

JAN.
20
PAR

UNIV. OF
ILLINOIS
LIBRAR

THE UNIVERSITY
OF ILLINOIS
LIBRARY

610.5
LA
1925'

The person charging this material is responsible for its return on or before the **Latest Date** stamped below.

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

University of Illinois Library

MAY 16 1969

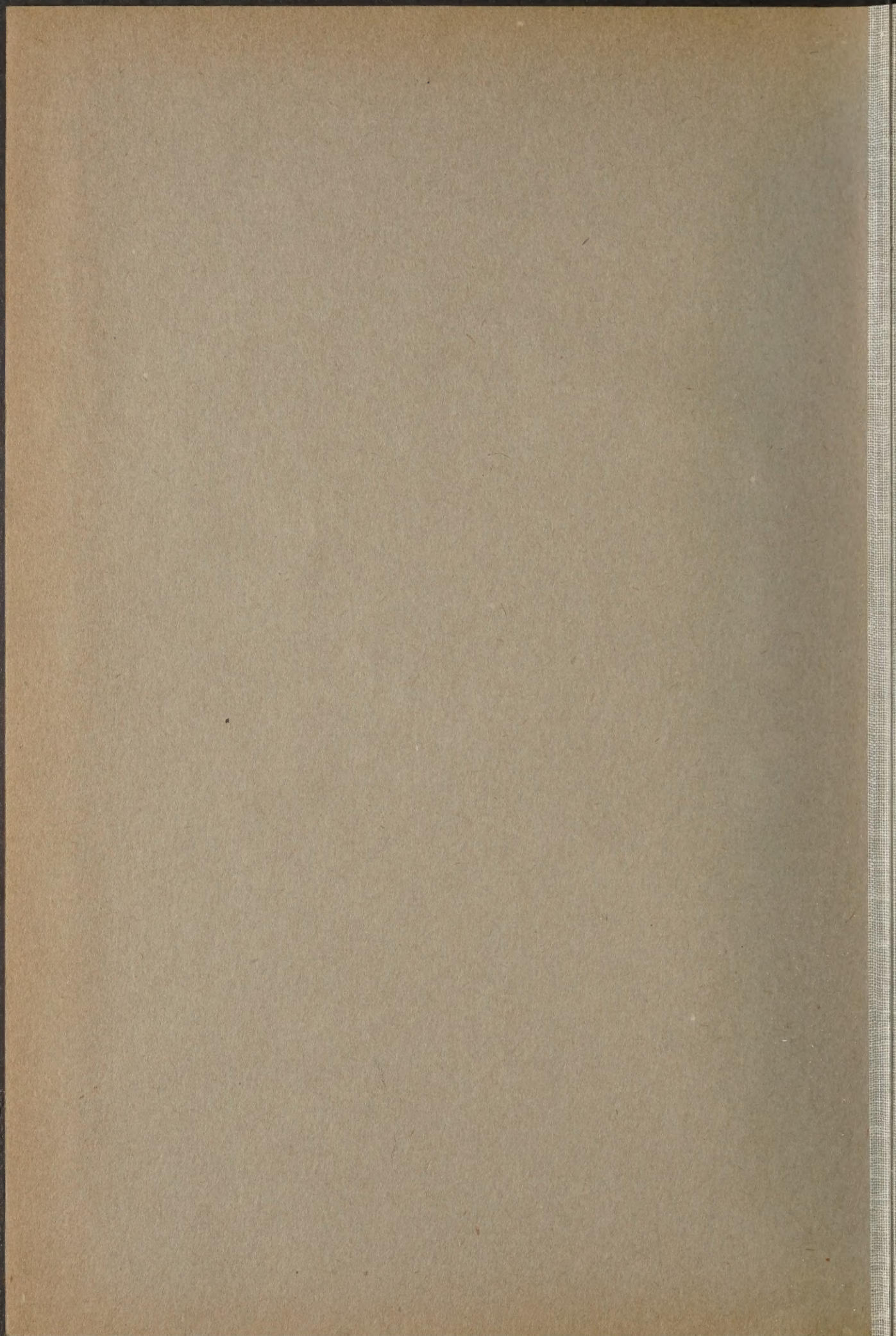
NOV 15 1985

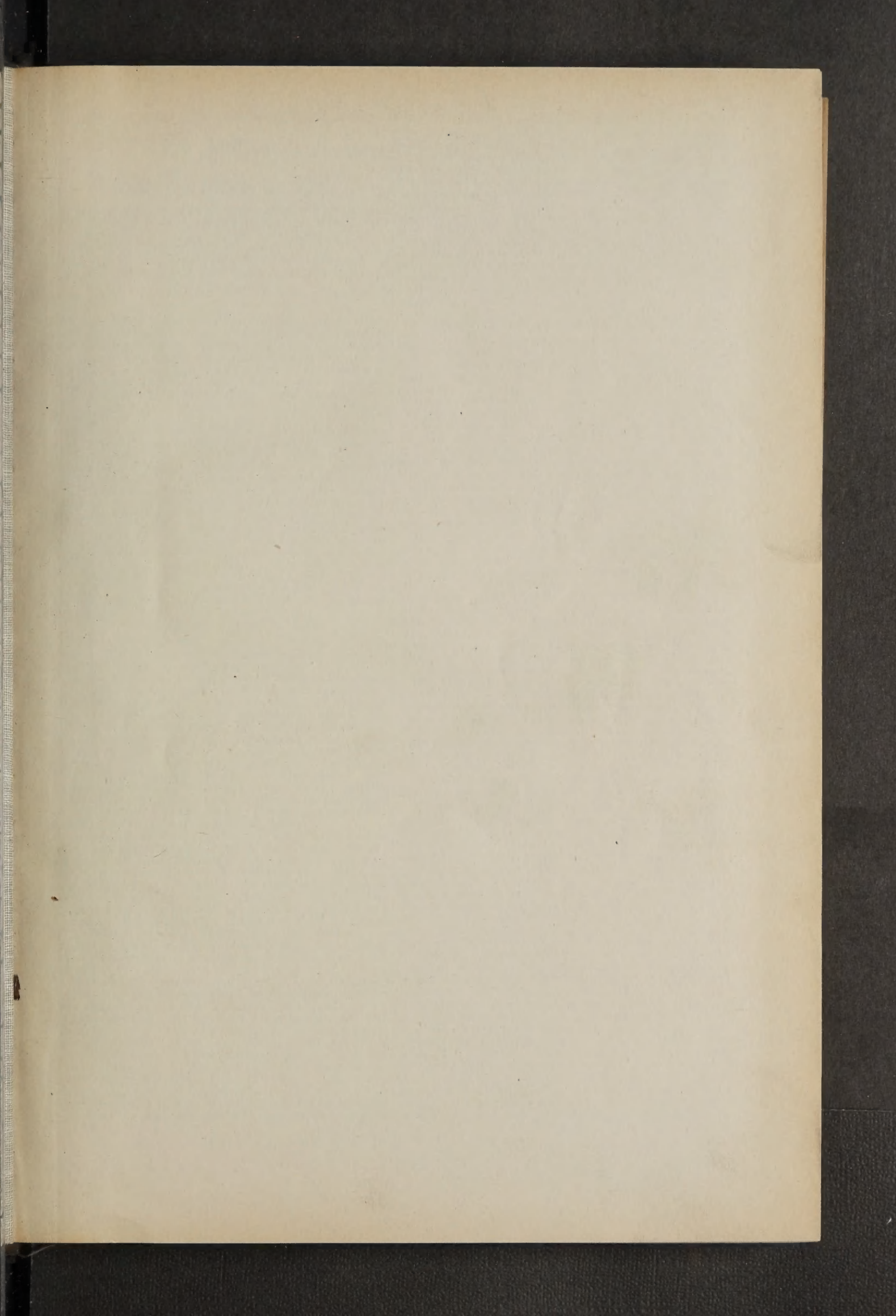
SEP 01 1993

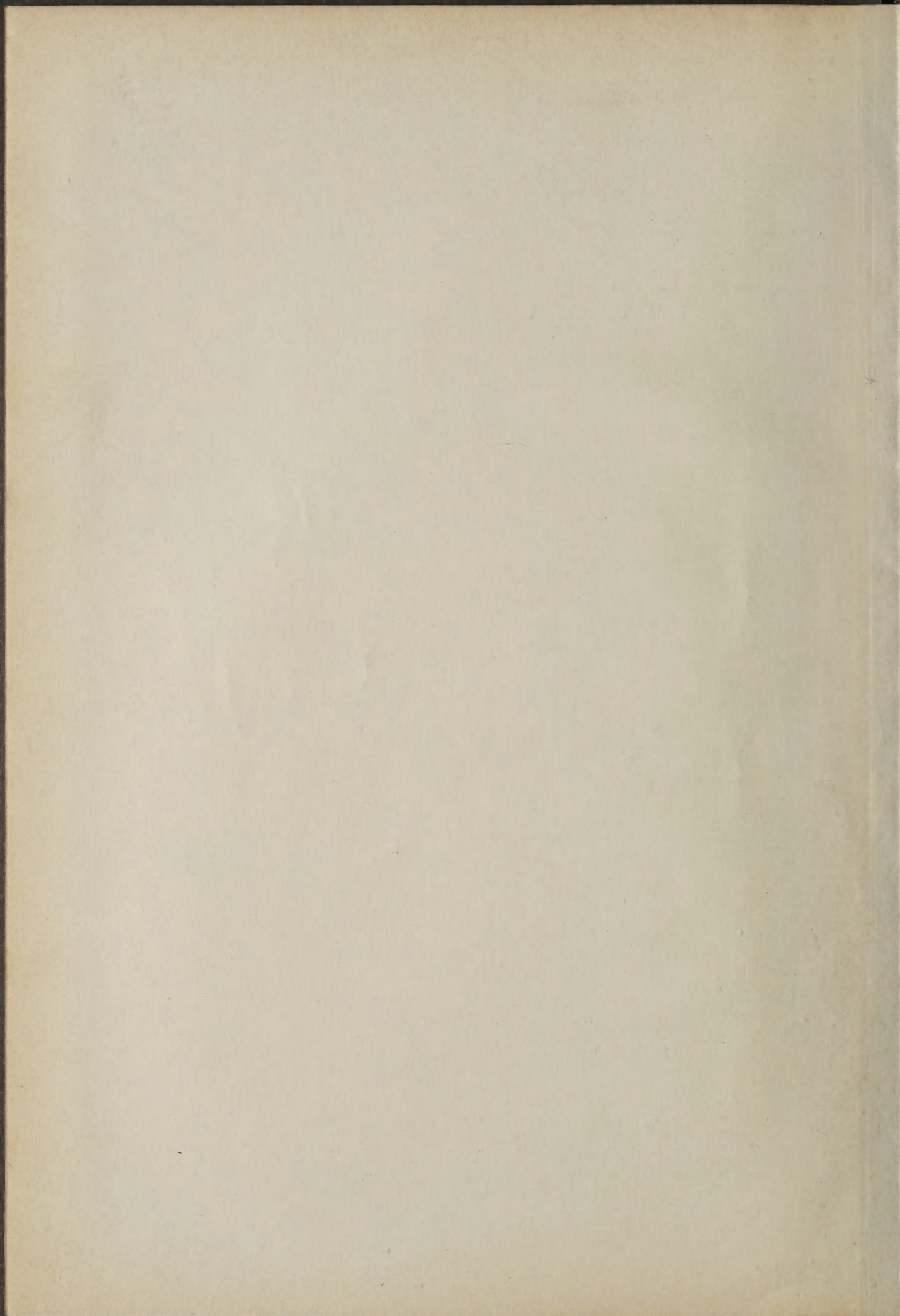
BUILDING USE ONLY

SEP 01 1993

L161—O-1096







1925
An Address

ON
RENAL TUBERCULOSIS.

Being the Presidential Address to the Section of Urology of the Royal Society of Medicine on Oct. 30th, 1924.

By CYRIL A. R. NITCH, M.S. LOND.,
F.R.C.S. ENG.,

SURGEON TO ST. THOMAS'S HOSPITAL, ETC.

(WITH COLOURED PLATE.)

I HAVE selected the subject of renal tuberculosis because it has not yet been brought before the Section and because I have complete post-operative details of a number of cases. As limitations of time will not permit of a complete review, I have only selected certain aspects of the disease, some of which are open to differences of opinion, and I shall refrain from giving more than a brief summary of the cases I have investigated.

Judging from hospital records the disease is not nearly so common in this country as on the continent, for in the last 12 years only 47 cases of surgical tuberculosis of the kidney appear to have been admitted to St. Thomas's. This probably does not represent a true total, for doubtless during the war years a certain number of cases escaped the Registrar, and probably several with primary renal tuberculosis were admitted to the medical and gynaecological wards and both treated and recorded as tuberculous cystitis. Fortunately, owing to the work of urologists in this country, physicians and gynaecologists are becoming more enlightened, and within recent years have sought the aid of their surgical colleagues for cases of "cystitis" instead of treating them with urinary antiseptics and tuberculin.

CLINICAL VARIETIES.

Renal tuberculosis is a disease of unusual interest because of the two distinct clinical varieties which we call medical and surgical respectively.

In the medical form the disease is bilateral, infection is nearly always hæmic, there is a coexistent parenchymatous nephritis, the urine is clear but contains tubercle bacilli, albumin of sanguineous origin, and hyaline and granular casts. Physical signs of chronic nephritis in the form of oedema with arterial and cardiac changes are often present and death from uræmia is not uncommon. The actual tubercles are scattered irregularly throughout the cortex and medulla, the greatest number being in the cortex, but as Bedo Hobbs has pointed out, though tubercles are often limited to the cortex they are seldom found in the medulla without a cortical lesion.

In the surgical form the disease is unilateral at the commencement, infection takes place by the blood- or lymph-streams, the urine is cloudy or turbid, and contains tubercle bacilli, pus cells, caseous material, fragments of renal tissue, phosphates, red blood corpuscles, and albumin of pyogenic origin. The focal lesions are limited in number and undergo caseation and liquefaction, forming an open or closed tuberculous abscess. The pathological anatomy is similar in its essentials to that of the medical form, but differs in degree, and will be discussed more fully later on.

It is curious that two types should exist with such wide clinical differences, the one with multiple tubercles and albuminuria, and the other with a limited number of tubercles and pyuria. I am inclined to think that the difference is only one of degree. In the medical form, the resistance of the kidney is lowered by a toxic inflammation which accounts for the albumin in the urine, and by frequent assaults by myriads of bacilli which are suddenly liberated from the primary focus—e.g., the lung. Eventually the day comes when the kidney, with lowered vitality and with its arterioles the seat of a chronic endarteritis, no longer

excretes all the bacilli and multiple tubercles develop. That they do not undergo caseation and liquefaction is due to the fact that death cuts the process short. In the surgical variety the tubercles form only after attacks by a small number of bacilli at considerable intervals, aided by a local rather than a total lowered resistance. These tubercles remain dormant for months or years and eventually undergo caseation and liquefaction, changes typical of a chronic infection. This view is strengthened by Macfarlane Walker's interesting observation that early albuminuria is a precursor of genital tuberculosis. In two of his patients albuminuria preceded the tuberculous lesions by five years and pointed to the urine as the infecting agent.

CHRONIC OR SURGICAL RENAL TUBERCULOSIS.

Having briefly considered these two main types, I shall confine my remarks to the chronic or surgical form of renal tuberculosis. The interest that has centred on the disease is shown by its voluminous literature; in fact, Randall, an American surgeon, writing in 1919, found that no less than 1500 articles had been published in the preceding ten years, and yet the post-operative cures only average 60 per cent. In view of the good results of the surgical treatment of tubercle in other parts of the body, provided the whole infective focus can be removed, and of the fact that renal tuberculosis is, in its early stage, limited to the substance of an organ surrounded by a good fibrous capsule; it is evident that we have yet to discover a method of diagnosing the disease in its early, or what I prefer to term, its operable stage.

It is now well known that the disease is primarily unilateral, and that the only hope of cure lies in an early nephrectomy. Spontaneous cure is extremely rare, and only a few authentic cases have been published in which the disease in the kidney appears to have been arrested, and in which the death of the patient was due to an entirely different cause. Albarran collected five cases from the literature, Rafin reported four, which, however, were not verified by post-mortem examinations, and Randall has published one case of closed tuberculosis in which death was due to pernicious anæmia, but even in this sceptics might argue that the blood changes were due to the renal lesion. More recently Bedo Hobbs, in a study of fatal cases of pulmonary tuberculosis, found fibrous nodules in the kidneys which resembled the scars of healed tubercles. Wildbolz and others have reported cases with a tuberculous kidney who have lived from 10 to 30 years in fair health. These are rare instances of autonephrectomy in which occlusion of the ureter and pelvis is followed by total caseation and necrosis, but they are so rare as to be negligible.

Bilateral, surgical tuberculosis is practically always secondary to a primary unilateral infection, which, if allowed to persist for a sufficient length of time, will spread to the lower urinary tract and slowly but surely reach the opposite and once healthy kidney. Continental writers (Israel, Caspar, Albarran, and Legueu) have estimated from an enormous number of cases that bilateral surgical infections should not exceed 15 per cent., but more recently Braasch has shown by animal inoculation that in seven out of 22 cases apparently unilateral the opposite side was infected, and further that after removal of the obviously diseased kidney all these patients have signs of active urinary tuberculosis. These results indicate that our conception of an apparently unilateral lesion may require reconsideration.

In the post-mortem room the figures for bilateral infection are very different, being placed by Kummel and Kapsamer at 64 per cent. and 68 per cent. respectively. Ekehorn has endeavoured to deal with this problem by exposing both kidneys and removing the more diseased one when he considered it to be the cause of pyrexia and distressing bladder symptoms. In 20 cases so treated between 1910 and 1922 the immediate result was a pronounced diminution in the pain and pyuria. Subsequently ten died,

five could not be traced, and five were still alive. Two of the survivors were free from pain and able to work 12 years after the operation, their only symptoms being nocturnal frequency; and a third was in a similar condition five years after the operation. Two of the fatal cases had lived six years and two years. Though this method of treatment is not applicable to every case, it is certainly justifiable in some, if by its means the distressing symptoms of a heavily infected bladder can be alleviated. In the Mayo Clinic the results were not so satisfactory, for out of 18 cases so treated four died immediately after the operation and ten within 18 months, either from renal insufficiency or tuberculous foci in other parts of the body.

SEX AND AGE.

In my series of 65 cases there were twice as many females as males, but this is unusual, for the majority of figures show that the two sexes are affected equally. The commonest age is from 20 to 30. No less than 84 per cent. of my cases were between 20 and 50, figures which curiously enough are precisely similar to those quoted by Judd and Scholl in a series of 874 cases. The right kidney is affected rather more often than the left, and in my cases the percentages were 52 and 46 respectively. It is suggested that this is due to the greater mobility and lower position of the right kidney, which favours congestion and exposes it to injury, but the difference is so slight that there is no need to waste time in conjecture.

PATHS OF INFECTION.

In the past there have been considerable differences of opinion in regard to the route by which tubercle bacilli reached the kidney, but now there are only two channels which need be considered—the blood-vessels and the lymphatics. The ureteric route, for reasons which will be given, can be disregarded. A careful study of the pathological anatomy of the disease makes it clear that a primary infection nearly always takes place through the blood-stream. It is hardly necessary to point out that the term "primary infection" is not scientifically correct, for the bacilli must have originated in some tuberculous focus, most probably a tuberculous mediastinal gland, but it signifies that the kidney has been infected from a quiescent and obscure lesion.

The Hæmatogenous Route.

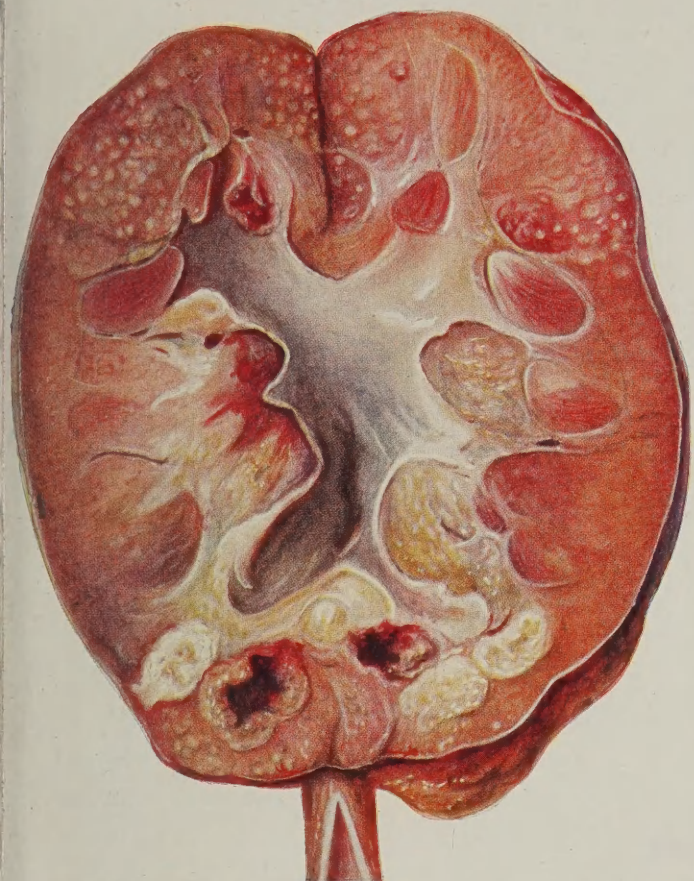
It is difficult to specify the exact site of the initial lesion in the kidney, for an operation specimen is seldom obtained at an early enough stage of the disease, and when several foci are present it is almost impossible to determine their relative age. In all probability the anatomical arrangement of the intra-renal blood-vessels plays an important part. Briefly it is as follows: The branches of the renal artery pass between the pyramids and form a series of incomplete arches across their bases. These are practically end arteries, for there is no anastomosis between adjacent arches. From these arches two sets of branches arise; one set, termed interlobular, passes straight to the cortex, and the other, the arteriolar rectæ, takes a recurrent course and supplies the base of the pyramids and the intermediate zone of the medulla. In the labyrinth each interlobular artery gives off a number of vessels which form glomeruli at the dilated extremities of the uriniferous tubules. Injected kidneys, both of man and the dog, show clearly the arterial arches giving off an enormous number of branches to the cortex, and so few to the papillæ as to make them appear almost avascular. As an interlobular artery is practically a continuation of the interlobar vessel, and is also larger than the recurrent arteriolar rectæ, tubercle bacilli in the blood-stream are most likely to be carried along them, either to lodge in the cortex, where they give rise to a tuberculous nodule, or to enter a glomerulus and escape into a uriniferous tubule. Here they may either lodge in a convoluted tube and thus form a primary cortical lesion, or they may be swept away in the urine. An excellent argu-

ment in favour of the earliest lesions being in the cortex is given by Bedo Hobbs in his paper in *Tubercle*, to which those interested in the subject are referred. He also states that Walsh, in a careful study of 52 cases, found the cortex affected alone in 26, both cortex and pyramids in 24, and the pyramids alone in two; and that Hallé in his writings on closed parenchymatous nephritis agrees that tuberculous foci appear most frequently in the cortex, next at the junction of the cortex and medulla at the level of the vascular arches, and least frequently in the pyramid. Many clinicians consider that the primary focus is located in the base of a pyramid, as this is the site of the grossest lesions in the majority of operation specimens. This, in my opinion, does not in any way negative the theory of a primary cortical origin, for in view of the fact that the intra-renal lymph-stream flows from the cortex to the medulla, bacilli from an initial small tubercle in the cortex can be carried by the lymph to the pyramids, which, as I have already pointed out, have a very poor blood-supply. Consequently, arrest of the organisms in this anæmic area is followed by extensive necrosis and the formation of a large tuberculous focus which overshadows the small primary lesion in the cortex.

The Lymphatic Route.

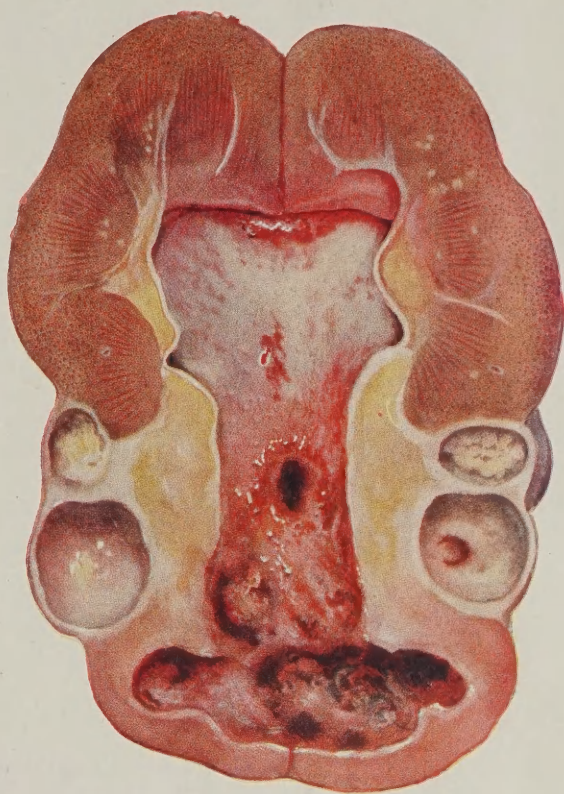
In a certain proportion of cases the primary infection of the kidney takes place through the lymphatics. This is made possible by the free communication between the various lymphatic systems in relation with it. Three plexuses are described: one in the kidney substance, a second beneath the fibrous capsule, and a third in the perinephric fat. Vessels from the intra-renal plexus converge to form four or five trunks, which emerge at the hilum, where they are joined by vessels which emerge from the subcapsular and perinephric plexuses. The subcapsular plexus communicates freely with the plexus in the perinephric fat, and also with the intra-renal plexus by trunks which enter the cortex in relation with the fibrous septa of the kidney. Free communication also exists between the renal and subdiaphragmatic lymphatics above, and those of the upper ureter below. The three sets of ureteric lymphatics form a more or less continuous chain, and the lowest communicate freely with those of the bladder, prostate, uterus, and Fallopian tubes. This free communication has been proved both experimentally and clinically by many observers, amongst whom I may mention Mr. Kenneth Walker (*THE LANCET*, 1922, i., 684). In the discussion which followed his paper, I mentioned several cases which had come under my notice of acute prostatic abscess followed by perinephric abscess, clinical evidence which clearly demonstrates the intimate connexion between the pelvic and perirenal lymphatics. As is well-known, Brongersma is a strong advocate of this mode of infection, and considers that in many cases the bacilli reach the kidney from the lung or pleura via the lymphatics through the diaphragm. Franke holds similar views. It has also been suggested that the communication between the colic and renal lymphatics constitutes another method of infection. At present, however, there is not sufficient evidence to allow of any definite conclusions that primary renal tuberculosis is often caused through the lymphatics. In secondary infections (i.e., infection of a healthy kidney from a long-established focus on the opposite side), which are not hæmic in origin, the lymphatics play a very definite part. In these instances bacilli from the diseased kidney travel in the urine to the bladder, where they gain access to the tissues through an abrasion or ulcer, and are then carried upwards to the healthy kidney in the peri-ureteral lymphatics. Walker considered this to be the interpretation of the post-mortem findings in one of his cases which died of advanced tuberculosis of the left kidney, bladder, and prostate. The inner coat of the left ureter was the site of extensive tuberculous infiltration, but on the right side the peri-ureteral tissues were infiltrated and the inner coat of the ureter was healthy.

FIG. I.



Primary closed parenchymatous tuberculous nephritis
(operation specimen).

FIG. III.



Primary open tuberculous pyelonephritis
(operation specimen).

FIG. II.



Bullous œdema hiding ureteric orifice of Fig. I.

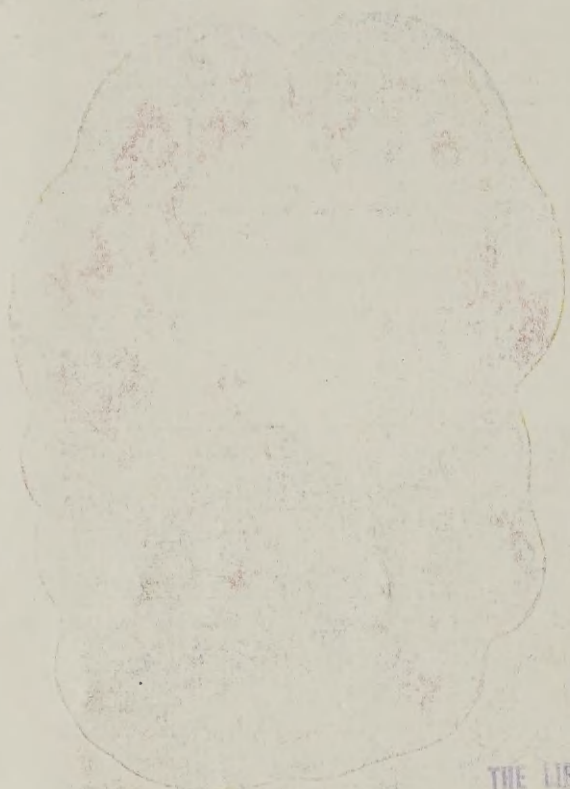
FIG. IV.



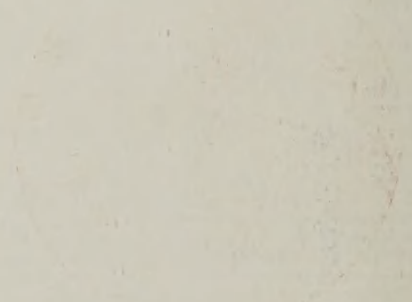
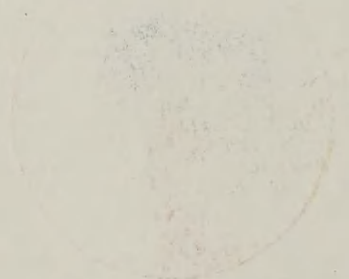
"Golf-hole" ureteric orifice of Fig. III. surmounted
by tuberculous ulcer.

MR. CYRIL A. R. NITCH: RENAL TUBERCULOSIS.

Figs. I. and II. are after drawings by S. A. Sewell and Figs. III. and IV. after drawings by W. Thornton Shiells.



THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



Ureteric Route.

As a result of experimental work by George Walker, Baureisen, Draper and Braasch, and recently by Dyke and Maybury, it has been proved conclusively that micro-organisms cannot pass directly up the ureter from the bladder to the kidney. The last-named (Dyke and Maybury) endeavoured to infect the kidneys of the rabbit by placing in the bladder a piece of Turkey sponge saturated with a thick emulsion of *Staphylococcus aureus*. The uniformly negative results led them to conclude "that the uretero-vesical junction offered, under the experimental conditions, an insuperable bar to the passage of infection from the bladder upwards." Another series of experiments "performed with a view to bring about the passage of cocci, or carmine granules, or Indian ink, from the pelvis into the renal tubules" was also fruitless and led to the conclusion that the renal papilla acted as a valve, and rendered infection of the renal tubules in the reverse direction quite impossible. When the epithelium, lining the renal sinus, was damaged there was a direct infection in the adjacent renal tissue and beneath the capsule. Therefore it is fair to conclude that direct spread of infection up the lumen of a sound ureter has not yet been proved. If its epithelium is damaged by trauma or inflammation, an ascending infection is possible, but it then takes place by direct extension in the walls of the ureter or in its lymphatics.

PATHOLOGY.

The best account is given by Hallé, who describes three types of chronic renal tuberculosis. (1) Primary closed parenchymatous tuberculous nephritis. (2) Primary open tuberculous pyelitis or pyelonephritis. (3) A combination of (1) and (2).

Alexander Randall has summarised these so clearly* that I cannot do better than quote him verbatim:—

"In the first, the primary closed parenchymatous tuberculous nephritis, the infection is situated in the parenchyma, most frequently in the cortex; it is limited and easily encapsulated; the peripherally growing lesions progressively involve the poles and lobules, forming cold abscesses, and end by a closed cavernous parenchymatous tuberculosis, with one or two ultimate conclusions—liquefaction or caseation. The lesions may be multiple, and as the condition progresses and the entire kidney becomes involved, secretion ceases. Interstitial pelvic inflammation ultimately destroys this portion of the organ, and its area is replaced by a fibro-lipomatous degeneration and scar tissue. The condition ends by 'total, successive, or simultaneous exclusion of the kidney,' or 'spontaneous nephrectomy.' Time simply adds atrophy to the process."

The term "closed" implies that the products of disintegration are not being emptied into the bladder. This is due to obliteration of the ureter and simultaneous or subsequent destruction of the kidney. Fig. I. on Coloured Plate illustrates these points and conforms to an early stage of this type. The tubercles are limited to the two poles and at the upper pole an eroded papilla is visible. The lower pole contains tubercles, caseous deposits, and abscess cavities; fibro-lipomatous degeneration is seen in the middle. The pelvis is healthy except in an upper calyx. The ureter was obliterated at the back of the bladder by a large caseous focus. The ureteric orifice, Fig. II., was hidden in a mass of bullous oedema resembling a mulberry in size and shape.

The kidney was removed from a woman, aged 37, with frequency and pyuria of four months' standing. When seen the urine contained pus and was sterile; repeated examinations for tubercle bacilli were negative. There was no efflux from the left ureter, nor was any indigo-carmin to be seen half an hour after injection. A mild cystitis accounted for the pyuria. Per vaginam a slightly thickened ureter could be felt. Three months after nephro-ureterectomy the patient was perfectly well, the ureteric orifice and the bladder were normal in appearance, and the urine was clear and free from tubercle bacilli.

In the second type, primary open tuberculous pyelonephritis, "the infection originates in the tissues of the renal pelvis high in the calyces and the papillo-

calicular sinuses. It occasions a progressive ulceration, working up into the renal tissue from the lateral surfaces of the papillae. Deeper lesions may develop, but the calicular lesions are always the more advanced, and the infection remains essentially a tuberculous pyonephrosis" (Randall). The pathologic products of the diseased kidney escape into the bladder, and in this type frequently give rise to a "golf-hole" ureteric orifice and ulceration of the adjacent mucosa. Fig. III. is a fair illustration of the type, showing advanced calicular and pelvic ulceration with destruction of the papillae. In the cortex are two cavities which contained caseous material, and were probably the initial lesions in this case. In the upper pole several tubercles are visible, arranged in rows as if formed in a lymphatic duct. The ureteric orifice (Fig. IV.) is open, dragged out, and surmounted by a large tuberculous ulcer.

The kidney was removed in January, 1913, from a female aged 48, with a year's history of chronic cystitis and occasional hæmaturia. Six years after the operation she was in good

FIG. V.



Mixed variety. A combination of Types I. and II.

health and weighed 12 st. She still had frequency about two-hourly day and night. Her urine contained pus, bacteria, and a trace of blood. No tubercle bacilli were found.

The third type is a mixed one where both of the above processes are coexistent. Fig. V. is a good specimen of the variety showing in its lower half closed parenchymatous nephritis which has progressed to caseation and almost complete destruction of the renal tissue, and in its upper half papillo-calicular ulceration and numerous tubercles, which are arranged in rows in several places.

The specimen was obtained in 1912 from a female aged 37, who had suffered from frequency and occasional hæmaturia for three years. Tubercle bacilli were found in the urine a year after the commencement of bladder symptoms. She was treated with tuberculin and improved for a time, but relapsed again when it was discontinued. The ureteric orifice was drawn out and the surrounding mucosa was congested and oedematous, and contained two tubercles. Nephrectomy with high division of ureter. The latter was thickened but its mucous membrane appeared healthy. In June of this year—i.e., 12 years after the operation—she was reported to be in good health, but I was not able to obtain further details.

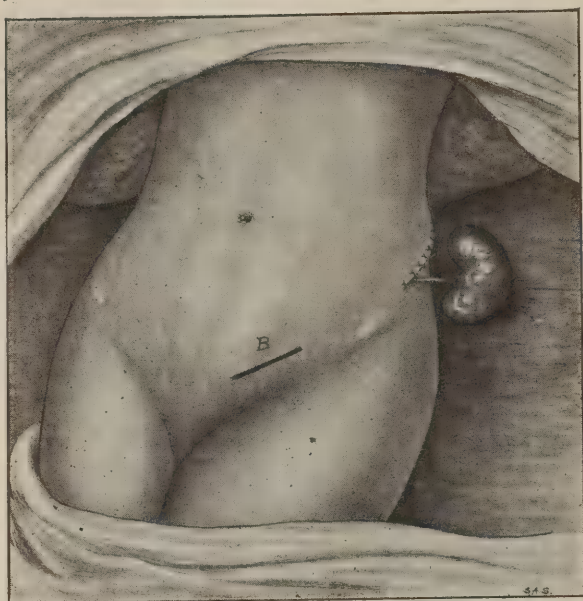
* Journal of Urology, vol. ii., No. 6, p. 429.

Hallé's figures show that the mixed type is the commonest clinically, and that types I. and II. are of about equal occurrence post mortem. It will be noticed that Hallé considers that the second type is papillary in origin, but this view is open to argument, for there is no proof that the initial focus is not a small one in the cortex, and that the papillary lesion is a natural sequence of intra-renal lymphatic extension analogous to the minute but infected tonsillar crypt, which only attracts attention through the enlarged cervical gland. As I have already shown, the comparative avascularity of the papillæ encourages the development of a tuberculous focus, and as soon as its epithelial covering is destroyed contamination by the urine in the pelvis accelerates its spread.

DIAGNOSIS.

The diagnosis depends on the symptoms of vesical irritation combined with an acid, turbid, sterile urine containing pus cells, tubercle bacilli, and occasionally

FIG. VI.



Showing kidney (A) still attached to ureter and line of incision (B) for exposure of pelvic portion of ureter.

blood in varying amounts. Given these data the site of the lesion is determined by cystoscopy. There are many interesting points in connexion with the diagnosis which I might refer to, but I do not propose to inflict them on you now, and will only discuss the presence or absence of tubercle bacilli in the urine. In the closed form just described tubercle bacilli cannot enter the bladder, and are therefore often absent from the urine. When present they must originate in some portion of the urinary tract below the obstructed ureter. The diagnosis of chronic renal tuberculosis can then only be made by the appearance of the ureteric orifice, the absence of efflux, and by the thickened ureter which can readily be felt bimanually, and is a positive indication of the renal lesion. In a typical case of open renal tuberculosis tubercle bacilli are found in an acid purulent urine, and there is no difficulty either in making the diagnosis or deciding on the correct treatment, but when bacilli are found in a clear urine the question arises whether tubercle bacilli can percolate through the kidney without injuring its substance. The published figures of several observers show that tubercle bacilli are excreted in a clear urine in about 9 per cent. of patients with pulmonary tuberculosis,

and post-mortem examinations have shown that tuberculous foci are present in the kidneys of some and absent in others. But can a kidney excrete, for a prolonged period, a normal urine containing large numbers of tubercle bacilli originating from an obscure and undiscoverable focus without itself being damaged, and if, in such a case, the physical signs incriminate one kidney, should surgical treatment be withheld? The answer is Yes, as the following case proves:—

In 1913 I removed a gangrenous appendix from a girl of 9 years who was otherwise healthy. Six days later she had a sudden attack of acute pain in the left kidney followed by profuse hæmaturia. The urine, examined by Prof. L. S. Dudgeon, contained blood cells only and cultures were sterile. The kidney was tender, and there was slight pyrexia, but otherwise there were no physical signs. The hæmorrhage diminished gradually and on the fifth day Prof. Dudgeon reported that the urine was still sterile, but that it contained more leucocytes than were compatible with normal blood, and that their presence suggested an inflammatory lesion of the kidney. Fifteen days after the onset of hæmaturia a perfectly clear and apparently normal specimen of urine was found to be swarming with tubercle bacilli, which were proved by animal inoculation. The excretion of bacilli continued for two and a half months and then ceased. The patient has been perfectly well ever since, and is now a well-developed girl over 20 years old.

Now, this is either a clear case of a leaking kidney or of one containing numerous parenchymatous tubercles, which, after pouring myriads of bacilli into the glomeruli and tubules, eventually healed completely, a possibility which most authorities emphatically deny. In fact, J. R. Caulk states that "there has never been in the history of medical literature a single authentic case of spontaneous healing of a tuberculous kidney."

TREATMENT.

The treatment of unilateral renal tuberculosis can be summed up in three words—early lumbar nephrectomy. The kidney should be removed with its capsule and any perinephric fat which is adherent to it. When dense adhesions render subcapsular enucleation necessary, the results are unsatisfactory, and the operation is apt to be followed by a persistent tuberculous sinus. If the disease is complicated by a perinephric abscess, nephrectomy must be deferred until the abscess has yielded to treatment. The kidney must never be incised to verify a diagnosis which should have been complete and certain before operation, otherwise the surrounding tissues will be infected and the wound may take months to heal. After operation a prolonged course of tuberculin should be given.

Treatment of the Ureter.—Most surgeons divide the ureter at a convenient distance from the kidney either with the cautery or between two ligatures after injecting iodine or carbolic acid. My own practice has been to remove the entire ureter whenever it was obviously infected, in the hopes of alleviating the bladder symptoms which persist in so many cases, but the results, though slightly better than those following nephrectomy alone, do not come up to expectations.

TECHNIQUE AND RESULTS.

In 52 cases operated on by myself and others, which I have been able to trace up to last July, nephrectomy was performed in 33, and in the remaining 19 the entire ureter was removed as well. The results are as given in Table I.

TABLE I.—Results of Nephrectomy and Nephro-Ureterectomy.

—	No. of cases.	Mortality.		Now quite well.	With bladder symptoms.
		Operative.	Late.		
Nephrectomy	33	4	3	15 (58 %)	11 (42 %)
Nephro-ureterectomy	19	0	3	10 (63 %)	6 (37 %)

Thus it will be seen that after the more extensive operation the number of apparent cures is slightly

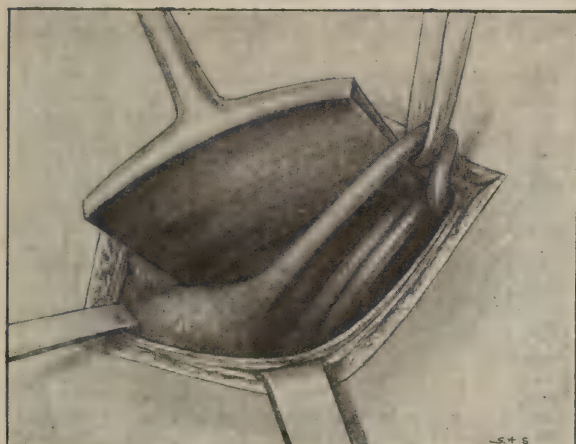
higher, and the number of cases with bladder symptoms is slightly lower. An analysis of the cases with persistent bladder symptoms is of interest. (Table II.)

TABLE II.—Cases with Persistent Bladder Symptoms.

—	No. of cases.	Frequency only.	Frequency and pyuria.	Frequency and pyuria with tubercle bacilli.
Nephrectomy ..	11	3 (27 %)	7 (63 %)	1 (9 %)
Nephro-ureterectomy	6	3 (50 %)	1 (16 %)	2 (33 %)

If the small number of cases from which these figures are derived is of any value, they indicate

FIG. VII.



Lower end of ureter and base of bladder. (Drawn at an operation.)

greater benefit from the major operation. Judd states that the extensive operation necessary to remove the entire ureter greatly increases the operative risk, but this is not my experience, as in 19 cases there has not been any operative mortality. If performed by the technique I will now briefly describe the risks are slight, and the shock is no greater than after simple nephrectomy.

After freeing the kidney and ureter the pedicle is ligatured and divided and the kidney is brought out of the wound. The subperitoneal fat is then separated from the ureter as far as the finger can reach, generally to the brim of the pelvis. The wound is now sutured, leaving the kidney, still attached to the ureter, hanging from its anterior extremity. The patient is then placed supine and the pelvic ureter is exposed by Kidd's incision (Fig. VI.); it is found easily as it has already been freed as far as the brim of the pelvis, and is as easily followed to the base of the bladder (Fig. VII.), where it is ligatured in two places, injected with carbolic acid, and divided (Fig. VIII.). An assistant then gives the kidney a sharp pull, when it comes away with the entire ureter attached. The lower wound is closed without drainage and the loin wound is drained for 24 hours with a piece of corrugated rubber.

Operative Mortality.

The records of 65 operated cases were examined; four died shortly after nephrectomy, one from shock, and three from uræmia, making an operative mortality of 6 per cent. In 35 of these cases which were under my own care there were no deaths from operation. If the deaths from uræmia (a cause which is rare in these days) be excluded, the operative mortality works out at 2 per cent., a figure which corresponds with other published records.

Late Mortality and Results.

I will now give you a brief summary of 48 of the above cases which were traced and of which I have complete post-operative details. In every instance I have either seen the patient recently or received a letter from him or his doctor. The urine of all who were not perfectly well and free from bladder symptoms was examined by a pathologist. Forty-two were living and six had died within two and a half years of the operation, either from phthisis or tuberculosis of the remaining kidney. The present condition of the 42 survivors is as follows: 25, or 60 per cent., are in good health and may be regarded as cured, and 17, or 40 per cent., are still suffering from bladder

FIG. VIII.



Ureter ligatured at base of bladder and injected with pure carbolic acid before division.

symptoms, either frequency only, or frequency and pyuria, and in three of these tubercle bacilli are still present in the urine. (See Tables I. and II.)

TABLE III.

Out of 42 cases—	8 are alive	3 years after operation.
4 " "	4 " "	" "
3 " "	5 " "	" "
5 " "	6 " "	" "
2 " "	7 " "	" "
4 " "	8-10 " "	" "
11 " "	10-17 " "	" "

Broadly speaking, the results of nephrectomy for unilateral disease in the 48 cases which were traced are as follows:—

12 per cent. are dead two and a half years after operation.
52 " " are cured.
35 " " still have urinary trouble.

It is interesting to compare these figures with those of the Mayo Clinic published by Judd and Scholl last March. In 29 years there were 863 nephrectomies for renal tuberculosis. Complete post-operative data were obtained in 611, with the following results:—

31 per cent. are dead.
58 " " are cured.
10 " " still have urinary trouble.

The figures of other writers, though varying slightly, are essentially the same, therefore it is fair to conclude that at the present day the operative mortality should not exceed 2 per cent., and the permanent cures should not be below 60 per cent.

Owing to the delay which so commonly follows the onset of symptoms, and the recognition and surgical treatment of renal tuberculosis, many patients of both sexes suffer from persistent bladder trouble (35 per cent. in my series), and males are prone to secondary genital tuberculosis. Frequency alone is due to a bladder which is contracted by long-standing

inflammation, and which will gradually dilate with time, though it seldom attains the capacity of the normal bladder. Hydrostatic dilatation is sometimes beneficial, but, generally speaking, it has little effect. One of my patients, operated on ten years ago, after a prolonged course of tuberculin advised by a physician, had such a contracted bladder that only a 2½ oz. distension was possible under deep anæsthesia. She is now able to retain urine for four or five hours, but this is exceptional. Frequency combined with pyuria is often due to a granuloma or a tuberculous ulcer of the bladder. For several years I have treated these conditions by diathermy "frizzling." The electrode is placed near enough to the ulcer to allow a shower of sparks to play on it, but care must be taken not to produce a severe burn, or perforation will follow the separation of the slough. Three males developed a troublesome stricture following tuberculous posterior urethritis. They all yielded eventually to tuberculin and careful dilatation with sounds. Four developed epididymitis, which in three was accompanied by vesiculitis and pyuria. In one the vesicle was converted into a large tuberculous abscess, which was opened and curetted extraperitoneally after orchidectomy, and in the other two Loughnane's operation of orchido-vaso-vesiculectomy was performed, and followed by rapid disappearance of the pyuria.

In conclusion, while admitting that the results of the surgical treatment of renal tuberculosis are not as good as they ought to be, yet I have no doubt that before long, when the medical profession as a whole has learned to regard all cases of mild "cystitis" with suspicion, and when the ureters of a patient with a sterile purulent urine are regularly catheterised, and the two specimens of urine are examined for tubercle bacilli, there will be a negligible operative mortality, a great increase in the percentage of cures, and a corresponding diminution in the troublesome genito-urinary complications.

References.

- Albarran, J.: Cited by Randall.
Baureisen, G.: Zeitschr. f. Gynäk. Urol., 1910, ii., 132.
Braasch, W. F.: Cited by Judd and Scholl.
Brongersma, H.: Proc. Inter. Assoc. Urol., Paris, 1908, 551.
Caulk, J. R.: Jour. Urol., vol. vi., No. 2, p. 97.
Draper, J. W., and Braasch, W. F.: Jour. Am. Med. Assoc., 1913, ix., 20.
Dyke, S. C., and Maybury, B. C.: Brit. Jour. Surg., 1924, xii., 45.
Ekehorn, G.: Hygiea, 1924, pp. 353 and 386.
Franke, C.: Berlin Clin. Woch., 1911, xlviii., 1973.
Hallé, Noël: Bull. de la Soc. Anat., 1888; Ann. de Mal. d. Org. Gen.-Urin., 1906, xxi., 161; Presse Médicale, 1914, xxv., 57 and 177.
Hobbs, F. Bedo: Tubercle, November and December, 1923, vol. v., No. 2.
Judd, E. S., and Scholl, A. J.: Ann. Surg., March, 1924, p. 395.
Kidd, Frank: THE LANCET, 1913, i., 1578.
Kümmel, H.: Klin. Woch., 1923, p. 2085.
Macalpine, J. B.: Proc. Roy. Soc. Med. (Sec. of Urol.), 1924, p. 29.
Raftin, M.: Cited by Randall.
Randall, A.: Jour. Urol., 1919, vol. iii., No. 6.
Walker, Kenneth: THE LANCET, 1922, i., 684.
Walker, George: Johns Hopkins Hosp. Reps., 1904, xii., 445.
Walker, K. Macfarlane: THE LANCET, 1913, i., 439.
Walsh, J.: Sixth Inter. Cong. on Tuberc., 1908, i., 347.
Wildbolz, H.: Zeitschr. f. Urol., Erstes Beiheft, 1912.

DEWSBURY MATERNITY HOME.—A maternity home of ten beds provided by the town council of Dewsbury has been opened at Moorlands Hall. The mayor, in opening the home, said that in certain parts of the town there were a great number of homes unfit for the birth of children.

ROYAL SALOP INFIRMARY.—At the annual meeting, held at Shrewsbury, it was stated that during the past year the number of in-patients was 1605 and out-patients 1216. Some 210 parishes in Shropshire and the border counties were giving generous help, the sum contributed last year being £3500—that is, £700 in advance of the previous year. During the year the subscriptions were £6650 and the donations £3270. The income balanced the ordinary expenditure. It is proposed to inaugurate a joint appeal for 1,000,000 shillings for extension and improvement of the Royal Salop Infirmary, the Eye, Ear, and Throat Hospital, the King Edward VII. Memorial Sanatorium, and the Shropshire Orthopaedic Hospital. Of the £50,000 required, £6908 have been received.

A STUDY OF THE EFFECT OF DEEP THERAPY ON THE BLOOD IN LEUKÆMIA.

By W. L. WATT, C.M.G., M.D. MANITOBA,
IN CHARGE OF DEEP THERAPY RESEARCH DEPARTMENT, GUY'S
HOSPITAL; FORMERLY IN CHARGE OF X RAY AND ELECTRO-
THERAPEUTIC DEPARTMENTS, WINNIPEG GENERAL
HOSPITAL.

Assisted by

J. CARTER BRAINE, F.R.C.S. ENG.,
GRIFFITHS DEMONSTRATOR OF PATHOLOGY, GUY'S HOSPITAL.

FROM the days of Pusey, who, in 1902, was the first to X ray an enlarged spleen, this method of treatment has gradually come into general use. The technique usually employed was one of repeated exposures at intervals of a few days, using rays which we now designate as soft. More recently medium hard rays have been employed, a series of three exposures being given, one to the front, one to the side, and one to the back of the splenic area, the series being repeated every three to four weeks. In the following cases extremely hard rays only were used, limited to one exposure of the whole splenic area wherever possible. In the grave cases a series of three or four exposures was given, covering various parts of the body.

All dosages mentioned are based on the time it would take the rays generated at a voltage of 210,000 and filtered through zinc 0.5 mm. and aluminium 3 mm., to cause a skin erythema at the area exposed in three days, the distance of the tube target from the skin being 23 cm. This time is given a nominal value of 100, so that if a 60 per cent. dose is mentioned, this means that it takes 120 minutes to give a skin erythema dose at a distance of 50 cm., the actual time of exposure was 60 per cent. of this, or 72 minutes.

It will be noticed that the list of cases is a fairly representative one; this has only been made possible by the great kindness of the visiting staff of the hospital, who, often at great inconvenience owing to the lack of beds, have readmitted these patients for further observation and treatment if necessary. The blood examinations have been carried out by Mr. Carter Braine, the actual number of counts taken being about 450. His findings were most kindly checked by Prof. Stokes and others on various occasions, and the variation has never been more than 10 per cent., so that the counts as given can be considered as at least approximately accurate.

TABLE I. (CASE 1).—Blood Counts.

Date.	Hb.	R.B.C.	Leucos.	Lymphos.	Polys.	Eosins.	Basos.	Monos.	Trans.
	%								
23/10/23	70	3,900,000	50,500	90.5	8.5	0.5	—	—	—
28/12/23	88	4,100,000	9,000	24	70	2	4	—	—
14/2/24	96	5,100,000	8,800	45	52	0.5	3.5	—	—
1/4/24	95	5,000,000	21,200	38.5	57.5	1.5	1.5	—	1
11/4/24	94	—	9,800	40	57	1	—	—	2
31/5/24	—	5,000,000	10,500	44	52	1	—	3	—

Hb, hæmoglobin. R.B.C., red blood corpuscles. Leucos., leucocytes. Lymphos., lymphocytes. Polys., polynuclears. Eosins., eosinophils. Basos., basophils. Monos., mononuclears. Myelos., myelocytes. Trans., transitionals.

CASE 1.—*Lymphatic Leukæmia.*—E. P., male aged 48 years, under the care of Dr. J. Fawcett. Twelve years ago patient had an operation for perforated duodenal ulcer. One year ago he had an attack of pneumonia and has never felt well since. Three months ago he noticed that his abdomen was enlarging and since then he has been greatly troubled with indigestion. A hernial protrusion has appeared in his operation scar. Examination revealed an enlarged spleen which reached two and a half inches beyond and below the umbilicus; the notch could be felt above and slightly to left. Blood counts are given in Table I.

CASE 2.—*Lymphatic Leukæmia*.—W. M., male aged 60, under the care of Dr. Fawcett. About October, 1923, patient noticed swellings in the groins, then in the axillæ, and later in the neck. The latter was accompanied by tinnitus aurium. He complained also of increasing pain in left shoulder and the sacral region. Examination revealed an enlarged spleen which reached beyond the umbilicus and one inch below a line drawn from the umbilicus and the anterior superior iliac spine. Blood counts are given in Table II.

TABLE II. (CASE 2).—*Blood Counts*.

Date.	Hb.	R.B.C.	Leucos.	Lymphos.	Polys.	Eosins.	Monos.	Myelos.
23/11/23 ..	59	3,800,000	180,000	92	7	0	0	1
7/1/24 ..	76	4,100,000	15,200	74	22.5	0.5	3	0
12/2/24 ..	96	5,100,000	8,500	45	51	0	4	0

Oxidase reaction on 21/11/23, only 10 per cent. reduction. This patient was subsequently lost sight of. Only recently has it been possible to obtain further information through the kindness of the doctor who subsequently attended him. His letter reads as follows: "In answer to your letter re M. He died in the infirmary on 21st May. I sent him there at the end of March as he was confined to bed and his home was not suitable for nursing him. At that time he had moderate enlargement of the spleen, extreme wasting, an evening temperature, pain in back, and glands were enlarged, but not very." No further details could be obtained from the infirmary as a post-mortem was not held, and the cause of death was given simply as leukemia. In the light of experience with even apparently much graver cases, it is unfortunate that further radiation was not given, especially if death was due to a recrudescence of the disease.

CASE 3.—*Lymphatic Leukæmia*.—A. U., male aged 49, under the care of Dr. Fawcett. Three years ago patient noticed a few lumps in left side of the neck which have gradually increased in size. Two months ago he noticed his abdomen becoming larger. Three weeks ago swellings appeared in the axillæ and groins. Patient states he has felt ill for past six months. On admission he was slightly jaundiced and had oedema of the hands and feet. Abdominal examination revealed an enlarged liver which extended to five finger-breadths below the costal margin and an enlarged spleen which extended to two and a half inches to the right of umbilicus and the same distance below. The notch could be felt above and to the left of the umbilicus. There was considerable free fluid in the abdomen. Radiologist reported that the chest showed enlarged root-shadows and infiltration of both lungs. Glands: Neck, both sides, especially the left, numerous, largest size of hen's egg. Groins: Both sides, numerous, largest size of walnut. Axillæ: Both sides, numerous, largest size of hen's egg. 7/1/24: Oxidase count by Prof. Stokes—98.5 per cent. lymphatic type. 14/1/24: A large mass of glands have developed under the left ear, following attack of quinsy. The spleen has further enlarged. 20/1/24: Glands incised and pus freely evacuated. Bacteriological report: A pure growth of *Staphylococcus aureus*. 21/2/24: Temperature normal. Pulse 80-95. Blood counts are given in Table III.

TABLE III. (CASE 3).—*Blood Counts*.

Date.	R.B.C.	Hb.	Leucos.	Lymphos.	Polys.
5/1/24 ..	3,240,000	50	340,000	99.5	0.5
9/2/24 ..	3,000,000	40	400,000	98.5	1.5
6/3/24 ..	2,880,000	48	180,000	95	5
2/4/24 ..	3,000,000	48	16,000	86	14
1/5/24 ..	3,800,000	60	15,600	88	9
30/5/24 ..	3,800,000	64	21,600	84	14

General Notes.—1. The lymphocytes remain persistently above the polynuclear, so that there is no crossing-over. 2. The red blood corpuscles and hæmoglobin after ten weeks begin steadily to rise. 3. Patient has received no further treatment for 14 weeks. He has been at home convalescing. He reported for examination on June 1st. His spleen was 7 cm. to the left of the umbilicus. His liver was smaller, reaching to one inch below the umbilical line. All glands were smaller and softer. Since this date he has been seen as an out-patient fortnightly. There has been a noticeable improvement in his general health. His blood count of leucocytes has remained practically stationary in the neighbourhood of

20,000. The liver and spleen have slowly decreased. All glands have diminished except the submaxillary, which recently enlarged. He was therefore readmitted to hospital on July 1st. His spleen now reaches 10 cm. from the umbilicus and is only about 2 cm. below the umbilical line, while the liver is now about the same distance above this line. As his leucocyte count is still only in the neighbourhood of 20,000 it is thought that a 30 per cent. deep therapy radiation to the submaxillary regions on each side will be sufficient.

CASE 4.—*Myelogenous Leukæmia*.—R. G., male, aged 53, under the care of Dr. A. F. Hurst. In July, 1923, patient consulted his doctor for shortness of breath. Examination revealed the spleen to be much enlarged. It has steadily increased in size up to time of admission, 21/2/24. Examination revealed an enlarged spleen, which was 2 inches to the right and 4 inches below the umbilicus. The liver is also definitely enlarged. Blood counts are shown in Table IV.

TABLE IV. (CASE 4).—*Blood Counts*.

Date.	Hb.	R.B.C.	Leucos.	Myelos.	Polys.	Lymphos.	Eosins.	Basos.	Monos.
27/2/24	55	3,460,000	184,000	59	34	2	1	0	4
14/3/24	70	3,540,000	23,600	6	78	11	1	4	0
28/3/24	80	4,100,000	11,000	1.5	84	11	1.5	2	0
9/5/24	100	5,200,000	16,000	10	75	12	0	2	1
30/5/24	98	4,800,000	26,000	25	60	10	1	1	3

CASE 5.—*Myelogenous Leukæmia*.—K. S., female, aged 34, under the care of Dr. Fawcett. History of amenorrhœa from September, 1922, with steady increase in size of abdomen. On admission a large hard tumour could be felt extending from pubis to half-way between umbilicus and sternum. Pelvic examination revealed presence of tumour mass there also. Splenectomy, 12/3/23. Blood counts are given in Table V. and V.A.

TABLE V. (CASE 5).—*Blood Counts, 1923*.

Date.	R.B.C.	Leucos.	Melos.	Polys.	Lymphos.	Mast.
12/3/23	3,300,000	110,000	50	41	7.5	1.5
14/3/23	3,200,000	200,000	—	—	—	—
21/3/23	2,200,000	146,000	—	—	—	—
7/4/23	3,100,000	74,000	—	—	—	—
6/6/23	2,900,000	47,000	—	—	—	—
4/9/23	2,400,000	121,000	—	—	—	—

TABLE V.A.—*Blood Counts, 1924*.

Date.	Hb.	R.B.C.	Leucos.	Myelos.	Polys.	Lymphos.	Eosins.	Basos.
12/3/24 ..	75	3,900,000	220,000	50.5	30.5	5.5	4	7.5
8/4/24 ..	90	5,000,000	9,400	42	45	6	1.5	5.5
9/5/24 ..	100	4,800,000	10,600	3	77	12	2	6
28/5/24 ..	100	5,000,000	11,000	2	75	17	3	2

The effect of splenectomy was first a temporary rise of leucocytes followed by a decline, which apparently reached its maximum in about three months. From this time there was a gradual rise to more than double the original count. The effect on the red blood corpuscles was unfavourable, and even six months after the operation the count was only 2,400,000. Her symptoms on readmission were complaints of general weakness and of being easily irritated and excited.

CASE 6.—*Polynuclear Type Leukæmia*.—F. B., female aged 60, under the care of Dr. Hurst. 13/3/24. History of six months' illness, with breathlessness and palpitation. Later she noticed swellings in axillæ and neck. She has gradually become weaker, and seven days before admission was compelled to go to bed. Latterly she has had a very troublesome cough. X ray report: Irregular rounded shadow opposite root of right lung. The right diaphragm has limitation of movement. Respiratory system: Diffuse bronchitis. Abdomen: Spleen four finger-breadths below costal margin. Glands: A mass of glands along posterior border of sterno-mastoids, numerous glands in axillæ, some as large as walnuts and a few in the groins. Blood counts are given in Table VI.

TABLE VI. (CASE 6).—*Blood Counts.*

Date.	R.B.C.	Hb.	Leucos.	Polys.	Myelos.	Lymphos.	Monos.
		%					
12/3/24 ..	3,950,000	70	144,000	84	9	5	1
20/3/24 ..	3,580,000	—	130,000	73	18	8	0
2/4/24 ..	3,800,000	85	90,000	80	11	6	2
12/4/24 ..	4,200,000	—	40,000	78	11	10	1
20/4/24 ..	—	—	38,000	83	5.5	8	3.5

This case showed previous to deep therapy marked hourly variations between 80,000 and 144,000.

This patient subsequently had her teeth extracted for pyorrhœa, commencing April 24th. Gradual extraction was carried out at intervals of a few days. On May 24th she developed an acute inflammation of the skin in the right cervical region about level of larynx, which rapidly sloughed. She was readmitted to medical wards May 31st, transferred to surgical June 5th, and died June 17th. The infection was streptococcal, and the erysipeloid condition spread over the right chest and shoulder, with sloughing of the skin. The left arm became swollen and inflamed, and eventually several suppurating sinuses formed.

Post-Mortem Report.—Emaciation, extensive erosion of the skin over right shoulder and neck anteriorly, suppuration of left arm from several sinuses, great œdema of the arms. Mucopus in bronchi. Dense adhesions right lung. This lung full of semi-hard nodules. A dense mass around left root. Lung adherent to pericardium. Spleen enlarged, weight 350 g.

The question naturally arose as to whether the condition was of the nature of an X ray burn. As, however, she only received three exposures in all, a 50 per cent. skin erythema dose to the lower left chest from in front, and a 45 per cent. dose to the same chest from behind and a 35 per cent. dose to the lower abdomen, this could be absolutely ruled out. The cervical regions and the right chest received no rays whatever. An X ray burn is invariably limited to the area of exposure.

CASE 7.—Myelogenous Leukæmia.—C. J., male aged 39, under the care of Dr. H. French. Patient was well until 18 months ago, when he was treated for carbuncles and has never felt right since. Latterly his general weakness has become much more pronounced, and his abdomen has steadily increased in size. His condition on admission was serious. The abdomen was enormously swollen. The spleen reached to the left anterior superior iliac spine and practically filled the pelvic cavity. The liver also was greatly enlarged, being only separated from the upper border of the spleen by about one inch. He has had a severe incessant cough for past two months, and on examination œdema of the bases of both lungs was present. Œdema of feet and legs was present, and considerable free fluid in the abdomen. His former admission to hospital was July 4th, 1923, and after a short stay he was sent to the X ray department for treatment as an out-patient. He was given in all 54 exposures to the splenic area, between this date and March 14th, 1924. There was considerable benefit at first, but from the beginning of the year he became increasingly worse, until on readmission his condition was as above described. Blood counts are shown in Table VII.

TABLE VII. (CASE 7).—*Blood Counts.*

Date.	Hb.	R.B.C.	Leucos.	Myelos.	Polys.	Lymphos.	Eosins.	Basos.	Hyaline.
	%								
5/7/23	36	4,560,000	325,000	86	19	3	2	3	7
26/7/23	30	—	250,000	66	28	6	—	—	—
29/7/23	40	3,660,000	430,000	—	—	—	—	—	—
8/4/24	38	2,260,000	580,000	70	21	5	1	3	—
2/6/24	56	4,000,000	146,000	59	30	5	—	6	—

A blood count previous to deep therapy showed that in the same day there was a remarkable variation of between 440,000 and 600,000.

CASE 8.—Myelogenous Leukæmia.—W. W. M., male aged 43, under the care of Dr. Hurst. History of duodenal ulcer since 1919. First admitted to hospital 2/4/23, discharged 18/5/23. He was greatly improved for about nine months, then an acute attack of abdominal pain. Readmitted on surgical side, but as the spleen was found to be enlarged, he was treated medically. Present condition: Spleen somewhat

enlarged, about three inches below the costal margin. The liver greatly enlarged, reaches to umbilical line. Marked bronzing of the skin. Axillary glands enlarged. Extreme general weakness. Patient since admission has been failing rapidly, his red blood corpuscles have dropped from 6,000,000 to 2,000,000, his hæmoglobin from 40 per cent. to 28 per cent. His leucocyte count exhibits extreme variations between 400,000 and 240,000. He has no desire for food, and is extremely listless. The fæces contain altered blood. Table VIII. gives the blood counts.

TABLE VIII. (CASE 8).—*Blood Counts. Before and After.*

Date.	R.B.C.	Hb.	Leucos.	Polys.	Myelos.	Trans.
		%				
26/4/24 ..	6,000,000	40	—	40	—	—
20/5/24 ..	3,400,000	35	250,000	—	—	—
3/7/24 ..	2,050,000	28	346,000	40	49	4
10/7/24 ..	2,146,000	32	200,000	49	36	6
24/7/24 ..	3,500,000	44	120,000	57	27	4
12/8/24 ..	4,000,000	60	100,000	53	25	3

The serious condition of the patient was so obvious that it seemed best to give only small radiations repeated at intervals of one week or longer. By this means it was hoped to cause a rather slow destruction of the leucocytes, with at the same time a decidedly stimulating effect on the red blood corpuscles and the hæmoglobin.

Deductions from the Cases.

These cases would appear to justify the following deductions:—

1. From the commencement of the exposure to deep therapy radiations the leucocytes begin to fall, and the destruction is most marked during the last half of the radiation.

2. The subsequent fall may be interrupted by a fleeting primary reaction coming on two to five hours afterwards, and by a secondary reaction which comes on two to five days afterwards and usually lasts 24 hours.

3. The susceptibility of the individual leucocytes varies with the type of leukæmia. In the lymphatic the lymphocyte is the most susceptible, in the myelogenous the myelocyte, and in the polynuclear the polynuclear. However, no matter which type it is, the polynuclear, the lymphocyte, and the myelocyte, if present, all share in the fall, and also in the primary and secondary reactions.

4. With the fall of the leucocytes there is a rise of the red blood corpuscles and the hæmoglobin. Conversely, when the red blood corpuscles and hæmoglobin fall the leucocytes rise.

5. The spleen steadily diminishes in size without undue rapidity and without any apparent deleterious effect. Likewise the liver, when enlarged, and also the lymph glands, similarly diminish in size.

6. The health of the patient steadily improves and in uncomplicated cases, without any serious disturbance of compensation, they are soon back to full-time work.

7. Splenectomy is not a contra-indication, as the effect is almost as striking as if this organ were present.

8. Patients already subjected to a long course of ordinary X rays, with final failure to respond, are still susceptible to deep therapy with considerable hope of improvement.

With subsequent radiations, in the lymphatic type, if the lymphocytes still predominate, they are the most susceptible, whilst the polys are but slightly affected. However, if the crossing over has taken place and the polys are now in the ascendent, they become the more susceptible, whilst the lymphos remain more or less stationary. They may even rise as the result of the radiation. The same remarks apply to the other types of leukæmia. The secondary reaction is still present. The reduction in the size of the spleen is more marked than with the first radiation. The rise of the red blood corpuscles and hæmoglobin may be more marked. There is usually a more noticeable improvement in the patient's general condition.

To attempt an explanation of these various deductions brings one at once into the realms of controversy. Heinecke, in 1913, demonstrated the effect on the spleen itself. One hour after radiation the destroyed leucocyte nuclei were practically all massed in the centre of the follicles and only a few in the periphery of the follicles. The destruction was at its maximum four to six hours later. Phagocytes now appeared which engulfed the nuclei and they in turn disappeared in eight to ten hours. After 12 to 24 hours no nuclei or phagocytes were visible. The follicles became cell-poor and free of lymphocytes. With stronger doses the follicles themselves are destroyed, and only the fixed cells left. The diminished spleen becomes of a dark-brown colour. There is an extraordinary increase of pigment, which normally is scanty. The round cells are destroyed and replaced by vacuolated epithelioid cells.

Direct cell injury is the outstanding feature. The nucleus and the protoplasm are especially sensitive. Wassermann demonstrated that it is the reproductive element of the nucleus which is especially vulnerable, as opposed to the nutritive element. The former he designated as the geniceptor and the latter the nutriceptor. Nurnberger demonstrated in his researches on the uterus of white mice that the nucleus shows a change in staining, it loses its acid character and stains with basic dyes, that it loses its normal chromatin hue and breaks up into larger and smaller chromatin globules. Halberstadter, in experiments on apes with trypanosomes, found that if sufficient dose was given to injure but not to destroy the trypanosomes, they no longer had the power of reproduction, and so gradually died off without doing any injury. By giving larger doses Wassermann proved that not only the geniceptors, but also the nutriceptors, were destroyed, and the whole organism died.

The sensibility of a cell depends upon the rapidity of its reproduction; the quicker this takes place the more vulnerable it is. The younger the cell the more vulnerable it is. The less specialised its function the more susceptible it is. The leucocyte is extremely susceptible, a 20 per cent. unit skin dose being quite sufficient to destroy its nucleus and the whole cell.

The primary reaction is possibly due to the irritative effects of the destroyed leucocytes causing the various storehouses throughout the body to throw their reserves of leucocytes into the blood-stream. The secondary reaction, however, may be due to the same irritative effects of the destroyed leucocytes on the cell-producing centres themselves, causing increased and rapid proliferation of more or less immature leucocytes, which, in turn, are especially vulnerable to the toxic agents circulating in the blood. The subsequent decline is probably an inhibitory action on the cell-producing centres by the toxins limiting their activity. The chief effect would be on the geniceptor element of the nuclei of the reproducing cells.

The leucocytes that survive the bombardment of the rays are the fittest and the strongest, as the weaker, the younger, and the more immature, are the first to be destroyed, and one feels inclined to believe that after the secondary reaction and subsequent decline, and the tissues have returned to a more or less normal condition, the leucocytes now formed have acquired a definite new characteristic; they are more resistant to the rays and might be designated as gamma leucocytes. It is probable that the extraordinary feeling of well-being that so frequently follows deep therapy radiations is due to the presence of these gamma leucocytes in the blood as well as the accompanying rise of the hæmoglobin and the red blood corpuscles which may likewise have acquired the gamma quality. Many remarkable results of the rays could be explained on some such supposition, and it is possible that one of the widest fields of usefulness of these rays will be in the application of stimulating doses to the red blood corpuscles, with slightly destructive doses to the leucocytes, repeated

at intervals of four to six weeks, and so to keep up what one might call a positive gamma stage over long periods. At the present time this is being more or less empirically done by many workers on the Continent in tuberculous and other chronic lesions.

For accurate results all blood counts must be most carefully carried out. As far as possible the same observer, using the same pipettes, the same counting-chamber, the same technique, the same conditions of time of day and relationship to food. In active cases this is absolutely necessary, as the hourly variations of the leucocyte count may be in the hundreds of thousands.

The results obtained would indicate that the success of the earlier methods was due to the cumulative effects of the few hard rays which were emitted during each application. The danger of repeated applications of soft rays has been irritation, both to the skin and the deeper structures with inflammatory changes and adhesions. In addition a great drawback has been that it made the patient a semi-invalid. He became an out-patient attending two or three times a week for treatment over prolonged periods of many months or years. By the use of deep therapy the danger of dermatitis is reduced to practically nil, as one never gives more than a 60 per cent. radiation. The rays are so penetrating that one can use any part of the body to obtain the effect desired. After the patient's primary stay in hospital he can usually return to his work, and he need not again leave it for weeks or months, and even when it is necessary for his readmittance, his stay need not be more than five to seven days.

Indications for Further Treatment.

These are: (1) Any marked increase in the pathological leucocytes, especially when accompanied by a drop in the hæmoglobin and the red blood corpuscles. (2) The presence of enlarged glands in other parts of the body which show no signs of diminishing. These should be radiated separately. (3) Failure of the spleen to diminish considerably in size, or its subsequent enlargement after having diminished. (4) The general health of the patient deteriorating.

It is to be noted that the actual number of leucocytes present in the blood is not given as one of the indications. It would be quite easy to set an arbitrary figure of, say, 20,000, above which would be an indication for further radiation. If accompanied by any of the indications as given above, it would be quite correct to subject the patient to further radiation, but otherwise one feels it would only be doing harm.

The contra-indications for further therapy are: (1) Leucopenia. This would indicate that an excessive dose had been given. (2) Persistent diarrhoea, due also to an excessive dose. (3) An actual increase of the pathological types of leucocytes after the radiation, unless only a small trial exposure had been given, in which case it would still be safe to give a full 60 per cent. skin dose. (4) Deterioration in the patient's general health with failure of the hæmoglobin and red blood corpuscles to rise.

Dangerous Fields of Exposure.

The liver should, generally speaking, not be exposed to the rays as there is much more liability to Röntgen toxæmia, a systemic condition with headache, fever, nausea, vomiting, diarrhoea, &c. If, however, it is excessive in size and does not reduce with the spleen, small doses (30 per cent.) to limited areas may be tried. The rays, especially the central rays, should not be directed towards the suprarenals, as they, like the testes and ovaries, are extremely susceptible to the rays.

Prognosis.

With the return to a practically normal condition the stage of compensation may be said to be reached. This stage may last for months, but the patient should be instructed to report once a month to his doctor or to the hospital, as far as possible at the

same hour of the day. A blood count should be taken and his general condition thoroughly gone into. If the indications point to a recrudescence of the disease, then arrangements should be made for an immediate radiation. The opportunity could be taken of radiating enlarged glands if present, or the long bones, so as to save the splenic area for any serious relapse where an immediate and marked effect is desired.

The duration of the stage of compensation is of necessity impossible to state. We know that it can last for three months or longer. This will mean that in the ordinary type of cases without a severe grade of failure, with marked enlargement of the liver, jaundice, oedema of the lungs, ascites, &c., it can reasonably be hoped that the maximum hospital treatment will not be more than one month in a year. The remaining 11 months the patient should be able to follow his usual occupation. The long interval between the radiations should help to lessen the risk of a marked diminution in effect of the subsequent radiations and so permit a greater expectancy of life with fairly good health.

In any particular case there are two indications of great importance in the prognosis. One is the rapid return to the normal relation and percentages of the various types of leucocytes, with a concurrent disappearance of the pathological types from the blood. The other is when, after subsequent radiations, we no longer get any disproportionate fall of the leucocytes, but all are equally affected. This, of course, means that there is no longer an over-production of any one type, and with the over-production the presence of many weak and immature and defective cells in the blood. The failure to obtain these two conditions with one or more radiations is indicative that the prognosis is bad.

The question as to whether a combination of splenectomy and deep therapy would be the best method of procedure is difficult to answer. In the one case of splenectomy under observation the effect was only a temporary one. The unfavourable sign was the marked and persistent diminution of the hæmoglobin and the red blood corpuscles. Notwithstanding the absence of the spleen this case responded to deep therapy extremely well, and the disappearance of the myelocytes from the blood with the return to a practically normal blood count was accompanied by a marked rise of the hæmoglobin and the red blood corpuscles, so that the patient is now at her work apparently in the best of health.

A series of observations were made as to the effect of the radiation on the blood pressure, pulse, and respiratory-rate. In four of the cases there was no appreciable change, either at half-way through or the end of one hour after the radiation. In two of the cases the blood pressure fell about 10 per cent. by the end of the radiation; this was accompanied by a slight slowing of the pulse-rate, but no change in the respiratory. In Case 6, which was of a very irregular type in every way, the readings were as shown in Table IX.

TABLE IX.—Blood Pressure Readings.

	Pulse.	Resp.	Systolic B.P.	Diastolic B.P.
First radiation—				
Before	78	22	110	74
After	76	22	108	72
Second radiation (interval 4 days) —				
Before	78	22	98	62
Half-way	84	23	93	62
End	84	22	105	72
1 hour later ..	84	22	103	70
2 hours later ..	82	20	95	64

The average age was 51 years. The average blood pressure was systolic 106, diastolic 76. The youngest patient of the series, aged 34, upon whom splenectomy had been performed, had the highest blood pressure—113–82 mm. Hg.

MELIOIDOSIS,

A DISEASE OF RODENTS COMMUNICABLE TO MAN.

BY A. T. STANTON, M.D. TORONTO,
M.R.C.P. LOND.,

AND

WILLIAM FLETCHER, M.D. CAMB.

(From the Institute for Medical Research, Kuala Lumpur, Federated Malay States.)

Two new items, tularæmia and melioidosis, have recently been added to our long account against the rodents. The damage done by these two diseases is infinitesimal when compared with the ravages of plague and, so far as our present knowledge takes us, they are of very limited distribution. This is particularly true of melioidosis which, apart from one case in Singapore, has been recognised nowhere except in the towns of Rangoon and Kuala Lumpur. It is difficult to believe that it is confined within such narrow bounds, and we are writing this short account in the hope that it will enable workers in other fields to recognise the disease when they meet it.

Melioidosis is very like glanders and, as in glanders, its symptoms vary according to the part or the organ of the body which is attacked; there are, indeed, absolutely no symptoms on which a trustworthy diagnosis can be based, and the true nature of the disease can be determined only by the cultivation of the causative organism from the lesions, or from the blood, sputum, or urine.

It was first recognised as a new disease by Whitmore and Krishnaswamy (1912). A year later, Whitmore (1913) published an excellent account of the malady under the title of "A Glanders-like Disease Occurring in Rangoon." Knapp (1915) and Krishnaswamy (1917) have made further contributions to our knowledge of this subject. We described new forms of the disease, and proposed for it the name "Melioidosis," as the physicians of ancient Greece had described by the name "Melis" a variety of conditions resembling glanders. We called the causative organism *Bacterium whitmori*, in order that Colonel Whitmore's name might continue to be associated with the bacillus which he was the first to isolate and describe; the name *pseudomallei*, which was the one he himself gave to the organism, being invalid (Stanton and Fletcher, 1921).

Our first encounter with the disease was in the form of a severe distemper among laboratory animals at Kuala Lumpur which broke out towards the end of 1913. The initial symptom was a milky discharge from the eyes and nose which was speedily followed by pulmonary involvement and death. Every case ended fatally. We isolated the causative organism but, though we noticed some points of resemblance to glanders, we did not suspect its connexion with Whitmore's bacillus or with a disease of man. In the year 1917, one of us (A. T. S.) saw several cases of the infection both in man and in animals, and found that they were due to one and the same bacillus. It is an organism with very marked specific characters, and was identified not only with the bacillus which had been the cause of the epizootic three years before, but also with that isolated by Whitmore from the human cases in Rangoon.

Epidemiology and Epizootology.

The causative organism has been found in the blood, the urine, the sputum, and, in one case, in the intestinal contents of man and animals. The outbreak among our laboratory rodents was due to the consumption of infected foodstuffs, which had probably been contaminated by the excreta of wild rats suffering from melioidosis. We have examined several wild rats (*Mus griseiventer* Bonhote) which had died from the disease contracted under natural conditions; and a domestic cat, which was supposed to have died from distemper, was found to have

succumbed to melioidosis. The disease may be conveyed to a rabbit or guinea-pig by pricking it with a needle dipped in a virulent culture, and it is possible that, occasionally, parasites may act as vectors of the infection; but we have not been able to prove that this is so. The disease which follows subcutaneous inoculation of the virus runs a course quite different from that which we saw in the laboratory outbreak, all the characteristic symptoms of which we readily reproduced experimentally by mixing cultures of *B. whitmori* with the animals' food, or by introducing the micro-organism into their noses with a platinum loop.

The problem of the way in which man contracts melioidosis remains unsolved. A large proportion of the cases observed by Whitmore, Knapp, and Krishnaswamy were morphine-injectors; at one time they considered that infection was carried by the syringe and they called the disease "morphine-injectors' septicaemia"; but none of the cases which have occurred in Kuala Lumpur have been injectors of drugs. We have not met with a case in which there was any history or evidence of a primary local lesion, such as occurs in animals inoculated with the virus. As it has been proved experimentally that animals can be infected by feeding, and as the onset of the disease in several human cases has been marked by very severe gastro-intestinal symptoms, we consider it in the highest degree probable that in man infection takes place through the medium of food which has been contaminated by rats.

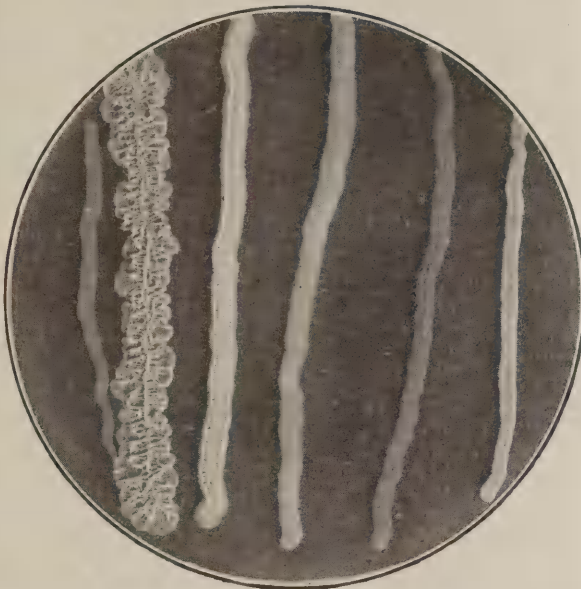
The bacillus has been found in the blood, the sputum, the urine, and the discharge from the superficial lesions of human cases, and the lungs are almost invariably affected; one would therefore expect the virus to pass readily from the sick to the healthy, but this has not happened. We have not met with a single example in man where it has been possible to trace the infection to a previous case of the disease. Patients suffering from melioidosis have not been segregated; they have been treated in the general wards of hospitals, yet they have not communicated the disease to others. Only a small number of cases has been recognised up to the present time; 38 by Whitmore in Rangoon during 1911-12, 1 in Singapore in 1922, and 11 in Kuala Lumpur between 1917 and 1924 (4 in 1917, 1 in 1920, 3 in 1921, 2 in 1923, 1 in 1924). Of these 50 patients, 25 were Indians, 23 were Burmans, 1 was a Chinese, and 1 a European; with one exception all were males. Some additional cases have been seen by Knapp (1915) and by Krishnaswamy (1917) in Rangoon, since the publication of Whitmore's account of the disease in 1913. It is highly improbable that melioidosis is limited to the three towns where its presence has been detected; but its diagnosis is almost impossible in places where there is no laboratory, and even where laboratory facilities are available the disease may escape recognition by those who are unfamiliar with it.

Though the recognised morbidity-rate from melioidosis is very low, the case-mortality is very high. So far, only two men are known to have recovered from the disease. In one of these the recovery was only partial, for there remained suppurating sinuses leading to necrotic foci in the tibiae and tarsal bones when the patient was last heard of, two years after the commencement of his illness.

Ætiology.

Bacterium whitmori, the causative organism of melioidosis, possesses marked characteristics which distinguish it clearly from other pathogenic bacteria. Whitmore has described it in detail and in this short account we shall follow him closely. The bacilli, as seen in films made from the lesions of an infected organ, are about the size and shape of *B. mallei*. They stain readily with all the usual stains, but they are neither acid-fast nor Gram-positive. With Leishman's stain they show a well-marked bipolar staining, a character which is exceedingly useful in arousing early suspicion of the nature of the infection,

when a preliminary examination of films from diseased organs is being made. Growth upon all the usual culture media is rapid and luxuriant; it occurs under both aerobic and anaerobic conditions, though much more luxuriantly under the former. On the surface of liquid media a pellicle is formed which becomes a tough wrinkled skin in the course of four or five days. The two outstanding features of *B. whitmori* are, first, its motility in young cultures and, second, its curious growth on glycerine agar. Cultures on agar containing 5 per cent. of glycerine begin to acquire a wrinkled appearance in a couple of days; the growth rapidly extends until after a week's incubation it has become heaped up and rugose like a thick growth of tubercle bacilli (see figure). The organism liquefies gelatin and



Corrugated and mucoid cultures of *B. whitmori* on glycerine-agar with *B. mallei* for comparison. Seventy-two hours growth at 37° C. From left to right: *B. mallei*, strain A; *B. whitmori*, corrugated; *B. whitmori*, corrugated; *B. whitmori*, mucoid; *B. mallei*, strain, Muktesar; *B. mallei*, strain, Java.

curdles milk. It grows readily on potato, but without displaying any phenomena of diagnostic importance. *B. whitmori* produces no gas in carbohydrate media. Glucose broth, inoculated with the bacillus, becomes pink in a couple of days, if Andrade's indicator is used. The colour begins to fade at the surface of the medium almost before the deeper parts have begun to redden, and by the end of ten days it has gone. Some strains in addition to fermenting glucose form acid in saccharose, dulcitol, and mannitol, when they are first isolated, but they soon lose this property.

In addition to the usual form of the bacillus, which produces a corrugated growth on glycerine agar, we have isolated on several occasions a slimy mucoid variety, like the mucoid variety of *B. paratyphosus* (Fletcher, 1921). The mucoid has never been found except in association with the ordinary corrugated form; in one human case colonies of both types were isolated from an abscess in the patient's leg. On another occasion corrugated colonies were cultivated from the spleen of a rabbit, but mucoids were grown from its testes. We have shown, by agglutination and absorption tests, that the corrugated and the mucoid *B. whitmori* are serologically identical with one another. Moreover, if a mucoid colony be inoculated into broth, incubated for a few days, and then plated out, a number of corrugated colonies will be found mixed with the mucoids from which they have taken origin. We have not seen the reverse process occur in vitro—i.e., mucoids originating from corrugated colonies—although we have

adopted the method employed with success by Ainley Walker (1923) in the case of *B. paratyphosus*.

An investigation of 14 strains of *B. whitmori*, from human and from animal sources, by means of agglutination, absorption, and fixation tests, showed not only that we were dealing with a homogeneous group, but also that this group was closely related to some strains of *B. mallei* which we had obtained from India and Java. Its kinship with three strains of *B. mallei* from the national collection of type cultures proved to be very distant. These latter cultures were isolated probably from horses of the Arab strain, and we venture the hypothesis that the glanders bacillus which infects Arab horses differs serologically from that which attacks the country-bred ponies of the Far East. Horses are apparently immune to infection with melioidosis; we have attempted to infect both Arabs and country-breds by subcutaneous, intravenous, and intranasal inoculation, but without success.

Inoculated into the peritoneal cavity of a male guinea-pig *B. whitmori* gives Strauss's reaction, the classical test for *B. mallei*, provided that the culture is not so virulent, nor the dose so large, as to cause the death of the animal before the characteristic inflammatory enlargement of the testes occurs.

Animal Inoculations.

Rodents are readily infected by feeding, by inhalation, by subcutaneous inoculation, and by scarification of the skin. The subcutaneous inoculation of a freshly isolated and virulent culture of *B. whitmori* will cause the death of a guinea-pig, rabbit, or rat from septicaemia in less than 24 hours. If the quantity of the virus is smaller, or its virulence is less, or if it be inoculated by scarification, the result is a localised caseating induration which breaks down to form a sloughing ulcer. The lymphatic glands in the groins and scapular regions become enlarged and suppurate, and the animal dies, usually within about three weeks. If a guinea-pig be infected by feeding it on a culture or by painting *B. whitmori* on the nasal mucosa, it dies within two weeks or less with caseous ulcerating lesions of the mucous lining of the nose, enlarged tracheal glands, caseous deposits in the lungs, and sometimes in the spleen and other organs. We have fed three monkeys (*Macacus cynomolgus*) on culture of *B. whitmori*, with the result that one died with caseous patches in the lungs, but the other two escaped infection. Goats are susceptible; domestic fowls are not.

Morbid Anatomy.

The characteristic lesion of melioidosis is a small, yellow, caseous nodule which commences as a collection of polynuclear cells surrounded by a zone of congestion. By the time these nodules have become large enough to be visible to the naked eye, they consist of a mass of necrotic, caseous material containing a great number of chromatin fragments which are the remains of dead nuclei. The nodules have been found in almost every part of the body except the brain, and they coalesce to form large areas of caseation, particularly in the lungs. They sometimes break down to form abscesses in the viscera of man, but not in animals. Small abscesses are the commonest lesion in the spleen; in the liver larger abscesses are more frequent. The gall-bladder is sometimes thickened, and *B. whitmori* can be cultivated from the bile. On several occasions small superficial ulcers have been found in the caecum, but *B. whitmori* has not been grown from them.

The lungs are nearly always affected. When the disease is not far advanced, the nodules can be felt, like shot, within the substance of the lungs; they resemble miliary tubercles, except that they are less numerous and more scattered. When the process has gone further the lungs may be filled with large caseous masses; nodules in the lungs very rarely break down to form abscesses. The spleen is enlarged and frequently contains nodules and small abscesses filled with creamy pus. Nodules in the liver are

particularly prone to suppurate, producing multiple small, round, sharply demarcated abscesses filled with thick greenish-white pus. Abscesses may also be found in the subcutaneous tissue, in the muscles, and in connexion with the bones. It is not uncommon to find nodules on the peritoneum of animals, especially on the under-surface of the diaphragm and in the great omentum, but we have not seen these lesions in human cases.

Melioidosis in rats is characterised by massive caseation of the lungs; the contents of the thorax are converted into a caseous mass with the heart embedded in the middle of it. Smaller lesions may be found in the liver, kidneys, and testes. Sometimes there are large nodules in the substance of the spleen and on its surface; it then bears a striking resemblance to the spleen of a rat with resolving plague. A condition exactly similar to that seen in naturally infected rats may be produced by feeding them on cultures of *B. whitmori*, or by inoculating a small quantity of a laboratory culture at the root of the tail. If a very virulent culture is used, the animal may die from septicaemia in about 24 hours. Sometimes the resemblance to plague is very striking; a rat which had been fed on a culture, recently isolated from a human case of melioidosis, died five days later, and, post mortem, there was the intense subcutaneous injection and redness, associated with haemorrhagic enlargement of the cervical and axillary glands, which is seen in rats dead from plague. The condition of the lungs, however, was characteristic of melioidosis; they were largely converted into yellow caseous material which was so friable that they crumbled like a milk cheese when one attempted to grasp them with a pair of forceps. Great numbers of *B. whitmori* were found in films prepared from the lungs. The bacilli were almost entirely within large cells. No organisms were found in films made from the blood or the spleen, although *B. whitmori* was cultivated from them.

Symptomatology.

Melioidosis presents no cardinal symptoms upon which to base a diagnosis, consequently it is difficult to give a succinct account by which it may be recognised. The symptoms depend partly upon the virulence of the infecting strain and its initial dose, and partly upon the resistance of the patient and upon the region of his body in which the lesions are situated. There is no clinical resemblance between tuberculous meningitis and tuberculous disease of the hip-joint, yet both are due to infection with the same organism. Similarly, there are wide differences between one case of melioidosis and another; we have seen, on the one hand, acute septicaemic cases which resembled cholera, plague, or typhoid fever, and, on the other, localised infections with *B. whitmori* which were diagnosed as amoebic abscess of the liver, lobar pneumonia, or mastoiditis, according to the organ or part of the body in which the main lesions were situated and which bore the brunt of the disease.

When the infection is very virulent, the illness begins suddenly with vomiting, collapse, and diarrhoea so severe that a tentative diagnosis of cholera has been made on more than one occasion. The four cases which occurred in Kuala Lumpur during 1917 all began in this way and all were fatal. In these very acute cases a reaction usually occurs, on the third day the temperature rises and assumes a swinging septic character; in one instance a patient actually died during the stage of collapse, 72 hours after the beginning of his illness. When the initial infection is less virulent, there is no preliminary collapse but fever is high from the commencement, and the patient passes quickly into a typhoid condition. If he survive the initial septicaemia, the organisms establish themselves in various parts of the body, where they multiply and form caseous or pyaemic foci. There are nearly always some signs of pulmonary involvement, and the lungs are found to be diseased in 90 per cent. of the cases examined after death. In one patient there were nodules in the substance of the

kidneys and ulceration of the mucous membrane of the bladder. In this case the outstanding symptoms were those of severe acute cystitis. Three of the patients seen in Kuala Lumpur suffered from skin lesions; in one a generalised pustular rash broke out the ninth day; in another, a pustule, from which *B. whitmori* was cultivated, appeared on the chest a week after the beginning of illness; in the third case there were numerous purulent subcutaneous abscesses and hæmorrhagic bullæ. Late in the course of the disease, should the patient reach this stage, abscesses may develop in connexion with the bones. These abscesses show little tendency to heal when opened and they form sinuses leading down to soft necrosed bone.

To sum up, some of the most acute cases resemble cholera or plague; others, which have a high temperature from the beginning, resemble malaria, enteric fever, or general tuberculosis; yet others find their way to the dysentery wards. If pustules and abscesses appear, a diagnosis of acute glanders may be made; while the bone lesions which appear later on resemble tertiary syphilis or chronic tuberculosis. Delirium is a common symptom, and we have seen one unfortunate patient who was confined in a cell because he was supposed to be afflicted with acute mania.

Prognosis.

With two exceptions, every person known to be infected with melioidosis has died; of these two exceptions, one recovered after a long illness, the other was still an invalid with abscesses, sinuses, and chronic suppuration in the bones of his feet and legs more than two years after the commencement of the malady.

Diagnosis.

As we have stated already there are no definite clinical signs by which the disease can be recognised; a certain diagnosis can be made only by cultivation of the causative organism. A "positive" agglutination reaction is of value as presumptive evidence, particularly if the titre of the serum increases after an interval, but this reaction is obviously of little value in the diagnosis of the disease in its more common acute form.

The nature of the disease has been recognised during the life of the patient in only five of the 50 cases of which we have the details. In one of these five cases *B. whitmori* was cultivated from the blood, in another from the urine, in another from a pustular eruption, in another from an abscess in the parotid, and in the fifth the suspicions aroused by a "positive" agglutination test were confirmed by the cultivation of the bacillus from an abscess which appeared later.

B. whitmori has been cultivated from the blood and urine of human cases and also from pustules and abscesses when these have been present. In one case of infection in a rabbit it was cultivated from the intestinal contents. The inoculation of media with blood obtained by splenic puncture is useful in clearing up a doubtful diagnosis. When the lungs are involved, as they usually are, the examination of the sputum or of material obtained by puncture of the lung may make the diagnosis clear. In cases of obscure fever, associated with enlargement of the liver, this organ should be explored with a needle and glycerine-agar slopes and animals should be inoculated with material thus obtained. Whenever an abscess of the liver is aspirated or drained, glycerine-agar and guinea-pigs should be inoculated with the pus. Some cases of abscess of the liver due to *B. whitmori* have been mistaken for amœbic lesions.

Melioidosis is a rare disease in Kuala Lumpur; we have been keenly on the watch for it, not only in the post-mortem room but also among the rats examined in connexion with routine plague work. In Rangoon, where it has been known to exist for 14 years, it has not become common. But all the great epidemic diseases must have had small beginnings, and it is well that we should be on our guard against such a painful and fatal malady as melioidosis.

(Continued at foot of next column.)

TUBERCULIN TREATMENT IN EXPERIMENTAL TUBERCULOSIS.

By L. S. P. DAVIDSON, M.B., Ch.B.,
M.R.C.P. EDIN.

(From the Department of Bacteriology, University of Edinburgh.)

IN view of the claims made by certain clinicians in favour of tuberculin therapy, the absence of experimental proof in support of this form of treatment is specially significant. The apparent discrepancy between the clinical and laboratory findings may be explained by a study of experimental tuberculosis in laboratory animals.

The failure of tuberculin as a specific and certain cure is now universally admitted. In fact, it is open to question whether tuberculin therapy possesses any real value, and whether the favourable results claimed from its use are not derived from general sanatorium régime. The majority of tuberculosis specialists, however, state that tuberculin treatment is of undoubted value, but even its most ardent supporters advance its claims with certain important reservations. Clinical experience is essential if satisfactory results are to be obtained. The physician must take into consideration (1) the site and extent of the lesion; (2) the type of the disease, whether acute or chronic, stationary or spreading, febrile or afebrile; (3) the general health of the patient. Having assessed all the available evidence, he may then be able to judge the correct dosage. After each dose the local, focal, and general reactions must be considered before estimating the next. No two cases can be treated alike, and success is essentially a function of experience; for no benefit will accrue if the case is unscientifically handled, but actual harm, or even death, may result from an excessive focal reaction with aggravation of the lesion and consequent serious systemic effects.

Difficulties Attending Experimental Investigations of Tuberculin Therapy.

The difficulties of the laboratory worker who attempts the tuberculin treatment of experimentally infected animals (e.g., guinea-pigs) can thus be understood. The appropriate initial dose, the subsequent ones, and the intervals between them can only be estimated empirically. Little or no information is known regarding the reactions of the animals to the antigen. Moreover, for any immediate conclusions to be drawn from the experimental results, a considerable number of animals must be used in order to eliminate the fallacies due to wide individual variations. Thus, in any scheme of experiments in which batches of animals are treated with the same doses at fixed intervals, the consideration of each individual case on its own merits is lacking.

In addition there are further difficulties. While it is well recognised that the guinea-pig is extremely susceptible to tuberculosis, only those who have actually carried out experimental work on the subject can realise to what extent individual guinea-pigs may vary. Thus in the publication of the Royal Commission on Tuberculosis it is stated that in one batch of animals injected with the same dose at the same time, the survival periods varied from 39-244 days. In the experiments about to be described it varied from 21-180 days. In other words, a definite minimum

(Continued from previous column.)

MELIOIDOSIS: REFERENCES.

- Fletcher, W.: Jour. R.A.M.C., 1920, xxxiv., 219.
Krishnaswamy, C. S.: Ind. Med. Gazette, 1917, lii., 296.
Knapp, H. H. G.: Ind. Med. Gazette, 1915, l., 287.
Stanton, A. T., and Fletcher, W.: Trans. of Fourth Congress Far Eastern Assoc. of Trop. Med., 1921, ii., 196.
Walker, E. W. A.: Jour. of Hygiene, 1923, xxi., 87.
Whitmore, A., and Krishnaswamy, C. S.: Ind. Med. Gazette, 1912, xlvii., 262.
Whitmore, A.: Jour. of Hygiene, 1913, xiii., 2.

lethal dose acting within a reasonable time cannot be established. Another fallacious statement which is constantly being made is that if a guinea-pig has tuberculosis it progressively loses weight. This only occurs either when the animal is extremely susceptible or when the dose is excessive. In the event of the animal having a moderate resistance, or when the dose of tubercle bacilli is small, it may steadily gain in weight. Eventually, however, when the tubercle bacilli have overcome the resistance of the animal and the infection has become widespread, there is progressive loss in weight, followed by death. Erroneous conclusions, therefore, may be drawn if these facts are not realised.

A further important consideration in evaluating experimental results is the following. It must not be taken for granted that, because a discharging ulcer dries up, or a lymphatic gland, previously soft, becomes hard and shotty to the touch, or fibrosis is seen on microscopic examination in an organ removed at a post-mortem, that these observations indicate general healing, much less cure. Prof. E. H. Kettle¹ clearly showed in his paper on the criteria of cure in experimentally infected animals that in untreated guinea-pigs one gland might be fibrosed while the next was caseous; that even in one organ, such as the spleen, one part might exhibit signs of healing, while in another area there was active spread; that on careful microscopic examination patches of active disease might be found in areas of fibrosis. In short, it is typical of tuberculosis that the disease heals in one area while it spreads in another.

In consequence of these pathological findings in untreated guinea-pigs, fibrosis indicates only that a certain amount of cure has taken place in the area examined. It does not contra-indicate the evidence of active tuberculosis elsewhere. In my experience of the disease in guinea-pigs such active lesions will invariably be found. The only proof of cure is the survival of treated animals with death of the controls. These considerations indicate the difficulties and fallacies in any attempt to estimate the value of tuberculin treatment in experimentally infected animals.

The observations to be described form part of a more extensive investigation into the effect of physical and chemical processes on the antigenic values of bacterial vaccines.

Objects of the Investigation.

Guinea-pigs were injected with living tubercle bacilli, and then treated by various vaccines of the tubercle bacillus in order to ascertain (1) whether benefit or cure resulted, and, if so, which type of vaccine was the most efficient; or (2) if actual harm resulted.

Vaccine Used.

It was originally intended that three types of vaccine should be tested: (1) the ordinary heat-killed saline bacillary emulsion; (2) a detoxicated vaccine; (3) a defatted or diaplyte vaccine (Dreyer). As no undiluted diaplyte antigen could be obtained from the Oxford laboratory, the work on this vaccine was held over. Since then, however, Kettle has investigated this question, using undiluted diaplyte antigen, and has kindly allowed me to quote his results.

Ordinary Vaccine (Bacillary Emulsion).—This was prepared by growing a recently isolated strain of the human type on Dorset's egg medium. The surface growth was removed, weighed, and evenly emulsified in saline so that each cubic centimetre contained 1 mg. of heat-killed tubercle bacilli. By means of dilutions the requisite doses were made. This vaccine will be referred to as the "bacillary emulsion."

Detoxicated Vaccine.—A subculture of the same strain used for the "bacillary emulsion" was detoxicated by Dr. David Thomson, the originator of the detoxicating process. He prepared a vaccine containing the alkali soluble products

of the organism, each cubic centimetre representing 100,000 million bacilli. I am indebted to Dr. Thomson for making this and other detoxicated vaccines, and for his continued interest in these investigations.

Experimental Animals.—Forty-five guinea-pigs obtained from the same source were weighed and divided into three groups (A, B, and C) of 15 in each. On Dec. 15th the animals in group A received 1/100 mg. of living tubercle bacilli subcutaneously in the groin. Likewise group B received 1/500 mg., and group C 1/1000 mg. Owing to the severe cold about Christmas time, several animals in each group died. This was in no way connected with the injections, as numerous stock animals also died at the same time. Only those animals surviving for a minimum of three weeks are included in these results. On Jan. 18th two guinea-pigs died, showing definite evidence of tuberculosis. Treatment was then started—i.e., one month after the injection of living bacilli. Eight guinea-pigs were left untreated as controls. Nine were treated with detoxicated vaccine, and eight with the bacillary emulsion. The animals were weighed and injected with progressively increasing doses at weekly intervals.

Results.

In every case tuberculous disease was present either when an animal died after progressively losing weight or was killed after continually gaining weight. The guinea-pigs which died in a comparatively short time showed very advanced disease in every organ, while the animals killed at the end of the investigation only showed early lesions. The investigation was concluded on March 25th—i.e., about 100 days after the injection of living tubercle bacilli. With the exception of three animals which were kept to ascertain the length of their survival, all remaining guinea-pigs were killed and their organs subjected to microscopic examination. These animals, despite the fact that palpable inguinal glands were present, appeared to be in good health and had increased in weight.

Examination of the Weight Charts.—Examination of the weight curves of the 17 treated guinea-pigs shows that no benefits have accrued and no immunity has been produced. In fact, the reverse is the case, as the eight control animals show the largest proportional gain in weight. Table I. clearly indicates the results.

TABLE I.

	Average weight in grammes.		Average gain or loss.	Percentage gain or loss.
	Before treatment.	After treatment.		
Controls—				
8 guinea-pigs ..	357	487	+130	+36
Detox. vaccine—				
9 guinea-pigs ..	438	461	+ 23	+ 5
Bacillary emulsion				
8 guinea-pigs ..	423	465	+ 42	+10

On examination of the table of weights of control animals compared to animals treated with diaplyte antigen, published by Kettle, corresponding results are seen. (Table II.)

TABLE II.—Prof. E. H. Kettle: Table of Weights.

	Average weight in grammes.		Average gain or loss.	Percentage gain or loss.
	Before treatment.	After treatment.		
Diaplyte—				
10 guinea-pigs ..	445	394	-51	-11
Controls—				
10 guinea-pigs ..	394	424	+30	+ 8

Thus, in Kettle's series the controls are 19 per cent. better than the animals treated with diaplyte antigen. In my series the controls are 31 per cent. better than the animals treated with detoxicated vaccine and 26 per cent. better than the animals immunised with the bacillary emulsion.

¹ The Criteria of Cure in Tuberculosis of the Guinea-pig, THE LANCET, 1924, i., 68.

Microscopic Examination.—No microscopic examination was necessary in any of the animals that actually died from the disease, as the disease, seen by the naked eye, was in a very advanced state. Careful microscopic examination was made of the organs of all the animals that were killed on March 25th. It will be remembered that, although all these animals had palpable inguinal glands, their general health was apparently good. The lesions found in every animal, treated or control, were identical. The livers were the least affected, the lung next, while the lymphatic glands at and adjacent to the site of infection and the spleen were the most involved. Fibrosis was absent, and the pathological changes were of the proliferative cellular type. It may be safely said that the microscopic evidence points to the lesions being of recent origin, the infection having been localised to the seat of injection for a considerable period. Shortly before the animals were killed the infection had become systemic, and probably during the next four to eight weeks a steady loss of weight followed by death would have occurred.

A comparison of sections of organs of treated and untreated animals showed identical lesions.

Conclusions.

As judged by body-weight, the period of survival, and microscopic findings, tuberculin treatment of the experimentally infected guinea-pigs in this investigation was not only ineffective in controlling the infection, but was actually harmful.

ABNORMAL EXTERNAL JUGULAR VEIN.

By A. J. E. CAVE, M.B. MANCH.,

DEMONSTRATOR IN ANATOMY, UNIVERSITY OF LEEDS.

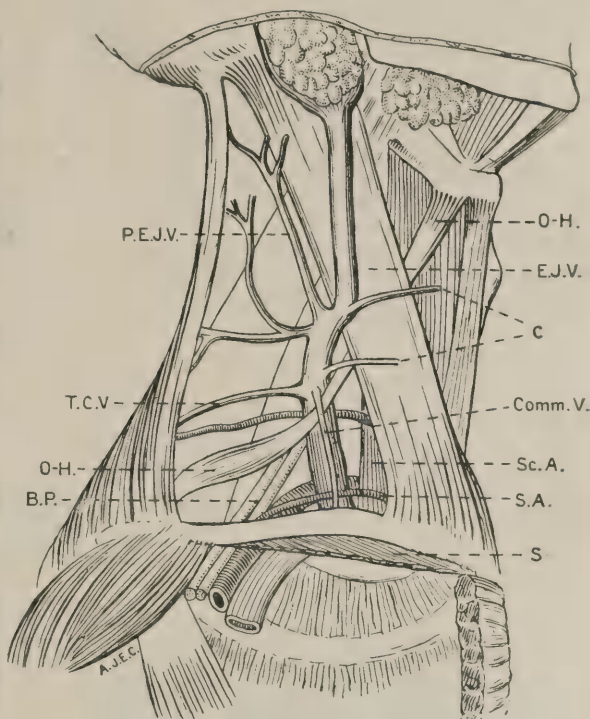
THE abnormality forming the subject of the present communication was observed recently in an adult male body during the course of its dissection in the anatomy department of Leeds University. It is deemed worthy of record partly because of its possible surgical significance, and partly because it does not appear to have been recorded previously.

Normal External Jugular Vein.

Normally the external jugular vein is formed by the confluence of the posterior auricular and posterior facial veins upon the superficial aspect of the sterno-mastoid muscle, at a point behind and below the angle of the mandible. The site of union is usually below the inferior limit of the parotid, but often the gland overlaps the origin of the great vessel, or the latter may commence actually in the parotid substance. From its origin the external jugular proceeds downwards and backwards upon the sterno-mastoid to the antero-inferior portion of the sub-clavian triangle, its surface marking being a line drawn from a point midway between the mastoid process and angle of mandible to about the middle of the clavicle. In its course it is covered by skin, superficial fascia, platysma, and, according to Poirier,⁸ the transverse branches of the cervical plexus (which, however, may pass deep to the vein); in the sub-clavian triangle it is deep to the suprascapular artery. Its posterior relations are the sterno-mastoid, the N. cutaneus colli, then (having left the sterno-mastoid about the junction of the middle and lower thirds of that muscle) the A. transversalis colli, the intermediate portion of omo-hyoid, the lower roots of brachial plexus, and the third part of the sub-clavian artery. To reach the sub-clavian vein the external jugular is obliged to perforate, first the superficial, and then the deep layer of the cervical fascia in the sub-clavian triangle, usually behind the clavicle; and as this deep fascia is intimately attached to the whole circumference of the vessel wall, the

lumen of the vein is maintained at a maximum. According to Struthers⁹ the valves of the external jugular are defective, and this fact, in conjunction with the inability of the vessel to collapse at its site of transit through the deep fascia, enhances the likelihood of air-embolism following wounds of the vein.

The more constant tributaries of the external jugular are (1) the posterior external jugular (entering at posterior border of sterno-mastoid); (2) the



Abnormal relations of external jugular vein. B.P.=Brachial plexus; O.H.=omo-hyoid; T.C.V.=transverse cervical vein; P.E.J.V.=posterior external jugular vein; Comm.V.=communication between E.J.V. and subclavian vein; S.=subclavian muscle; S.A.=suprascapular artery; Sc.A.=scalenus anticus; C.=communications from anterior jugular vein; E.J.V.=external jugular vein.

transverse cervical vein (above posterior belly of omo-hyoid); (3) communications from the common facial and anterior jugular veins (crossing the sterno-mastoid); (4) the anterior jugular itself (passing deep to sterno-mastoid); and (5) sometimes the suprascapular vein.

Recognised Abnormalities of External Jugular Vein.

It may be absent on one side, or on both, according to Cunningham,¹ Quain,² Piersol,⁴ and Morris.⁶ It may vary considerably in its mode of origin, being sometimes the continuation merely of the posterior facial vein, or the posterior auricular; in such cases it is small, the internal and anterior jugulars being enlarged. It may receive the lingual vein (Morris) and the cephalic vein (Quain, Morris), this being the persistence of an early developmental phase; and when the other jugulars are subnormal in size, the present vessel is proportionately enlarged. According to Morris⁶ it may pass over the clavicle to open into the cephalic, and both Quain² and Morris⁶ draw attention to its occasional jugulocephalic branch. Morris figures this branch on p. 648. The vessel may be double according to Gray³ and Piersol; Sobotta⁵ and Sappey⁷ make no comment upon such variation. One author⁴ states that the vein is sometimes pierced by the N. cutaneus colli.

Present Abnormality.

As shown in the drawing, this external jugular vein was normal at its origin and in its sterno-mastoid course. On leaving the superficial surface of that muscle it came to lie upon the roots of the brachial plexus, and the *A. transversalis colli*; but instead of crossing the omo-hyoid also it pierced the deep fascia just above the muscle, and passed *deep* to the intermediate portion thereof, sending off, however, a small vein which descended over the omo-hyoid to enter the subclavian. Thus the intermediate part of the omo-hyoid was enclosed in a venous loop, through which ran also the suprascapular artery, anterior (as normally) to the external jugular itself. As a result of this anomalous disposition the great vein was "tacked down" fairly deeply in the neck, and was also more tortuous in its lower part than the diagram suggests. The anomaly was bilateral; the anterior jugulars were very small; both internal jugulars were present and of normal size, but the external itself was fully thrice its average size.

I have no evidence as to whether, in life, the external jugulars were subjected to compression by the omo-hyoid; this would probably be obviated by the venous communications with the anterior jugulars and by the extra communicating vein present. Possibly, in development, the omo-hyoid split the lower part of the external jugular system; but that is a minor point.

Clinical Significance.

Note in connexion with this anomaly (a) its large size, (b) its passage deep to the omo-hyoid, and (c) its transit through the deep cervical fascia above the level of that muscle, the vein possessing, in consequence, an abnormally deep course in the subclavian triangle. Given a vessel so disposed, the surgeon working in the posterior triangle, upon the plane of the omo-hyoid, might, thinking himself in no danger of wounding the external jugular, proceed to a deeper plane. His next manoeuvre might then bring him unexpected and profuse hæmorrhage, and the grimmer catastrophe of air-embolism. Moreover, the superficial communicating vein lying over the omo-hyoid might easily be mistaken for a normally placed, though small, external jugular, and so still further mislead the operator. Apparently this variation is uncommon, but to guard against danger in case of its occurrence the surgeon might be advised to incise half an inch above the clavicle just anterior to the anterior border of the trapezius, then to dissect down and secure the posterior belly of the omo-hyoid, and by blunt dissection to follow this up to the intermediate portion, reflecting medially all tissues superficial to the muscle. In this manner the normally disposed external jugular would be retracted out of harm's way, and an abnormal, deeply-lying vessel would be exposed in time to avoid injury to it.

References.

1. Cunningham, D. J.: Text-book of Anatomy, 5th ed., 1922.
2. Quain, Sir R.: Elements of Anatomy, 1892, ii., pt. 2.
3. Gray, H.: Anatomy, Descriptive and Applied, 22nd ed., 1923.
4. Piersol, G. A.: Human Anatomy, 1907.
5. Sobotta, J.: Atlas of Human Anatomy, 1907.
6. Morris, Sir H.: Treatise on Human Anatomy, 1893.
7. Sappey: Traité d'Anatomie Descriptive, Paris, 1888.
8. Poirier, P.: Traité d'Anatomie Humaine, Paris, 1896.
9. Struthers, J.: Anat. and Phys. Observ., p. 246.

INTERNATIONAL CONGRESS FOR INDUSTRIAL ACCIDENTS AND PROFESSIONAL DISEASES.—At a meeting in Amsterdam on Dec. 21st last, the Permanent Committee of the International Congress for Industrial Accidents and Professional Diseases (*Ongeaccellengeneeskunde en Beroepsziekten*), which has not been in session since 1912, was reconstructed, Sir Thomas Oliver (England) and Dr. Kaufmann (Switzerland) being elected as hon. presidents. The fourth congress is to be held in Amsterdam on Sept. 7th, 1925. An English committee, under the presidency of Sir Thomas Oliver, is now being formed and the names of the members will be published later. Dr. H. S. N. Menko is hon. secretary of the English Committee, and his address is 2, Grosvenor-gardens, Cricklewood, London, N.W. 2.

TWO CASES OF ALARMING HÆMORRHAGE DUE TO STREPTOCOCCUS INFECTION.

By MACLEOD YEARSLEY, F.R.C.S. ENG.,

AURAL SURGEON TO THE LONDON COUNTY COUNCIL; CONSULTING
AURAL SURGEON TO THE ST. JAMES'S HOSPITAL, BALHAM.

THE following two cases, in which alarming hæmorrhage occurred as the result of the presence of a hæmolytic micro-organism, are both interesting and instructive:—

CASE 1.—Mr. A., aged 20, the subject of marked nasal obstruction (due to an accident some 18 months previously) and septic tonsils causing frequent sore throats, during which he was incapacitated for work, was operated upon in December, 1920. A submucous resection was performed, followed by dissection of the tonsils. Nasal plugs of compressed gauze were inserted in accordance with my usual method. A troublesome general oozing from the tonsils followed, which was treated at first in the usual manner. No special bleeding spot could be found, and it was noted that the hæmorrhage appeared to occur at about 20-minute intervals, each attack being heralded by the detachment of very friable clot, which broke up easily. Thirty grains of calcium lactate were given, with saline injections four-hourly. The bleeding became less, but at 10 P.M. recurred with renewed severity. The tonsils had been very septic, and I was loth to carry out a suggestion of suturing the faucial pillars. The patient was, therefore, seen in consultation by Dr. H. G. Butterfield, who remarked upon the strong streptococcus odour of the case. Twenty cubic centimetres of antistreptococcic serum were at once injected, and by 11.30 P.M. the bleeding had practically ceased. The next morning the patient was much better, but there was still a little oozing, and a second dose of 20 c.cm. of serum was given at 10 A.M. by Dr. Butterfield. At 12.30 P.M. there was only slightly blood-stained mucus, and by 5.30 P.M. all bleeding had ceased. The nasal plugs were removed at 10.30 A.M., without the occurrence of any hæmorrhage.

CASE 2.—Mr. B., aged 22, had suffered from colds, morning nausea and sickness, and repeated sore throats for some time. The tonsils were septic, and he showed the complexion and acneiform eruption of chronic toxæmia. The tonsils were dissected out in February, 1923, the left containing much foul-smelling, cheesy material. The patient did well until five days later, when there was a slight attack of hæmorrhage which yielded to treatment. This recurred next day at 5.30 P.M. more severely, and was treated by the injection of 1 c.cm. of hæmoplastin. The fauces were much swollen, with hæmorrhagic patches, and I noticed a strong streptococcic odour which had not been manifest before. The clot showed the same friable nature as in the previous case. Hæmorrhage recurred next day, and he was seen in consultation by Dr. Butterfield, who gave 25 c.cm. of antistreptococcic serum at 4 P.M. The effect was remarkable. By 6 P.M. the bleeding had entirely ceased, the swelling of the fauces had greatly diminished, and the unpleasant smell was much less noticeable. Further progress was uneventful. A swab, taken at the consultation, swarmed with streptococci.

Commentary.

Both these cases show much the same features. In both hæmorrhage was due to a hæmolytic organism, rendering the clot soft and liable to crumble at the slightest touch. In both the unpleasant, bad-meat odour, characteristic of streptococcus infection, was present. In the first case no swab was taken, so that the diagnosis was not confirmed bacteriologically, although there can be little doubt clinically as to the similarity of infection in the two patients. The effect of an antistreptococcic serum was quickly marked in both cases, especially in the second, and the rapidity with which the smell disappeared in this case was remarked by everybody, including the patient's relatives.

The futility of any other treatment in such cases is obvious. It was proposed to me in the first case to suture the faucial pillars. Had I done so, the removal of the stitches 24 hours later would have certainly been attended by renewed bleeding, and the effect of such an operation upon the septic tissues can easily be imagined.

A CASE OF EXTREME MALFORMATION OF THE UTERUS

ASSOCIATED WITH PERIODIC PAIN.

By FRANK COOK, B.Sc., M.B., B.S. LOND.,
F.R.C.S. ENG.,

OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR, GUY'S HOSPITAL.

THE following case of uterine malformation seems to be worthy of record:—

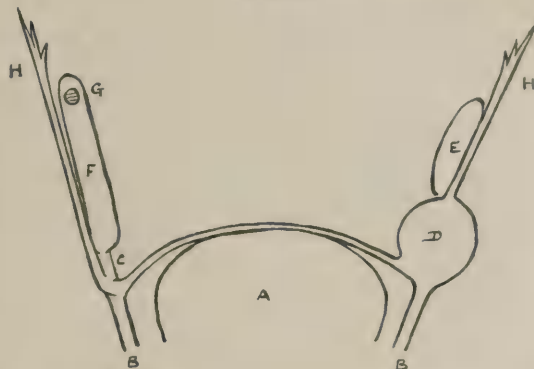
A girl of healthy appearance, aged 17, was referred to me by Dr. John Hollings on account of primary amenorrhœa and intense periodic pain in the left lower abdomen, accompanied by vomiting. This pain recurred at regular intervals of 28 days, and lasted for three or four days on each occasion; it had started at the age of 13, and tended to increase in severity. Although the development of the breasts, vulva, and secondary sexual characters in general appeared to be perfectly normal, the vaginal canal and uterus were found on recto-abdominal examination under anæsthesia to be extremely ill-developed or entirely absent. The right ovary was distinctly palpable, the left seemed to be considerably enlarged.

Various forms of medical treatment were applied without avail. The girl was seriously incapacitated during the monthly attacks, and her doctor found considerable doses of morphia necessary to alleviate the pain. On account of this latter fact, and in view of the definite localisation of pain and apparent ovarian enlargement, it was decided to operate. Laparotomy revealed the following state of affairs.

The left ovary was normal in size and general appearance. The right ovary was considerably elongated, and about twice the size of that on the left; at its upper pole was a recently ruptured Graafian follicle. (In this latter connexion it should be noted that operation was performed

This was judged to represent a rudimentary uterus or adenomyoma, and it was consequently excised as the probable source of pain (Fig. 1). On section the excised

FIG. 1.



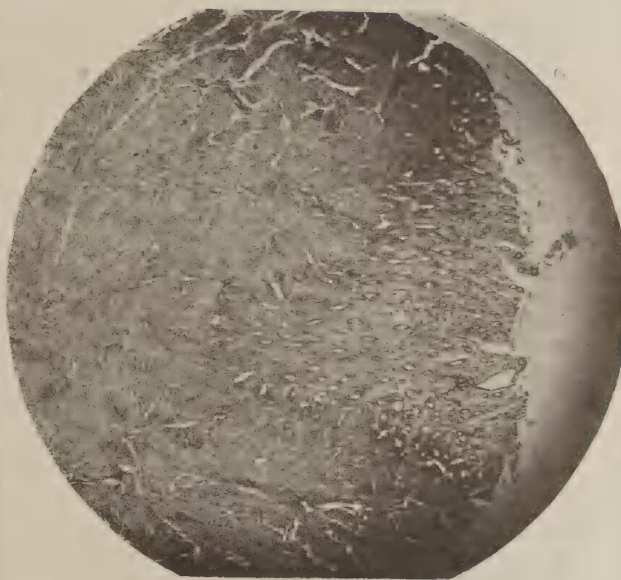
A, Bladder; BB, round ligaments; C, ovarian ligament; D, tumour representing rudimentary uterus; E, left ovary; F, right ovary; G, recently ruptured Graafian follicle; HH, Fallopian tubes.

tumour was found to consist of tough muscular tissue, of which the fibres appeared to be concentrically arranged. It was solid, apart from a minute circumscribed space at its centre. Examined microscopically by Dr. R. D. Passey, the bulk of the specimen proved to consist of plain muscle tissue, approximately disposed in three strata, of which the middle was the thickest and consisted of fibres arranged in various directions; the inner and outer layers contained fibres of mainly circular arrangement. The central cavity was lined by mucous membrane indistinguishable from

FIG. 2.



FIG. 3.



on August 6th, the last painful period having terminated on July 26th.) The abdominal ostia of both Fallopian tubes were normal in appearance, and patent. On the right side the tube was patent as far as a point near the internal abdominal ring, where it was closely attached to the round ligament; it thence turned as a narrow solid band to cross the posterior surface of the bladder and reach its fellow of the opposite side. Although the Mullerian ducts had thus met in the middle line, there was nothing whatever to indicate their further fusion or descent to the urogenital sinus. On the left side, and corresponding to the junction of the Mullerian duct and round ligament, there was situated a spherical tumour rather less than a golf ball in size.

uterine mucosa. In general, the examination indicated definitely that the tumour represented a rudimentary uterus developing abnormally in the course of the left Mullerian duct, and not an adenomyoma. Prof. A. Stokes kindly prepared the accompanying micro-photographs, which demonstrate in detail the structure in the neighbourhood of the central cavity. (Figs. 2 and 3.)

The patient has been entirely free from her periods of pain since the operation, although several months have elapsed. Unfortunately, in this particular case the causation of the pain has seemed so obvious as to throw but little light on the nature of dysmenorrhœa in general.

A NOTE ON THE ALLEGED DETERIORATION OF INSULIN IN THE TROPICS.

By A. NEAVE KINGSBURY, M.B., B.S., D.P.H.,
D.T.M. & H. LOND.,

PATHOLOGIST, INSTITUTE FOR MEDICAL RESEARCH, KUALA
LUMPUR, FEDERATED MALAY STATES.

DURING the past 12 months the deterioration of insulin in tropical climates has aroused considerable interest, if judged by the number of contributions on the subject which have appeared in the medical press. The majority of writers have expressed the opinion that there is a definite decrease in potency after insulin has been exposed to a tropical temperature for even a short time. Many of these workers, however, have based their conclusions on the blood-sugar findings from three or four rabbits only, and in their reports have laid insufficient stress on the probable error resulting from the small number of animals employed. The evidence now available that the reaction of rabbits to insulin in the tropics differs from that obtained in temperate climates also tends to discredit many results obtained in India and elsewhere.

But the careful work of Major Stott¹ on 12 diabetics in India is open to neither of these objections. He showed that a progressive fall in the potency of a large batch of insulin occurred month by month when

before the assay was commenced. During this period the average temperature in the building at 9 A.M. was 79.6° F., at noon 84°, and at 3 P.M. 83.5°, with corresponding maximum and minimum temperatures of 84.5° and 75°, 89° and 77°, and 89° and 76° respectively.

The strength of the insulin was 28 units per c.cm. when shipped from America, but to allow for decrease in activity doses of 0.075, 0.1, and 0.125 c.cm. per kilogramme were given to the three rabbits in series (1). As the third rabbit became convulsed, the dosage was decreased to 0.056, 0.075, and 0.094 c.cm. in series (2), (3), and (4). The insulin was diluted so that the doses could be accurately given, and injections were made subcutaneously into both flanks of each rabbit. The animals had been starved for 24 hours and blood-sugars were estimated before injection, and 1½, 3, and 5 hours afterwards.

Effect of Tropical Conditions on Carbohydrate Metabolism of Rabbits.

Applying the Toronto method of calculating unitage, the strength of the insulin, based on the results obtained from the first nine rabbits, shows a deterioration of about 40 per cent. after six months storage. Rabbits Nos. 10 to 12 (series 4) were the first local generation of Belgian hares imported from England some 11 months before, and they were given the same dosage per kilogramme as the rabbits in series (2) and (3) which had been purchased locally. None of these "local" rabbits became convulsed,

TABLE SHOWING RESULT OF RE-ASSAY ON A BATCH OF AMERICAN INSULIN IN THE TROPICS.

Series and date.	Rabbit No.	Weight (g.)	Dose of insulin.		Colour of rabbit.	Blood-sugar percentage.				Remarks.
			C.cm.	C.cm. per kg.		Normal.	Hours after insulin.			
							1½	3	5	
I. 30/9/24	1	1550	0.115	0.075	Brown and white	0.108	0.049	0.042	0.058	—
	2	1260	0.125	0.100	Black and white	0.112	0.059	0.054	0.065	—
	3	1350	0.170	0.125	Albino	0.100	0.037	—	—	Convulsions 2½ hours after insulin.
II. 1/10/24	4	1298	0.073	0.056	Albino	0.165	0.120	0.059	0.062	Animal struggled before commencement of experiment.
	5	935	0.070	0.075	Albino	0.120	0.065	0.052	0.050	—
	6	1317	0.124	0.094	Albino	0.104	0.068	0.050	0.057	—
III. 2/10/24	7	1122	0.063	0.056	Albino	0.096	0.053	0.047	0.071	—
	8	1300	0.097	0.075	Albino	0.098	0.046	0.050	0.062	Hurried breathing 2 hours after insulin.
	9	1057	0.099	0.094	Albino	0.145	0.055	0.052	0.065	—
IV. 6/10/24	10	2285	0.128	0.056	Belgian hare	0.103	0.055	—	—	Convulsions 2 hours after insulin.
	11	2190	0.164	0.075	Belgian hare	0.112	0.050	—	—	Convulsions 1 hr. 55 min. after insulin.
	12	2080	0.195	0.094	Belgian hare	0.108	0.046	—	—	Convulsions 1 hr. 40 min. after insulin.

kept at room temperature. On first arrival in India this insulin was found to have a glucose equivalent of 12 g. per original unit, and the activity gradually decreased to a glucose equivalent of less than 1 g. per original unit after six months storage. If his monthly glucose equivalent values of the insulin are plotted against time, the resulting curve approximates to a logarithmic one. Further reference will later be made to this point.

On the other hand, Bose² has reported favourably on the keeping properties of insulin in India, and in January last a letter was addressed to the medical press by manufacturers of insulin³ stating that a batch had been kept at 95° F. for one month without deterioration, and that a voyage to India and back had been without effect on the activity of another batch. It must be admitted that this letter was not received without scepticism by many medical men in the East.

The writer has recently carried out a re-assay on a batch of American insulin which was received during the first week of April, 1924, and stored at room temperature in the laboratories here for six months

yet all three in series (4) went into convulsions and, although given intravenous glucose and adrenalin, rabbit No. 12 died.

The number of rabbits available was insufficient for a very accurate assay, and the weights of rabbits Nos. 1 to 9 were considerably below standard, but it is noteworthy that the insulin assay on "local" rabbits showed a fall in potency of about 40 per cent., while the assay on the first local generation of Belgian hares indicated that the insulin was practically as potent as when it was shipped. It may be urged that Belgian hares are perhaps more susceptible to the action of insulin than other rabbits, but the experience of Bose and Acton⁴ in Calcutta serves to negative this objection. These workers found that three original units of insulin per kilogramme weight caused a fall in blood-sugar of 45 to 50 per cent. in albino rabbits, and of 50 to 57 per cent. in Belgian hares, and that piebald rabbits were the most sensitive to insulin.

Climatic or dietetic conditions would therefore seem to modify the carbohydrate metabolism of the rabbit after many generations in the tropics so as to render it unsuitable for the standardisation of insulin, and

the writer hopes to confirm this observation by using successive generations of the strain of Belgian hares for insulin assay.

Factors Affecting Stability of Insulin.

Regarding the vexed question of the deterioration of insulin in the tropics, there is trustworthy evidence that some samples show considerable decrease in activity, while others retain their original potency for many months. We thus conclude that insulin may be stable at tropical temperature, but some batches are either impure or the character of the solution renders the preparation unstable. The logarithmic character of the curve obtained from Stott's results certainly shows that dissociation occurs in some batches. Insulin is known to be more stable in acid than in neutral solution, and Cheadle⁵ has demonstrated recently that it can be autoclaved at 125° C. for 20 minutes with a loss in activity of 20 to 25 per cent. only, if in solution of pH 2, but that it loses all activity if the procedure is carried out in solution of pH 4. The writer has noted that a batch which gave indifferent clinical results was less acid in reaction than a more active sample, so that the pH of the insulin solution may be a factor in the deterioration of insulin at tropical temperatures.

Summary.

A batch of insulin was stored for six months in the tropics and then reassayed on local rabbits. It appeared to have deteriorated by about 40 per cent. The reassay was also done on the first local generation of recently imported rabbits. The results then indicated little if any deterioration.

References.

1. Stott, Major H.: *Indian Med. Gaz.*, 1924, lix., 130.
2. Bose, J. P.: *Indian Med. Gaz.*, 1923, lviii., 557.
3. *THE LANCET*, 1924, i., 101.
4. Bose, J. P., and Acton, Major H. W.: *Indian Med. Gaz.*, 1924, lix., 336.
5. Cheadle, F. M.: *Aust. Jour. Exp. Biol. and Med. Sc.*, 1924, i., 129.

Clinical and Laboratory Notes.

THE DIAGNOSIS OF TUBERCULOUS MENINGITIS IN CHILDREN.

By W. L. KINNEAR, M.D. ST. AND.,

RESIDENT MEDICAL OFFICER, QUEEN'S HOSPITAL FOR CHILDREN,
BETHNAL GREEN, E.

TUBERCULOUS meningitis is not an uncommon disease in children, and accounted for 9 per cent. of deaths in the medical wards of this hospital in 1923. It is a disease which must cause much anxiety to practitioners owing to the difficulty of its diagnosis in the early stages. On the average patients were admitted well on in the third week when signs of advanced infection were usually present. The ease with which a certain diagnosis can be made in hospital has possibly led to less attention being paid to the signs and symptoms of onset; but lumbar puncture is not practicable for most general practitioners, and a diagnosis is often arrived at by the failure of the usual remedies and the appearance of grave cerebral symptoms.

I have felt that a general description of the signs and symptoms, as is found in most text-books, could be made more useful by a table showing their relative frequency; individually they are not distinctive, and it is only when in combination that they point to the diagnosis. There are certain points of much importance which must be omitted from this table, such as the facies, the alteration in behaviour in each patient, &c. The signs and symptoms given below were all present on or before admission, this being the stage of the disease when they were last

seen by the practitioner or when the mother brought her child to hospital for treatment. It is important to note that in this hospital the latter class is much the more numerous. No signs or symptoms developing in hospital are given.

I should like to comment on one point only, and that is on the asymmetry of distribution of the nervous symptoms. On looking over the notes I was much struck by the frequency of such signs as paralysis, twitching, spasticity, &c., confined to one limb or to one side of the body; the presence of Babinski's or Kernig's sign, abdominal reflexes, or knee-jerks on one side only. The temperature charts are frequently very suggestive of this trouble—an irregular, moderately raised temperature, a varying pulse-rate, and a persistent blank in spite of medicines in the column devoted to registering stools being the distinctive features.

Analysis of 100 Cases.

Lumbar puncture was done in 95 per cent.; post-mortem examination was done in 42 per cent. The average duration of illness from the first definite symptom—e.g., vomiting or convulsion—was 19.9 days. The average number of days in hospital was 8.2. The number of cases admitted when delirious or unconscious was 16. Forty-four were males and 56 females. A tuberculous family history was present in 34 per cent.

The age distribution was as follows:—

	Per cent.		Per cent.
0-1 years	18	4-5 years	12
1-2 "	24	5-10 "	10
2-3 "	18	10-14 "	7
3-4 "	11		

The youngest patient was 3 months old; the oldest patient was 13 years 8 months old.

Seasonal Incidence.—64 per cent. of the cases occurred during the first six months. The largest number occurred in March, when 22 cases were admitted.

The symptoms and signs were as follows:—

	Per cent. of cases.		Per cent. of cases.
Vomiting occurred in	89	Babinski's sign present in	31*
Constipation occurred in	81	Screaming occurred in	29
Headache occurred in	80*	Convulsions occurred in	29
Strabismus occurred in	31	Knee-jerks absent in	27
Stiffness of neck present in	65	Abdominal reflexes	
Kernig's sign present in	51†	absent in	20
Head retraction present in	35	Twitchings occurred in	15
* Over 2 years of age.		† Doubtful in six.	

Temperature.—The average temperature on admission was 99.8° F. Three cases showed no rise of temperature to 100° throughout. In ten cases the temperature rose over 105°. This was usually due to the ante-mortem elevation.

Examination of Cerebro-Spinal Fluid.—In nearly every case the fluid was under increased pressure, and a coagulum formed on standing.

Average number of cells per c.mm.	73.0
" percentage of lymphocytes	88.0
" " chlorides	0.675

An interesting point was the diagnostic importance of increased globulin content, a definite cloud with the Noguchi reaction being sufficient to exclude cases of meningism in which the fluid was also usually under increased pressure.

A CASE OF INTESTINAL OBSTRUCTION.

By A. GRAHAM BRYCE, F.R.C.S. ENG.,

ASSISTANT RESIDENT SURGICAL OFFICER, MANCHESTER
ROYAL INFIRMARY.

THE following case, from the unusual nature of the cause of obstruction, seems worthy of record:—

A married woman, aged 52, was admitted to the Manchester Royal Infirmary on March 8th with the following history. On Jan. 1st, 1924, she was suddenly attacked by abdominal colic and vomiting. The attack lasted for a week. Similar pain lasting for an hour had been present a fortnight before her admission. Thirty-six hours before being brought in she was again attacked by intermittent colic referred to the umbilical area. She had vomited several times during that period, but the vomiting did not become feculent. The bowels had been opened three times normally since the onset. Except for the presence of some tenderness at and around the umbilicus and shifting dullness in the flanks,

examination of the abdomen, hernial sites, rectum, and knee-jerks showed nothing abnormal. The temperature was 99.6 °F., and the pulse-rate 100. A diagnosis of incomplete intestinal obstruction was made, and the patient was kept under observation for about two hours, but, owing to the severe and continuous nature of the colic, it was decided to operate.

At operation a fair amount of free serous fluid escaped. The cæcum was collapsed, and no greatly distended gut presented, but three irregular hard bodies were found lying close together within the lumen of the small intestine at a point estimated to be three or four feet from the ileo-cæcal junction. The intestine below the site of impaction was collapsed. The foreign bodies were removed through an opening in the bowel wall, which was immediately sutured and the abdomen was closed without drainage. Recovery was uneventful.

The foreign bodies were examined after removal. They were found to be chestnuts, of which the largest was of the usual size and the smallest half the size of an ordinary chestnut. All were minus the outer shell and covered by a thin layer of faecal material. Inquiry elicited the fact that the patient had eaten roasted chestnuts on New Year's Day and had swallowed them whole. The interest of the case lies largely in the fact that the chestnuts had been quite unaffected by the digestive ferments over a period of nearly ten weeks.

I am able to publish this note by the courtesy of Mr. J. Howson Ray, to whose surgical unit the patient was admitted.

Medical Societies.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

At two recent consecutive meetings of this Society Prof. ARCHIBALD YOUNG, the President, in the chair, a discussion was held on

Rheumatoid Arthritis.

Prof. R. STOCKMAN, opening the discussion, described the condition termed rheumatoid arthritis as most probably a group of closely allied germ diseases known and described under many different names—e.g., chronic articular rheumatism, chronic rheumatic arthritis, chronic fibrous rheumatism, chronic villous polyarthritis, nodose rheumatism, rheumatic gout, atrophic arthritis, Still's disease, chronic infectious arthritis, and so forth. The clinical course and morbid anatomy marked it as a germ disease of low virulence, but of extreme chronicity. As a rule, no organism could be found in the joints or other affected structures or in the blood, but in a certain number of cases (relatively a very small number) bacilli, diplobacilli, cocci, diplococci, and streptococci had been isolated from the joints and cultured outside the body. The probability was, he said, that there were several different causal organisms, but whether all cases were due to the same organism, or to various different organisms, the broad results for the patient were the same. The white fibrous tissues of the locomotory system of the body formed the point of attack, and essentially and in the beginning it was a fibrositis, with proliferation and increase of the affected fibrous tissue structures. There was never suppuration, and no local emigration of polymorphous leucocytes took place. Chronic hydrarthrosis of one joint was probably its mildest form, and from this there were all grades of severity up to polyarthritis with high fever. It usually began insidiously, the speaker said, in the small joints and progressed with little constitutional disturbance; much seldomer it began in the large joints, and then with more acute systemic symptoms. Ultimately in all cases it presented the general clinical aspect of a low chronic septic infection, and must be regarded as a very general infection, not merely as an arthritis. In all cases the fibrous tissue of the muscle, aponeuroses, fasciæ, and panniculus adiposus

were more or less deeply involved and inflamed. In the joints it was the fibrous tissue of the synovial membrane and capsule which were primarily affected. The cartilage and bone were not primarily involved, but as the influence of disuse, muscular contractures, and other changes came into play, the bone got thinned and atrophied, the cartilage became rough or ulcerated, the fibrous capsule contracted and hardened, and ultimately a fibrous or a bony ankylosis might result.

With regard to the search for a focus of infection, it was remarked how very infrequently any focus could be identified with certainty. It was possible that in many cases the original focus had disappeared before the patient came under observation; and a joint might remain as a reservoir of infection after others had ceased to show active signs. Tonsillitis, boils, septic sores, pyorrhœa, chronic pulmonary or intestinal conditions, and so on, had been blamed, and the association of various skin conditions, such as psoriasis, had been noted.

Treatment.

The various methods of treatment, both local and general, were then described. The later symptoms and changes which followed as a result of the fibrositis were referred to, and the necessity for vigorous treatment by massage, movements, baths, and appropriate exercises was urged—anything rather than rest. Treatment must be directed (1) to restore movement in the joints by elongating the contracted muscles and shortening the elongated ones, so that they may each regain their normal action; (2) to get rid of the fibrositis in and around the joints and to stretch and render more pliable their ligamentous tissues and adhesions; and (3) to bring up the bulk and strength of the muscles. For the most part the stretching and movements could be done manually, but the assistance of splints was desirable in many cases. Forcible extension under an anæsthetic was to be avoided, but in certain instances the mobility of a joint could be more easily tested under chloroform. The fixation of a joint in plaster or splints for more than a few days was very inadvisable owing to the risk of immobility occurring.

Dr. DAVID CAMPBELL described the results of the treatment of rheumatoid arthritis by non-specific therapy—the so-called protein shock treatment. He described the technique which he had employed in 100 cases from 1921 to the present date, and showed various charts illustrating the general and local reactions following the injection. Of 70 cases treated up to November, 1923, 58 derived great benefit, both directly from diminution of pain and tenderness in the joints, and also indirectly from the consequent greater facility with which more effective local treatment by heat and massage could be carried out. The maximum benefit was obtained in those cases which had started acutely and with involvement of many joints. Of the 12 cases which showed no improvement, four were of long standing in which the disease process had become inactive. Seven reacted to each injection, but the infection remained active. Of the 58 cases improved by the treatment, 40 had, from periods varying from one to three and a half years, been able to perform all their ordinary duties, with no exacerbation of the joint conditions nor spread of the disease to other joints. In 16 cases in which relapse had taken place, a fairly advanced stage of the disease had been reached before treatment was started, while in several the treatment had been discontinued after two or three injections, owing to the great improvement shown. The advisability was discussed of continuing the injections after the active process had apparently ceased. In conclusion, the opinion was expressed that, while protein shock therapy could not be regarded as ideal, it offered greater probability of success than any other known methods.

Prof. STOCKMAN was of the opinion that protein shock therapy was capable of cutting short the infection in the early stages of the disease.

Prevention of Deformity.

MR. JAMES RUSSELL, in discussing the surgical treatment of arthritic conditions, referred to the various deformities which might result from these diseases. He deprecated strongly operative treatment based on X ray appearances alone, and insisted that surgical interference could be justified only where improved functional value of the limb was likely thereby to be attained. The fundamental question was function, and mere deformity as such should not be allowed to assume undue importance. The commoner deformities of the various joints were then described and the methods employed for their prevention discussed. A number of splints were shown and the method of their use demonstrated. It was pointed out that the splints should be of such a type that they could easily be removed for massage and other local treatment. In the acute stage of the disease there was a limit to the patient's tolerance of treatment, and in such cases the skill and judgment of the surgeon might be taxed to the utmost. Once deformity had developed, any forcible movement was sure to be harmful, but gradual stretching by weights or splints could overcome many of these early contractures. In conclusion, Mr. Russell urged the necessity of physicians and surgeons appreciating the value of posture, during the acute stage of the illness, and splintage, in the prevention and control of deformity.

Discussion.

In the discussion which followed, Dr. W. S. SYME referred to the difficulty of finding a focus of infection, and urged that the examination of the throat and nose for any such focus should be more strict than was commonly the case. For example, it was often the most innocent-looking tonsil which showed the greatest degree of infection in the crypts when a thorough examination was made by pressing forwards the pillars and projecting the tonsil towards the observer. In the case of nasal infection, even more care was required to demonstrate the freedom from infection of the various sinuses. In some cases where generalised infection had occurred, removal of the primary focus did not afford relief, probably because secondary foci were then equally fertile as sources of infection.

Dr. J. N. CRICKSHANK referred to the occasional occurrence of herpes after protein shock therapy. He quoted six cases in which severe herpes of the mouth and lips and surrounding area of skin had occurred. Subsequent injection of a fresh vaccine from the same stock was again followed by herpes. One patient had been treated by a vaccine from a different stock without the appearance of herpes. When treated by the vaccine which produced herpes in the other patients, he also suffered in the same way. These facts suggested the need for care in selecting a suitable stock vaccine.

Dr. MARION GILCHRIST spoke of the difficulties in the treatment of rheumatoid arthritis and of the problem of individual resistance to such infections. The vigorous application of all measures calculated to raise the patient's general resistance was essential. In the prevention of deformities and limited function, movement was important. Pain was a difficult symptom to treat, and in several instances she had found local X ray treatment of much benefit in the relief of pain. She wished particularly to emphasise the importance of treating the mental attitude of the patient. It was essential to increase the mental resistance of the patient to the disease.

Dr. G. H. CLARK referred to a point of interest in the treatment of resistant cases by heat. He had found that a dressing of methyl salicylate and carbolic oil along with the application of heat gave in some cases a much better effect than heat alone. He had also found better results in some cases with the Grevillite bath than with ordinary radiant heat.

Reviews and Notices of Books.

FRANCIS GALTON.

The Life, Letters, and Labours of Francis Galton. By KARL PEARSON. Vol. II. Cambridge University Press. 1924. With 54 plates and many taxy figures. Pp. 425. 45s.

THE first volume of this biography was published in 1914; we have waited ten years for this, the second instalment; the third has yet to appear. And in the meantime circumstances have led to some alteration in its scope and method. In the happy days of pre-war printing ventures, the Galton professor had contemplated an issue of Galton's collected works, particularly desirable in the case of an author who dispersed a great amount of noticeable work among a variety of journals and magazines as well as writing his more formal books and scientific papers. This project has, we are sorry to read, perforce been given up. Instead, and as far as may be in substitution, the biography now gives a fuller account of his writings, summarising them in enough detail to enable the reader to apprehend what Galton did and, in the light of Prof. Pearson's comments, to appreciate what his doings stood for when they were done and what they stand for to-day. As far as the biography is concerned, this change is for the better. It involves, it is true, the expansion of the whole from two to three volumes, and the third is still unpublished. But it has led to an account of the life and work of a scientific man which is without parallel in recent English biography, and reaches a pitch of excellence of which it is difficult to speak without exaggeration; it was reached before by Prof. Pearson in his account of W. F. R. Weldon in the fifth volume of *Bio metrika*, and the present volume alone of Galton's life is about ten times as long as that memoir.

If Galton had been a man of one idea or even of one recognised field of inquiry, if his own "Memories of My Life" had been something more than trivial (for they are hardly better than that), his biographer's task might have been relatively simple. Among his great contemporaries whose lives are classics, Darwin is evolution, J. D. Hooker is the Himalaya and Kew, even Huxley might almost be said to have lived in a groove. But anything which his amazingly curious mind happened to notice was a subject for investigation by Galton, and he had to an exceptional degree the habit of noticing things which other people had missed. Between many of his interests there was, of course, a nexus of relationship or development, but just as he was continually striking out as a pioneer into fresh topics, so he invented the idea that nearly all these interests were parts of a connected whole. This whole has no clear name; it is not anthropology in the ordinarily accepted sense, it is not eugenics as that term is commonly understood. We doubt whether more than a few people have been in a position to know what its content was before Prof. Pearson gave us this biography, and it is difficult to think of a more appropriate name than Galtonism.

The first volume was largely preparatory and brought Galton to the age of 32, an experienced traveller in foreign parts, married and prepared to settle to a quieter life. This second instalment tells us of his really effective middle life and develops the versatility of a mind which must surely have been one of the most genuinely original of last century. He writes the "Art of Travel," a standard book, which went through many editions, of recipes for camping, avoiding sore feet, dodging wild animals, and rolling up your shirt sleeves (which last is either quite wrong or applies to a kind of shirt not now in common use); is active at the Geographical Society; notices that very little attempt is made by meteorologists to get general rules out of their laborious data, discovers and names the "anticyclone," and on April 1st, 1875, procures the publication in the *Times* of the first of our familiar daily weather maps;

looks into spiritualistic phenomena; suggests a method of achieving a decimal system of coinage. These are a few of the items of his activity dealt with in the first chapter. We pass, then, to "Hereditary Genius" (published in 1869) and all the studies cognate to it which henceforward tend more definitely to group themselves round the study of the heredity of the mental and moral characters as a basis for race improvement and which centre in his three other fundamental books—"English Men of Science, Their Nature and Nurture" (1874), "Human Faculty" (1883), and "Natural Inheritance" (1889). There are interesting and less familiar experiments on the influence of blood transfusion and experimental Siamese twinning on heredity, undertaken with immediate reference to his cousin's hypothesis of pangenesis; composite photography; anthropometry and some correspondence with Florence Nightingale about a proposed professorship of applied statistics. Only cursory mention of some of the activities of these crowded years is possible. And Prof. Pearson, with his commentary and explanations, at once human and erudite, has woven it all into a tale which is of rare fascination in itself and has the truly Galtonian quality of suggesting how and where we may make further progress and help to run down some of the many hares that Galton started. Our gratitude to Prof. Pearson will be even greater if he will quickly produce the final volume which will deal with statistical heredity, correlation, fingerprints, and the rest of his subject's later work.

INTERNAL DISEASES.

The George Blumer Edition of Billings-Forchheimer's Therapeutics of Internal Diseases. Edited by GEORGE BLUMER, M.A. Yale. M.D., David P. Smith Clinical Professor of Medicine, Yale University School of Medicine, Attending Physician to the New Haven Hospital. New York: D. Appleton and Company. 1924. With illustrations. In six volumes and an Index volume. Pp. 4834. £12 the set.

WHEN the practice of medicine first separated itself from the priestly vestments which clothed it in its early youth, men were wont to speak of the healing "art." With modern rationalism has come a tendency to regard this phrase as inapplicable to medicine, and to try to confine therapeutics to the administration of remedies for which a scientific basis of action can be discovered. So long as effective empirical methods are not scorned simply because we do not at present understand them, the efforts to explain their action can only lead to good. It is to America particularly that we have come to look for such efforts, and the volumes before us represent an attempt by more than 150 authors to deal with all the diseases which afflict the internal organs of man from the point of view of pathology, sociology, and treatment, leaving symptomatology and diagnosis almost out of consideration.

The first volume of this large series is entitled "Principles of General Therapy," and opens with a general account of the cell and its physiology as the rational basis of all therapeutics. From a disquisition on such general subjects as colloids, equilibrium, diffusion, ions, osmosis, &c., the reader passes on to a chapter on feeding, wherein he will find some helpful and elaborate diet tables and estimates of food values, of the digestibility of the various articles of diet, and of the effect of cooking on them. The chapters which follow give an outline of modern methods of hydrotherapy, exercise, light and radiation applications, and kindred subjects. The chapter on organotherapy deals with this vexed subject in a moderate and conservative manner. The second volume continues the general principles with a sensible article on psychotherapy as it comes within the province of the practitioner, and with chapters on immunity, anaphylaxis, and blood. The various methods of administering remedial measures are then considered, and the "special" division of the work opens with

the infectious diseases. Tuberculosis and the pneumonias occupy the larger number of pages in this volume. The third volume deals with infectious diseases due to filter-passing viruses, under which heading are grouped—perhaps a little prematurely—acute arthritis and all the exanthemata. The mycoses, protozoal and metazoal infections follow. "The Intoxications" is the heading of the next group, in the course of which poisoning from all sources is considered, including food preservatives and belligerent gases. In the concluding chapters the subject of seasickness is treated with an appropriate breeziness. Rhinologists and psychotherapists will, perhaps, feel somewhat aggrieved at the exclusively anaphylactic treatment recommended for hay fever and asthma in Vol. IV. The deficiency diseases, ductless glands, vasomotor and metabolic diseases are dealt with in subsequent chapters, and the alimentary canal is then taken systematically, followed by diseases of the blood and lymph systems. The fifth volume treats of the thoracic organs, blood-vessels, and skeletal and excretory system and of occupational and tropical diseases. The concluding chapter gives a comprehensive survey of the various poisonous animals and plants and the treatment suitable to each. The final volume deals with the sexual system in both sexes, the nervous system, and eye and ear.

It will be seen that the range of the work is very extensive, but the treatment of each subject is by no means sketchy, such important practical details as diet tables, regimen of life, and suitable prescriptions being provided in every section. The bibliographical reference lists at the end of each chapter are full, and the reader who wants to pursue investigations further than the text takes him, or who wishes to trace recommendations to their source, will find no difficulty in so doing. The discussion of transmissible diseases and others having a social significance is characterised by a sympathetic and common-sense recognition of the personal problems of the patient as well as of the duty of physician and patient to the community. As will be seen from the summary of contents given, there is some overlapping and duplication, inevitable perhaps in a production for which so many writers are responsible, and the order of classification is one not wholly familiar to English readers, though based on rational principles. The indexing should serve to overcome this difficulty; each volume is fully indexed and a Composite Index to the entire work is bound separately for desk use. The volumes are disappointingly heavy in these days of light paper, but inasmuch as the work is essentially one for reference rather than steady perusal, this disadvantage is less important.

Novelty medical men will find here a refreshing novelty of presentation of well-known treatments, and some new suggestions of real value.

CLINICAL METHODS.

A Guide to the Practical Study of Medicine. Eighth edition. By ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital; Physician to the Hospital for Sick Children, Great Ormond-street; and HARRY RAINY, M.D., F.R.C.P. Edin., F.R.S.E., formerly Physician to the Royal Infirmary, Edinburgh. London: Cassell and Company, Ltd. 1924. Pp. 688. 12s. 6d.

THE new edition of "Hutchison and Rainy" has been revised by Dr. Robert Hutchison with the help of Dr. Donald Hunter, Dr. J. R. Marrack, Dr. P. N. Panton, Dr. John Parkinson, and Dr. George Riddoch. In 646 pages of text and some 40 pages of index are to be found the most remarkable summary extant of all that is best as regards the examination of patients. This is one of the books that may well stand as a proof of the high status of British medicine, and the reader puts it down with a feeling of gratitude to its distinguished authors, one of whom is unhappily no longer with us to enjoy its success. Complicated biochemical processes such as blood analysis are fully described,

but are relegated to positions which bring out their true relation to less "modern" but even more important methods such as the routine examination of the various systems of the body. On p. 253, "sulphanilic acid 1 c.c." should read "1 gram," a misprint which is reproduced from the original paper quoted on the same page; beyond this small error, we have found no mistakes in the descriptions of various complicated processes.

We hesitate to suggest that so trusted a servant should change his livery, but we feel that, when a book is of the excellence of the present one, a somewhat larger page would enable it to assume a form at once more dignified and useful.

MATERIA MEDICA.

A Text-Book of Materia Medica. Being an Account of the More Important Crude Drugs of Vegetable and Animal Origin. Designed for Students of Pharmacy and Medicine. Fourth edition. By HENRY G. GREENISH, D.-ès-Sc., F.I.C., F.L.S., Professor of Pharmaceutics to the Pharmaceutical Society of Great Britain and in the University of London. London: J. and A. Churchill. 1924. Pp. 586. 25s.

THE term materia medica has changed its meaning gradually in the last 40 years. The term as used in this book corresponds to the modern use of the word; it gives the source and descriptions of the plants and plant-derivatives which are used in medicine. "Greenish" is a book primarily for the pharmacist; but there must even now be many physicians who do take an interest in their drugs, and for these it can only be a source of delight.

He is a clever writer who can make interesting a text-book on the source and structure of drugs, but Greenish, partly by the simplicity of his style and partly by the clever use he makes of his illustrations, arrives at success. A look at the well-chosen pictures gives confidence, and a search into the text confirms this confidence. No words are wasted: the writer has a task to carry out and he does it without much ado. We can recommend the book to all pharmacy students and to those medical men who want to know more of their drugs than that they come out of a chemist's shop and that they can be obtained by writing a prescription.

INFECTIOUS DISEASES.

Diagnosis and Treatment of the Infectious Diseases. By FREDERIC H. THOMSON, M.B., C.M. Aberd., D.P.H. London: H. K. Lewis and Co., Ltd. 1924. Pp. viii.-208. 7s. 6d.

Dr. Thomson's valuable work in connexion with many of the infectious diseases is well known, and the publication in this volume of his post-graduate lectures will receive a wide welcome. The book is admirably suited for the busy general practitioner, containing as it does in compact form all that is material regarding the differential diagnosis and treatment of the infectious diseases liable to be met with in this country. At the same time it will prove of great interest to those whose work lies in fever hospitals and who are desirous of comparing their own methods with those of one whose prolonged experience commands respect. A short chapter, full of useful information, on the conveyance of infection opens the volume, and the possibilities of transmission of droplet infection by the air are briefly discussed, conclusions being drawn from the results of the author's experiments with "bed isolation" methods of nursing. It is interesting to note his belief that in measles the infectivity of the patient ceases with the disappearance of the rash and that in chicken-pox probably does not outlast the first week of the eruption, or in mumps the subsidence of the swelling. Dr. Thomson is more cautious regarding whooping-cough, and contents himself with saying that infection has gone when the patient ceases to whoop, whereas many hold that there is very little risk when once the paroxysmal stage has fully developed.

The chapters on the individual diseases are all good, those on small-pox, chicken-pox, and diphtheria particularly so. Many hospitals have discarded all local treatment of the throat in diphtheria, but it will cause surprise to learn that even in septic scarlet fever the same course is recommended. That much unnecessary exhaustion has been induced by persisting with local treatment must be admitted, and it is reassuring to hear that Dr. Thomson considers that the patients do quite as well without the traditional swabbing or douching of the throat. Throughout the book the author's suggestions for treatment seem eminently sound and sensible. An excellent section is that on tracheotomy. The few plates, chiefly illustrating small-pox and chicken-pox, are admirably chosen, and the book is clearly written and well printed.

THE SCIENCE AND ART OF LIVING.

By LEONARD WILLIAMS, M.D. London: Hodder and Stoughton. 1924. Pp. 240. 5s.

Dr. Williams's little book is didactic and propagandist, to use his own words, but the teaching and the advocacy are very entertaining. They centre round the author's belief that the crime of our civilisation is gluttony, begotten of an arrogant assumption of superiority. To eat, whether you want to or not, because it is one o'clock, is to the author one of the most fantastic acts of physiological folly that can well be perpetrated. Only if the bowel is supplied with plenty of vitamins does it empty itself automatically and generously; and the cooking-stove to the author is one of man's most deadly inventions, deadlier than the spirit-still, and only to be classed with the closed window. Round this thesis it would be easy—it has, in fact, been done—to write a very dull book, but Dr. Williams castigates others with good humour. He scoffs at the little luxuries to which man has accustomed himself "to keep up his strength," "to pull him together," "to neutralise acid," and so forth. Any suggestions to the contrary, to the effect that no such reinforcements are needed, sends the subject off to the miracle-monger, for he does not know what Dr. Williams knows, that man is, in fact, at any given moment, a resultant of his endocrine hormones.

So much for the science of living. Part II., on the art of living, contains much sound advice for local hygienic precautions. It is not, the author thinks, the pressure of the hat that causes baldness, but the harbouring of dirt; for a man will wear the same hat month after month, perspire in it, leave it about in all manner of odd places, without more than a perfunctory superficial external brushing. Who desires to retain a crop of hair should wash the inside leather band with soap and water at least once a week. The town-dweller should cleanse the inside of his nostrils morning and night with soap and water, adding some volatile antiseptic oil during a time of epidemic. He should avoid all the sticky foods represented by starches and sugars, all concentrated foods (beef-tea, Dr. Williams remarks, is more an excrementitious substance than a food), he should avoid misinterpreting as hunger the sinking feeling in the pit of the stomach, when it is really a form of indigestion for which the proper treatment is not tea but muscular exercise. An occasional three-day fast is enjoined in order to use up the material unwittingly put by the body for a rainy day, but the fast to be beneficial has to be cheerful and devoid of self-pity. The hungry reader will be relieved to find that after observing all the author's maxims, an evening meal will still remain for him consisting of fish and a salad, bird with a green vegetable, toast, cheese and fruit, varied with some of the etceteras such as chicken's liver and cod's roe—for the rational diet is in no sense synonymous with starvation diet.

Dr. Williams desires to rouse his readers from intellectual lethargy in matters scientific, and induce them to revise their standards and uplift their ideals. His attempt is stimulating and piquant.

PEDIATRICS.

Clinique médicale des enfants: Affections de l'appareil respiratoire. By Prof. P. NOBÉCOURT. Paris: Masson et Cie. 1924. Pp. 348. Fr.22.

THE attempt to teach clinical medicine by writing a book always seems a little paradoxical, but Prof. Nobécourt has succeeded in bringing the physician as close to the bedside as the written word will permit. As he says in the preface, his aim has been to paint complete pictures without any unnecessary detail, to convey clear-cut impressions and to ignore all that is hazy and uncertain. Much of this book deals with case-reports, but they are not like the ill-assorted clinical notes sometimes used as padding when the sources of inspiration run dry. Prof. Nobécourt's case-reports are strictly pruned, and he has the rare gift of describing a case in words that vividly conjure up a mental picture. Those of his readers who have enjoyed the privilege of listening to Sir Clifford Allbutt's bedside demonstrations will be reminded thereof when they take up this book. Passing from generalities to the special case, and back again to generalities, the author attaches one to the other in the way best calculated to leave a permanent impression on the reader's memory. With the atmosphere of the sick-room rather than the library, the author is as justified as anyone can be in calling this a clinical treatise. The sub-title—*Affections de l'appareil respiratoire*—gives the best summary possible of the contents of this volume.

REMINISCENCES OF AN OLD PHYSICIAN.

By ROBERT BELL, M.D., F.R.F.P.S. London: John Murray. 1924. Pp. 291. 16s.

Dr. Bell is well known as an earnest advocate of the treatment of cancer without operation. The main part of his book, however, deals with his life in general apart from purely professional work, early education, fishing excursions, travels, views on art and architecture, poetical compositions *et hoc genus omne*. Though a Scot, he was born in Alnwick, studied at Glasgow, and practised at first in that city and also in Durham. In 1893 he married and went for a continental honeymoon. Among other places he went to Florence, concerning which place he says, "it does not seem to be generally known that the real and original Chartreuse Monastery—for it is the oldest edifice of the order—is situated within a short carriage drive from Florence." It certainly is not generally known; it is not even the fact. The real and original Chartreuse Monastery is not far from Grenoble, where St. Bruno founded his order in 1086, though it is true that the existing buildings mostly date from the seventeenth century. Dr. Bell was evidently much struck by the cleverness of the Florentine school of copyists, and tells us that he purchased a copy of a picture by Carlo Dolce, a strange choice in a town which is full of works by Botticelli, Gentile da Fabriano, Filippo Lippi, and Ghirlandajo, to mention only a few. Dr. Bell also purchased a copy of a picture in the Monastery of St. Marco by a painter whom he calls Fra Angelica. The only thing that he tells us about his stay in Venice is how he successfully treated a gentleman from Leeds who suffered from constipation with a dose of castor oil. In Milan, though it is true that he considers that Leonardo's "Last Supper" "still held its position as a masterpiece," he apparently missed the chief thing to notice in the Duomo, the two *ambones*, and was struck chiefly by the modern glass and the imitation of groining on the roof. Dr. Bell's artistic tastes, however, improved, for in 1902, on his visit to Spain, he greatly and properly appreciated the Alhambra and Toledo Cathedral. In the same year Dr. Bell published an "In Memoriam" upon Queen Victoria, which he gives in extenso and which might have been written by the Rev. Robert Montgomery. Lest we shall be accused of doing nothing but cavil, we express our hearty thanks to

Dr. Bell for the following reminiscence (v. p. 236). He was one day walking down Sauchiehall-street in Glasgow, when he was accosted by an inebriated person, who "addressed me as follows: 'W-will yo-you p-please to tell me wh-which is the o-other si-side of the street?' I replied, pointing across the way 'Over there, of course.' Whereupon he said, 'Do-on't try to ga-ga-gammon me, for I was o-o-over th-ther and a ma-ma-man t-t-told me it was over here.'"

INSANITY AND LAW.

A Treatise on Forensic Psychiatry. By H. DOUGLAS SINGER, M.D., M.R.C.P. Lond., and WILLIAM A. KROHN, A.M., M.D., Ph.D. Philadelphia: P. Blakiston's Son and Co. 1924. Pp. 437.

ONE of the objects in the publication of this book is to bring about a better understanding between the medical and legal professions in matters of lunacy. It may be considered in two parts, of which the first is a text-book of psychiatry for the lawyer, and the second a law manual for the physician. The latter section deals, of course, with procedure in the disposal of the insane, criminal responsibility, testamentary capacity, and a great variety of other medico-legal problems which insanity may present. There is an excellent chapter entitled "The Physician in Court." The book will no doubt serve a useful purpose in America, but its value in England is limited by differences between the lunacy laws of the two countries.

ANNALS OF ROENTGENOLOGY.

Vol. IV. Normal Bones and Joints Roentgenologically Considered. By ISIDORE COHN, M.D., F.A.C.S., New Orleans. New York: Paul B. Hoeber. 1924. With 220 radiograms. Pp. 218. \$10.

THE series of monographic atlases grouped under the title of Annals of Roentgenology is edited by James T. Cast, an ex-president of the American Roentgen Ray Society. This volume is the last published, but six others are in actual preparation and others are being planned. It is to be hoped that nothing will hinder the early publication of those already in hand, and that those planned will embrace the whole of the wide field of roentgenology. This volume is a study of the appearance of normal bones and joints, and is a wonderful pictorial record of the changes which occur as a child grows into adult life. The extraordinary care which has been taken is well illustrated by the section on the elbow-joint, for the following radiographs are shown: at 17 months, 1; 5 years, 3; 6 years, 2; 7 years, 1; 8 years, 4; 9 years, 3; 10 years, 2; 11 years, 5; 12 years, 6; 13 years, 8; 14 years, 3; 15 years, 3; 17 years, 3. These 44 plates are all of normal joints, and there follow 15 plates illustrating the architecture of the joints with regard to normal angles, and lastly 30 photographs of fractures and the patients concerned before and after treatment. All the other joints are treated in a similar manner. The author explains in the text the details of ossification, of the structure and architecture of the joints, and presents the whole in a most attractive way. Later his points are emphasised by various fractures, and the case-histories of his patients are given in full. It is, of course, impossible to have even the smallest knowledge of abnormalities until the normal appearances are thoroughly understood. This monograph presents this aspect in the fullest possible manner, and meets an urgent need in the literature of bone and joint surgery. In the announcement in front of this volume we see no promise of a volume devoted to the pathological conditions of bones and joints, and we hope that this series will not be considered complete until such a volume has been written.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XXIV.—DOCTOR AND CORONER.

BY G. ROCHE LYNCH, O.B.E., M.B.,
B.S. LOND., D.P.H.,

OFFICIAL ANALYST TO THE HOME OFFICE; PATHOLOGICAL
CHEMIST TO ST. MARY'S HOSPITAL; LECTURER ON
FORENSIC MEDICINE AT WESTMINSTER HOSPITAL.

THE duty of a coroner is to hold inquests on: (1) cases of death under certain circumstances; (2) treasure trove; (3) fires in the City of London. We are only concerned here with the medical aspects of the coroner's duties.

The object of an inquest is to ascertain if death is due to criminal, avoidable, or natural causes; further, to enable the guilty to be brought to justice, and to prevent and to limit accidents. Cases of death occurring in certain institutions are made by statute the subject of a coroner's inquest; this is done mainly to satisfy the public and the immediate relatives, so that any criticism directed towards those who were responsible for the custody of the deceased during life may be properly inquired into. Deaths from accidents in mines or factories fall into the same category, where the factory inspector must be informed by the coroner. Inquests of this type are just as much in the interest of the medical profession as in that of the public.

Information.

The circumstances in which an inquest is to be held in cases of death are stated thus in Section 3 (i) of the Coroners Act, 1887: "Where a coroner is informed that the dead body of a person is lying within his jurisdiction, and that there is reasonable cause to suspect that such person has died either a violent or an unnatural death or has died a sudden death of which the cause is unknown, or that such person has died in prison or in such place or under such circumstances as to require an inquest in pursuance of any Act," the coroner is to proceed to summon a jury and hold an inquest, whether the cause of death arose within his jurisdiction or not. It follows that a coroner does not take action until he receives information. Such information may come from any one of six sources: (1) his officer; (2) the police; (3) a registrar of births, deaths, and marriages; (4) friends or relatives of the deceased; (5) medical practitioners (in attendance during life or after death); (6) private individuals. The duty of informing a coroner of a death, where it may be deemed desirable to hold an inquest, is not thrown on any person or persons by statute, except in the following cases:—

1. A manager of an asylum in cases of insane persons under his charge.
2. Cases of judicial hanging by the sheriff (who must inform the coroner prior to the execution).
3. Deaths in prison.
4. Deaths which come within the scope of the Infant Life Protection Acts.

Registrars of births, deaths, and marriages are instructed by the Registrar-General to report to the coroner all deaths:—

1. Occasioned directly or indirectly by violence.
2. Occurring under suspicious circumstances.
3. The cause of which is stated to be unknown.
4. Which are stated to have been sudden, and respecting which no certificate issued by a medical man is produced.
5. Of infants in houses registered under the Infant Life Protection Acts.

The coroner, having decided to hold an inquest, must do so within reasonable time of the death,

although there is no statutory time limit laid down, and it is worthy of note that in one case the inquest was not held until 19 years after the death. Inquests have been threatened, or even held, upon bones, as to which it has been evident that they belonged to more or less remote antiquity. To hold inquests in such cases is obviously unnecessary. In exhumation cases a considerable time may elapse between death and the inquest. It is the duty of a coroner to hold an inquest on any portion of a body that may be found.

Medical Man as Informer.

When information has reached a coroner, he causes his officer to make inquiries, and as a result of the latter's investigations he decides whether or not an inquest is to be held. The duties of a medical man in relation to a coroner are all too vaguely laid down. By the Registration of Births and Deaths Act, 1874 (Section 20, Subsection 2), it is ordered that, "In case of the death of any person who has been attended during his last illness by a registered medical practitioner, that practitioner shall sign and give to some person required by this Act to give information concerning the death, a certificate stating to the best of his knowledge and belief the cause of death," the subsection giving particulars as to how the certificate is to be dealt with. There is a need, however, for specific statutory directions to the medical man as to what he is to do where he cannot conscientiously give a certificate as to the precise cause of death, whether he believes it to be a natural death or not. In practice he will generally inform the coroner if he finds that no one else is obliged to do so, particularly where he knows or has reason to think that death is not due to natural causes, or he will give a certificate so worded that the registrar will refuse to act upon it, and will inform the coroner. It may not be necessary for the medical man to inform the coroner himself, in fact, neither under this Act or any other Act is there any legal obligation for him to inform the coroner. In practice, however, he can gain nothing by following the letter of the law, for the coroner is bound to receive information from other sources eventually, and the net result of this strictly legal proceeding on the part of the medical man would be a general delay of the proceedings and a general inconvenience to all concerned. The medical man, on the other hand, is warned to be certain of his facts before he gives information to a coroner, for should his reasons for his action be unsubstantiated by fact, he may find himself in a very false position at a later period.

Accepting the principle that it is a duty of the medical man to inform the coroner in cases which are likely to be the subject of a coroner's inquest, the next point is what type of case should be notified. Many cases leave the medical man in no doubt as to his procedure, but there are a considerable number of cases in which one coroner would decide to hold an inquest whereas another would consider it unnecessary, for coroners interpret their duties very differently. Medical men are in a difficulty here, as by reporting some cases in which a coroner does not hold an inquest they may incur hostility from relatives, and, on the other hand, by reporting too few their action may be criticised by the coroner. To overcome this difficulty, the prudent medical man will soon learn the idiosyncrasies of the coroner of his district and act accordingly. He may, however, find a simple course in difficult cases and one which is quite in order—namely, to give a death certificate and at the same time inform the coroner that he has certified, and also of the salient facts of the case.

The following rules may assist him:—

1. Report if there is a history of an accident, no matter how remote.
2. Report to the coroner (if he does not consider that he can conscientiously give a certificate assigning a natural cause for death) any facts which cause him to abstain from doing so or which point to the case being one for an inquest under the section of the Coroners Act quoted above. He

will remember that the coroner is to act where he has "reasonable cause to suspect" and that a coroner has jurisdiction to hold an inquest, and is justified in doing so, "if he honestly believes information which has been given him to be true, which, if true, would make it his duty to hold such an inquest."¹

3. Take no action in cases of suspicion only, unless the details on which the suspicion is based are capable of being substantiated in the witness-box.

4. Report those cases where the medical man knows that if he does not report someone else will.

Officer's Inquiry.

As soon as the information is lodged the coroner's officer is directed to make inquiries. Such inquiries are almost certain to include the practitioner involved. The practitioner should be at all times willing to help this officer in every way, but at the same time he must remember that the statement he makes to the officer, although of no legal import, is used by the coroner as the basis of his examination of the practitioner in the witness-box. He must, therefore, be guarded in what he says. Further, as this examination by the coroner's officer is not a legal proceeding, the doctor may refuse to answer any question, especially those involving the confidential relations of doctor and patient, and those which may in any way reflect on his professional capabilities or conduct. But bearing this in mind, the practitioner is urged to be open in his dealing with this officer, as a refusal to give information, although quite within the rights of the practitioner, may place him in a false position at the subsequent inquest. Regarding the confidential relations of doctor and patient, the practitioner should decline to give any information to the coroner's officer. He should wait until questions involving this relationship are put to him in the witness-box and then only answer them after his professional protest has been over-ruled.

Post-Mortem Examination.

The coroner, having decided to hold an inquest, issues a warrant and summons various witnesses to attend. In the case of the medical man he may receive also an order to make a post-mortem examination, and, if necessary, an analysis of the viscera. The analysis being a specially skilled process should only be undertaken by a trained toxicologist, and no coroner would expect the medical practitioner to undertake it. The performance of a post-mortem examination is generally delegated to the medical practitioner associated with the case, but there is a growing tendency amongst some coroners to employ skilled pathologists for this purpose. The practitioner associated with the case should be present.

The holding of a post-mortem examination rests entirely with the coroner, who is naturally guided by the statements taken by his officer from the medical man and others. Here again there is a need for caution lest the coroner is led to think that the medical man is so satisfied as to the cause of death that no post-mortem examination would be necessary. It cannot too often be emphasised that if a case has features which make it a proper subject of a coroner's inquest, it is almost always advisable to hold a post-mortem examination. Over and over again the interests of justice have been defeated or jeopardised by the failure of a coroner to order an examination. However, in justice to the coroner, it is fair to say that often the complete failure of a local authority to provide suitable facilities for this purpose has influenced him in his omission. The Public Health Acts in the majority of cases only give power to the local authority to provide mortuary and post-mortem accommodation, but do not make it compulsory. In certain instances there is no doubt that avoidance of post-mortem examinations and of toxicological analyses is dictated on the grounds of economy.

Medical men should beware of making a post-mortem examination unless they receive written

authority from the coroner to do so. The body is under the absolute jurisdiction of the coroner, and even if he should give verbal consent such as "I do not order a post-mortem examination, but you may make one yourself if you like," on no account should the medical man act, for, should any future question arise, the doctor will be unable to shelter under the coroner, who has only power to act in the prescribed form. In such a case the doctor, of course, gets no fee for the examination. In important cases a skilled pathologist is sometimes called to make a second examination, which can only be legally done through a request made to the coroner by the jury. When a post-mortem examination is made, in every case without exception all organs, including the brain, must be examined by the medical man personally, and the work should not be delegated to the attendant. Those present at the examination, other than the attendant, should be persons authorised to be there by the coroner in writing.

During the examination, if the medical man as the result of his investigations has any suspicion that the deceased has died from the effects of poison, or is unable to exclude poison, it is his duty to place the whole (not portions) of the more important organs into perfectly clean stoppered jars which he himself has cleansed just prior to use, preferably each organ in a separate jar. He should on no account add any preservative. By this means the liver, kidneys, stomach and contents, bladder and contents, and intestines in ordinary cases, and other organs in special cases, should be reserved. The jars should be made of glass entirely, as, for instance, a jar involving the use of indiarubber bands is unsafe, for a portion may be detached and become intermingled with the viscera, with the result that the analyst would probably find antimony to be present, as manufactured indiarubber often contains this metal. Such has actually happened in one case. The jars should be tied down effectively and sealed with a seal. Each jar should be labelled with the name of the deceased, date of examination, nature of contents, and signed by the person performing the examination. These jars should be handed to the coroner's officer and a receipt obtained for them. The coroner should be then informed that in medical opinion an analysis should be made. Too much care cannot be exercised over these details, which are so often neglected. Points of this kind are sometimes challenged by the defence, should a criminal charge supervene.

In cases where it is possible that the professional conduct of a medical man may be questioned by anyone, the coroner wisely directs another medical man to make the post-mortem. In such cases the medical man concerned may elect to be present himself or be represented at the examination by a colleague, to which the coroner usually gives consent although he is not in any way bound to do so. Similarly, an accused person or one who may be possibly the subject of subsequent proceedings, may also be represented by a doctor at the examination. The medical man should make careful notes at the time of or directly after the examination of all his findings. Where a witness on oath before the coroner has ascribed death to negligence or improper treatment by a medical practitioner or other person, "such medical practitioner or other person shall not be allowed to perform or assist at the post-mortem examination."²

It will be remembered that in the recent trial of Dr. Hadwen a point was made for the defence that he had not been given an opportunity to be present at the post-mortem examination of the deceased child. If authority was cited for any right of a medical man, or any other person, charged to be present on such an occasion it was not reported in the newspapers.

¹ Rex v. Stephenson, 13 Q.B.D., 331.

² Coroners Act, 1887, Sec. 21, Subsec. 2.

Evidence at Inquest.

The coroner is not bound in any way to follow the rules of evidence which are strictly observed in other courts. He may take or refuse any evidence or testimony that he pleases. It is customary in all courts for the witnesses to remain outside the court until they are called to give evidence, after which they are allowed to remain in the court. The medical man, however, whose testimony is often taken last, is permitted to be present during the whole of the proceedings, as is the custom in other courts. His position is one of an expert witness and his presence in court is considered desirable so that he may hear the evidence given that it may assist him in arriving at his opinion as to the cause of death. Nevertheless, the coroner, as also the magistrate or presiding judge in other courts, may direct the doctor to remain outside the court until required.

Having been sworn, the medical man should give his evidence briefly and clearly, avoiding the use of technical terms wherever possible, and if such are necessary he should explain the same in simple phraseology. Above all, he should never be tempted to take up the position of lecturer and give the coroner and jury a discourse or a verbose account of what in his opinion were the circumstances of the death. Such advice appears to be superfluous, but evidence, if it may be called so, of this type is still too often given in these courts. The medical man must remember that the coroner's court is also a court of record, and that everything pertinent to the case is taken down in writing by the coroner or his clerk, and that he is subsequently called upon to sign this written statement. This document comes into the hands of the presiding authority of other courts, civil or criminal, and anything the doctor has said at the coroner's court in an unguarded moment may be thrown at him subsequently, with the result that he may be made to look foolish. When he has completed his evidence the coroner will read the transcript over to him and he will sign the statement. If he is in any way in doubt about what is written, he should make corrections at the time and read for himself carefully what is written, as once he has signed no correction may be made. He will then be bound over in a certain sum to attend at some other court in due course, if the case is to go further.

These remarks apply to every inquest, no matter how straightforward the case appears to be, and it must be remembered that there is always the possibility of any case being reopened in civil or criminal courts.

Fees.

Medical witnesses are by law (Coroners Act, 1887) allowed one guinea for attending to give evidence, or two guineas for making a post-mortem and giving evidence. No provision is made for mileage or for adjourned sittings, at all of which the medical man is bound to attend, unless specially released by the coroner. There has always been some doubt whether resident medical officers of institutions, whose duties are to attend on the inmates of institutions such as lunatic asylums, hospitals, infirmaries, &c., are entitled to receive fees. So far as hospitals supported by voluntary contributions are concerned, the medical man is not entitled. The test usually adopted is whether the institution is supported by voluntary subscription or not. It has always been customary for medical officers of those not supported by voluntary subscription to be paid, but recently in some cases payment has been refused. The wording of the Act is obscure, and a test action to settle the point would be an advantage. If it can be upheld that medical officers of infirmaries can be refused their fees, it seems likely that all institutions in which sick persons are attended may be interpreted as coming under the scope of Section 22 of the Coroners Act, 1887. The matter is under acute dispute just now.

Anæsthetic Deaths.

From the purely legal aspect it would seem clearly the duty of the coroner to hold inquests in this class of case. Exactly what is meant by the terms "anæsthetic death," or "death from anæsthesia," is very difficult of definition. The anæsthetic is usually deemed to be finished as soon as the patient is "round from the anæsthetic." In most cases as soon as this stage is reached the patient is deemed, so far as the coroner is concerned, not to have died from the effects of the anæsthetic. It is obvious that in many cases where operations are followed by death inquests are unnecessary. The anæsthetist is quite aware that the patient may not survive the operation owing to the gravity of the condition. On the other hand, where an apparently healthy person undergoing a minor operation, or even a major operation which is not an emergency, dies under the anæsthetic, it is eminently desirable for an inquest to be held. No medical man has anything to fear if his procedure was appropriate to the circumstances. The surgeon has been held at law to be responsible for everything which takes place in the operating theatre, and his testimony at the inquest is as important as that of those who in the eye of the law are his assistants.

Infanticide.

It is the duty of a coroner to hold an inquest on all newly-born children where there are any suspicious circumstances relative to the death, and in certain cases under the Infant Life Protection Acts. There is, however, in this case a difficulty. A still-born child is not a person within the meaning of the Coroners Acts, and in many cases live birth can only be proved by a post-mortem examination. A coroner, however, who has reason for thinking that a child may have been born alive, can decide to hold an inquest, and having so decided can order a post-mortem examination. If the examination establishes still-birth the right course appears to be that, evidence to that effect having been given, the inquest should conclude with a verdict of still-birth and that the coroner should then give his order for burial of the body in accordance with the Births and Deaths Registration Act, 1874, Section 18, c. Further legislation will no doubt deal with still-births in relation to inquests, for which the law at present makes no specific provision.

Reports and Analytical Records.

AGOTAN.

(HOWARDS AND SONS, LTD., ILFORD AND LONDON.)

WE have received a bottle of Agotan tablets showing that the convenient form in which this preparation is put up and the care with which it is distributed have been maintained. Agotan, which is of value by increasing the excretion of uric acid and urates in the urine, is identical with the preparation described in the British Pharmaceutical Codex as Quinophan (phenyl quinoline carboxylic acid), though a higher standard of purity is claimed for it. We have noted in these columns previously the chemical constitution of the preparation, and welcome such efforts to keep in this country the manufacture of synthetic drugs whose value has been proved in practice. On this last point we may say that we have received professional evidence of undoubted standing.

OSTELIN.

(GLAXO, OSNABURGH-STREET, LONDON, N.W. 1.)

This is an elegant little preparation consisting of an unsaponifiable fraction of cod-liver oil suspended in glycerine so that 3 minims are equivalent to 1 drachm of the original oil. The use of the preparation is obvious where the ordinary administration of cod-liver oil is attended with difficulty. The proprietors publish an interesting pamphlet from their medical department in which X ray photographs are given of the

various stages observed in a case of rickets treated with ostelin in a London hospital. The brochure indicates the value of the preparation as an anti-rachitic factor, suggesting that its use to prevent dental diseases in children follows on the lines of the experiments published in the *British Medical Journal*¹ last August by Mrs. May Mellanby.

"GADUS" JELLY.

(HEYERDAHL PRODUCTS CO. (ENGLAND), LTD., 36, REGENT-STREET, CAMBRIDGE.)

This preparation of cod-liver oil is also devised to make the administration of cod-liver oil pleasant to children. The jelly is manufactured from high quality Norwegian oil under the direct supervision of experts and is so flavoured that, although 30 per cent. of cod-liver oil is present, the fishy flavour, which is nauseous to some more than others, is concealed. The specimen jar sent to us contained approximately 80 teaspoonfuls, and the recommended dose varies from one level teaspoonful to two level tablespoonfuls per diem, according to the age of the subject. We need not expatiate on the use in many directions of a cod-liver oil which is agreeable to small patients, for the answer which children make to regular dosage in suitable cases is familiar to us all.

OXOID GLAND PREPARATIONS.

(OXO, LTD., THAMES HOUSE, LONDON, E.C. 4.)

The firm of Oxo, Ltd., now manufactures a large selection of organo-therapeutic gland products, comprising ampoules of liquor hypophysis and adrenalin solutions, suprarenal gland tablets, anterior and posterior lobe tablets, and also a varied assortment of pituitary and thyroid gland tablets—ampoules of liquor hypophysis 10 per cent. (0.5 c.cm.), and 20 per cent. (1.5 c.cm.) suprarenal gland tablets and adrenalin tablets. All these preparations have been tested physiologically and adjusted to a uniform standard of activity, and many or all of them have been noted at different times in medical literature. The way in which the preparations are put up for storing or for distribution is excellent in its convenience, while the range of dosage is large. The value of the gland products becomes yearly more widely recognised by the medical profession, making the need all the greater that the profession should be able to rely upon standard manufacture.

(1) ATOPHAN; (2) VERAMON.

(A. AND M. ZIMMERMANN, LTD., 3, LLOYD'S AVENUE, LONDON, E.C. 3.)

1. Atophan or Acidum Phenyleinchoninicum, which has also been noticed under the name of Phenoquin, has been found to facilitate the elimination of uric acid in gout and rheumatic affections, and in the columns of THE LANCET reference will also be found to the value of the preparation in neuralgia and sciatica. The preparation is put up in boxes of 20 tablets, each containing $7\frac{1}{2}$ gr. Even in a dose of this kind a definite increase in excretion of uric acid within an hour can be observed. The action is attributed to some alteration in the fermentative processes which regulate the oxidation of the purin bases, but precaution should be taken in raising the doses as unpleasant effects have been known to occur. Some interesting observations on the use of this drug will be found in THE LANCET, 1915, i., 1092, reporting the work of Dr. P. Biffis, whose results were published fully in *Il Policlinico*. The tablets are best taken after meals and swallowed whole followed by a glass of water.

2. Veramon. This preparation has now been in the hands of the medical profession for some three years, and clinical evidence is forthcoming of its merits as an analgesic especially in peridontitis, neuralgic headache, and migraine. It has also been found to relieve the headache accompanying intestinal disorders. The compound is a combination of amidopyrin and veronal.

¹ August 30th, 1924, p. 354.

PETROLAGAR.

(DESHELL LABORATORIES, LTD., SENTINEL HOUSE, SOUTHAMPTON-ROW, LONDON, W.C. 1.)

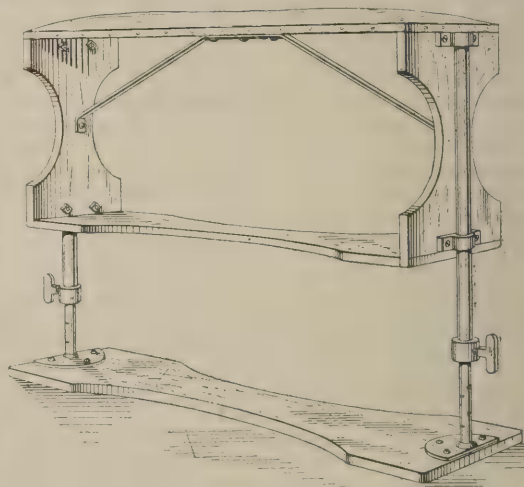
We have received samples of this emulsion of medicinal liquid paraffin and agar-agar. Petrolagar is sent out in two forms, with and without phenolphthalein. The emulsification of the mineral oil tends to increase efficiency as an intestinal lubricant, while the agar-agar mechanically aids the action of the bowel from its well-known physical qualities. The addition of phenolphthalein gives a purgative action to the mixture, of which advantage can be taken in suitable cases. Practitioners will find this preparation very suitable for patients where bowel action is obstinate and capricious, where it is desired to avoid the use of aperients, or where such medicines have failed to regulate the mechanism.

Asparol (Chem. Fabrik. J. E. Stroschein, Berlin) is stated to be calcium caffeine acetylsalicylate. Its use is indicated in cases where the administration of salicylic acid or acetylsalicylic acid and caffeine is likely to be beneficial. Its analgesic action is said to be prompt and lasting, and it is claimed that the presence of the calcium inhibits the action of the caffeine on the heart. It is also stated on medical authority that the drug is far better tolerated than acetylsalicylic acid and caffeine.

New Inventions.

THE HERMIT FOOT SUPPORT.

I HAVE tested recently a foot support for use in bed, and several of my patients speak very highly of it. Everyone knows how uneasy it is to take meals in bed, or to read or write, on account of the constant



tendency to slide down the bed. In the "Hermit" support the difficulty is solved, as the apparatus is adjustable to the length of the individual, whose feet can be kept in constant contact with it. As will be seen from the illustration, it consists of a framework capable of being extended in length and padded at one end as a support for the feet. By its use the whole tension is taken away from the bottom of the back, thereby relaxing the muscles there, and consequently giving a more comfortable position when sitting up in bed; it is of particular use where anyone has to be propped up in bed for heart trouble, chest complaints, and after operations. Mr. Herbert Mitchell, of Bradford, is the inventor.

Bradford.

WILLIAM F. RAWSON, F.R.C.S. Edin.

THE LANCET.

LONDON: SATURDAY, JANUARY 3, 1925.

ALASTRIM OR "PARA-SMALL-POX" ?

THE fact that the Registrar-General's returns for the year just passed have chronicled about 3000 notified cases of small-pox occurring at different times in nearly 100 English sanitary districts without entailing any appreciable mortality, taken with the evidence from many sources of the very slight character of the notified illness, lends a special interest to the review entitled *Alastrim and Variola* which appeared in the October number of the *Bulletin* of the Office International d'Hygiène Publique, and of which a translation was given in the last two issues of THE LANCET for 1924. This scholarly and practical study we owe to the distinguished epidemiologist and professor of hygiene at Lisbon, Dr. RICARDO JORGE. He has reviewed the epidemiology of the special type or variety of small-pox characterised by persistent benignity in different countries during recent years, describing its presence and characteristics in parts of Africa, Central America and the West Indies, in Brazil, in Australasia, and in Europe, as well as in a recent and instructive outbreak in the Azores. These epidemics are described under different names, such as *alastrim*, *amaas*, *para-variola*, and "mild small-pox." In all of them, Dr. JORGE points out, there are common characteristics so striking as to justify the conclusion that, however closely the epidemic disease is connected with or related to small-pox, it has qualities which, both for practical and scientific purposes, require to be differentiated from the *variola* or small-pox which is ordinarily understood and described in the text-books. In this contention Dr. JORGE is by no means oblivious of the fact that, from the time of SYDENHAM and from pre-vaccination days, classical small-pox has shown variations from epidemic to epidemic in its general severity, and that, occurring as it does in these days among populations which to a large extent are protected by vaccination, each epidemic comprises a series of cases of mild or abortive small-pox in which the modification has resulted from incomplete vaccinal protection. But, in regard to *alastrim*, *amaas*, or "mild small-pox," it would appear that the characteristic benignity is not a factor of immunity acquired by the individual as a result of previous small-pox or of vaccination, but is inherent in the type of the infection itself. The well vaccinated escape *alastrim* just as they escape small-pox; there is no dispute about the efficacy of the protection conferred. But, on the other hand, the unvaccinated, when attacked by *alastrim*, get through the disease, as a rule, with little more disturbance constitutionally than happens with chicken-pox or other infectious maladies which are usually considered of minor importance. Even when the rash is abundant and confluent in the early stages the patient hardly feels ill, and his eruption habitually dries up with little pustulation and rarely leaves scarring or pitting. No one who was familiar

with small-pox as it occurred, for example, in London in 1893 and 1902, or as it occurred as recently as 1921 in Glasgow, can fail to realise the contrast between such a disease when unvaccinated children are concerned or older adults who have not been vaccinated since infancy.

Dr. JORGE has included a discussion of recent English "small-pox" in his survey, making use of the clinical accounts by GARROW, PAINTON, JAMESON, and others, as well as of the information supplied to the Office International d'Hygiène Publique by the British delegate, Sir GEORGE BUCHANAN. He finds in these accounts evidence which convinces him that the disease which we are now notifying and reporting as small-pox belongs to the class of *alastrim* epidemics in other parts of the world. Special attention is drawn to the parallel occurrences in Switzerland, where during the last three years the total reported cases have been 3900, the number of deaths only three, and the individual cases throughout have hardly ever merited the term severe. These observations, which accord with much that has been written and suggested in this country on the subject, notably by Dr. S. M. COPEMAN, are of practical as well as academic interest. The contrast which Dr. JORGE draws between the position in this matter of "unicists" and "dualists" is instructive and particularly worthy of study. As he points out, the uncompromising "unicist" is in a position of some difficulty in relation to the advocacy of vaccination on which he is accustomed to rely—namely, as an effective and necessary preventive of the severe or classic form of small-pox by which we may at any time be invaded. If vaccination is advocated as a protection against the severe type while we insist at the same time that the benign type should be diagnosed and notified as small-pox without any differentiation, the public receiving the propaganda is apt to become bewildered or mistrustful. On the one hand, it is asked to accept rigid systems of vaccination and hospital isolation, sometimes under legal compulsion, in order to ward off a terrible disease; on the other hand, the terrible disease, when it appears and comes to its doors, is no more alarming than chicken-pox, and has so far shown no signs of possessing a potential or inherent danger of being transmuted into the redoubtable form. The other side to the picture is that the prudent "dualist" admits that if he has to see an individual case, in its early stages, with no knowledge whatever of the epidemic of which it forms part, he cannot with any certainty diagnose it as *alastrim* and not small-pox, or vice versa. He is in the same position as with a case of enteric fever where he has no bacteriological aid to determine between typhoid and paratyphoid infection. Dr. JORGE reviews several points of possible differentiation, such as the character of the rash and immunity and allergic reactions, emphasising the need for further investigation and research in these directions, but without finding any absolute criterion as between *variola* and *alastrim* decisive for the individual case.

Looking to the question as a whole we believe that there will be a large measure of agreement with his main contention—namely, that for clarity of thought as well as for administrative convenience it has now become necessary to adopt a special term to designate the characteristically benign type of small-pox (in the generic sense) which is now extensively prevalent in different parts of the world. The term "mild small-pox" is not of itself sufficient, inasmuch as mild cases occur with every epidemic

of classical small-pox, and severe cases may occur, though rarely, in course of the benign epidemics. "Alastrim" has much to commend it historically and etymologically; it signifies merely a disease which is scattered, and it can be used without prejudice to any controversy. The alternative "para-small-pox" (or "para-variola") has advantages from the point of view of analogy, from its including a reference to the disease with which it is so closely akin, and because no new position would be created in the matter of notification. On these grounds, perhaps, it may be preferable to ignore the unpleasantly hybrid nature of the word "para-small-pox" and adopt it boldly for our working purposes. The decision here seems to rest with the Ministry of Health and those who determine official nomenclature in regard to infectious diseases.

THE STIGMA OF NEUROSIS.

THE evolution of official terminology from "mad-house" through "lunatic asylum" to "mental hospital" shows that there is a great deal in names when they involve prejudice, and any change in nomenclature is justified that helps to remove the notion that the mental sufferer is a guilty encumbrance to be hidden away so that he cannot offend. But the expression of prejudice in names is still current in the sphere of those minor psychoses that rarely involve certification. "Shell-shock" was a respectable disability, whilst the alternative and correct diagnosis of hysteria was, and often still is, suppressed on account of the attached opprobrium. A patient may have a gastric or vaso-motor "neurosis," but he must not be "neurotic" on pain of social or family ostracism and, we fear, some degree of professional neglect. There is, indeed, a distinction between "neurotic" and "neurasthenic" which involves a subtle moral judgment. If we accept inquest reports as a basis of observation we find that the sufferer from neurasthenia often commits suicide whilst the neurotic never does; thus the latter may demonstrate, by suicide, his right to the more respectable diagnosis. The phrase "nervous breakdown," however, involves nothing blameworthy, and a recent lay writer describes under that title the mental trouble from which the elder PITT suffered, though the description makes clear that the condition was one of anxiety hysteria.

This medley of prejudice and pseudo-diagnosis is partly responsible for that astonishing amount of suffering and disability in the domain of the psycho-neuroses to which Dr. EDWIN GOODALL referred in a recent issue of THE LANCET (Dec. 20th, 1924, p. 1275), and for which our Scottish correspondent in the present issue gives chapter and verse. The obloquy carried by such words as "hysterical" or "neurotic" is accompanied by a belief that the patient is to blame, that he need only use common sense and will-power to rid himself of his difficulties, and that neurotic suffering is best treated by "wise neglect." This belief will often be supported by the practitioner who has not followed the progress of psychopathology. It is regarded as a sad injustice when a patient with an organic disability is wrongly thought to be hysterical or neurotic, but, though an error in diagnosis is always regrettable, it is our peculiar attitude towards the neurotic that makes this particular mistake so distressing. Yet the denial of help to the mental sufferer is a greater injustice, and the patient who needs treatment for his mental state is often not even given the opportunity to

describe the symptoms for which he would welcome relief.

This same medley is allowed to form the equipment with which many a practitioner, even after holding hospital appointments, sets out to handle the problem of the psycho-neuroses in general practice. Systematic instruction in psychopathology hardly exists, though its foundations are now well established, and that it receives little attention in the general curriculum is suggested by the fact that the candidate for a qualifying examination would never expect to be questioned, say, upon that common clinical phenomenon connoted by the phrase "a nervous breakdown." In fact, his hospital training teaches him that all clinical interest ceases when once a diagnosis of neurosis is established. Certainly the neurotic patient seems to have a legitimate grievance, but it is one that bids fair to be removed or alleviated. More instruction is being given to-day in our medical schools along the indicated lines, as the teachers themselves are becoming more impressed with its necessity. And here we have a direction in which medical training can be improved practically without additions to a crowded curriculum.

QUININE IN MALARIA.

ALTHOUGH the discovery of the cause of a disease is rightly regarded as a necessary preliminary to the establishment of rational as opposed to empirical treatment, it often happens that many years of patient study are needed before the full practical results of the discovery come to fruition. Thus the causal organism of pulmonary tuberculosis was identified in 1882, and after the lapse of 40 years we remain baffled in our attempts to formulate a direct method of attack, based on our knowledge of the cause of the disease. Again, the virtue of cinchona bark as an empirical remedy for malaria was known and utilised more than 200 years before the malarial parasite was first seen and described by LAVERAN in 1880. Since that date a vast amount of research work has been done, much of it recent and inspired by the experiences of the war; yet we remain in ignorance as to the precise manner in which the good effects of quinine are brought about, nor is there any approach to unanimity as to the dosage, method of administration, or even the preparation of quinine or other cinchonoid alkaloid from which the best results may be expected. The careful and closely reasoned criticism of the methods of treatment of the malarials by Lieut.-Colonel CLAYTON LANE, which appears in the *Tropical Diseases Bulletin*,¹ is on this account particularly opportune, and merits the close attention of all who are interested in malaria. Among many points of importance a few may be selected as of special interest. There is experimental evidence to show that, within a few minutes of the injection of a solution of quinine into the blood-vessels of a rabbit, 90 per cent. of the amount injected has disappeared from the blood. Of this a moiety, variously estimated as 15-65 per cent., is excreted in the urine; the remainder is stored in the organs of the body, more particularly the kidneys, spleen, and adrenals, where in course of time it is broken down or "metabolised" into substances of unknown nature. The rapid disappearance of quinine from the blood makes it difficult to believe that its virtue lies in any direct poisonous effect on the plasmodia, and it must be presumed that its action depends on the production,

¹ 1924, vol. xxi., No. 11.

directly or indirectly, of bodies of unknown nature, which combine with the malarial organism and destroy it.

Of the numerous observations undertaken with the object of determining the line of treatment most likely to be successful in eradicating the parasites from victims of relapsing malaria, Colonel LANE singles out for special notice two sets of experiments, the Macedonian cases recorded by A. G. ANDERSON, and the Liverpool series by J. W. W. STEPHENS. In each series the conclusion has independently been reached that the efficacy of quinine in the prevention of relapse varies according to the time of year, the period of greatest efficiency coinciding with the warmer months. In assessing the relative value of different methods it is clearly of the greatest importance to recognise and make allowance for this underlying seasonal influence, and the failure to do so must be regarded as vitiating the results arrived at in much of the experimental work on the subject. No proof appears to be forthcoming of the widely held view that quinine is effective mainly or exclusively against extracorporeal organisms. On the contrary, there is evidence that plasmodia are vulnerable to the influence of quinine in all but the terminal phase of intracorporeal growth. It is concluded that the practice of timing the administration of quinine so as to correspond with a special phase of the life-cycle of the organism is not supported by scientific evidence. In discussing the much debated subject of intramuscular quinine stress is rightly laid on the experimental work bearing on the unfortunate sequelæ that may follow the injudicious use of the intramuscular route. On the other hand, while oral administration suffices for all ordinary purposes, it must be recognised that there are cases in which, for one reason or another, quinine requirements cannot be fully met by the oral method, and in these cases we believe that the value of the alternative route, as a temporary means of supplementing or replacing oral quinine, has been amply demonstrated. The clinical experience of the war, in which the aggregate number of intramuscular injections was very large, shows that, provided due care is taken to prevent sepsis and to avoid injury to nerve trunks, the risk of serious local complications involving permanent disability is very small indeed. Perhaps the only circumstance in which the intramuscular method should be absolutely prohibited is the concurrence of a debilitating condition, such as chronic dysentery, with malaria; in such cases intramuscular injections of quinine are likely to cause widespread necrosis of muscle and abscess formation, and therefore should not be prescribed. The review concludes with a short account of recent work on the comparative values of quinine and other alkaloids derived from cinchona, such as cinchonine, cinchonidine, and quinidine, in the course of which a considerable discrepancy of evidence is disclosed, and it is clear that the subject is one on which further research may profitably be undertaken.

The problem of the treatment of malaria presents peculiar intricacies. When it is remembered that there are three forms of malaria, differing not only in biological and clinical characters, but also in their therapeutic reactions; that there are a number of cinchonal alkaloids, mostly of proved value, but of which the relative efficacy awaits exact determination; and further, that there exists a seasonal factor which directly influences the results obtained by treatment, the difficulties of a scientific investigation in which so many variables have to be taken into account are readily realised.

AN OLD HIGHLAND FARM.¹

To have compiled a book which is not only interesting but eminently readable out of an ill-kept, incomplete, and what would now be called illiterate account book is a literary feat of which Miss Grant may well be proud. She has produced a lifelike picture of Highland rural life at a date when what was practically mediæval feudalism as it existed in England, say, in the fourteenth century, was still in being. William Mackintosh, of Balnespick, whose account book between 1768 and 1782 is the foundation of Miss Grant's work, was born sometime before the year 1745, being infeft—i.e., enfeoffed—into Balnespick in 1743, which estate he sold to Macpherson of Invereshie in 1748. At the date of his account book he held a tack—i.e., lease—for "Three nineteen years" from the Chief of Mackintosh of the Davoch of Dunachton and Kincraig in the parish of Alvie on the upper reaches of the Spey. The position of the tacksman was as follows. Of the land which he held from his chief he kept a portion in his own hands; the rest he leased to subtenants who farmed it on a sort of coöperative system on the same principle as village communities in mediæval England (v. Chap. VII.). As Dr. Scott points out in his preface, "it appears that the rents due from his subtenants nominally covered the chief rent he paid. That left him the produce of the portion of land he reserved for himself for his own maintenance." But "he was not dependent on the produce of the lands of Dunachton for his own living, since he had other sources of income." In a case where the tacksman had not the latter resources, continues Dr. Scott, there might have been some danger that the subtenants would have suffered. Anyway, they did not suffer under Balnespick's rule, for we find him acting as a beneficent landlord. He received and administered the pay of a man who was with the army, and despite the fact that the man was in debt to Balnespick the whole of the money transmitted in this way was spent on the man's family and the debt was not claimed until after his return. Balnespick also arranged marriage settlements, administered the affairs of widows and orphans, acted as a sort of bank, provided credit for the tenants, and formed an arbitrator in grazing disputes and the like. In fact, he carried out the feudal system at its best, a system which only fell because those who worked it would not remember that although those below them had duties to carry out, yet they themselves also had responsibilities to their inferiors. He was responsible for the distribution of such poor relief as there was, for the collecting of the minister's stipend and the schoolmaster's salary. What strikes a modern reader is the hardness of the farming life and how both the people and their animals were generally very near to starvation. The plough was as primitive as that described in the Georgics, and yet so small and weak were the cattle that it took a 12 ox team to draw it. Yet with all this they were a hardy and happy race, and no one who has studied the history of the British Empire will fail to remember what a debt that Empire owes to such men and their descendants.

THE University of Sydney is about to appoint its first professor of obstetrics, a new chair having been founded with the aid of a grant made by the New South Wales Government. This appointment will increase to eight the number of professors in the medical faculty, which includes one-third of all the students at the University. Applications for the chair are now being invited in this country as well as in Australasia, and should reach the Agent-General for New South Wales at Australia House not later than Saturday, Jan. 24th. A committee sitting in London will investigate the claims of candidates for this chair.

¹ Every Day Life on an Old Highland Farm. By L. F. Grant. With a Preface by W. R. Scott, M.A., Phil.D., Adam Smith Professor of Political Economy in Glasgow University. London: Longmans, Green and Co. 1924. Pp. 276. 12s. 6d.

Annotations.

"Ne quid nimis."

ACCIDENT BEDS IN LONDON.

THE appeal of the Metropolitan Hospital at Christmas for a large building fund was based partly on the fact that accidents have become so frequent in the neighbourhood as to render necessary a new casualty ward. In his speech at the meeting of the General Council of King Edward's Hospital Fund for London, which we reported last week, the Prince of Wales pointed out that one of the most important subjects dealt with recently by the Fund is the increased provision of accident beds. The hospital accommodation of the capital will presently be increased by 301 beds, of which 53 are to be reserved for accidents, several of the new grants in aid of schemes of capital expenditure being made conditionally upon a specified number of beds being set aside for emergencies. This welcome and long overdue expansion is the outcome of a recommendation made in March last by the Ambulance Cases Disposal Committee of the Fund, and to it must be added the 16 further accident beds which have already been made available at King's College Hospital. In themselves these are substantial additions to the means of dealing with cases of accident and sudden illness, but they are still far from being adequate to the constantly growing need. Guy's has 57 beds definitely attributed to casualties and accidents; St. George's, 38; St. Thomas's, 23; but in most cases the numbers are inconsiderable, while the smaller general hospitals and cottage hospitals have, at the best, only one or two, and in most cases none at all.

If street accidents only had to be provided for this provision would still be inadequate, especially in view of the disquieting fact that these accidents are steadily increasing. Whereas in 1907 17,065 cases of personal injury were reported by the police, 283 of which were fatal, in 1922 25,547 persons were injured and 675 killed. To these high figures must, however, be added cases of sudden illness, necessitating removal to hospitals or infirmaries; in 1922 there were just under 8000 such cases. There has been no comparable addition to casualty beds—indeed, during the last three or four years the provision had remained practically stationary until the King's Fund fortunately found itself in a position to take action. Notwithstanding the "Safety First" propaganda, which has done much to remind both pedestrians and drivers of vehicles that they are always responsible for their own lives, and often for those of others, accidents in the streets of London are unlikely to diminish. Carelessness, ignorance of the presence of danger, absence of mind, sudden loss of nerve, are contributory causes which will continue to exist so long as the human mechanism falls short of perfect action. Roadways and footpaths become more crowded every year, and thoroughfares that were comparatively peaceful a decade ago are now ceaselessly thronged. It is thus of real importance not only that there should be a sufficiency of casualty accommodation in the hospitals, but that it should be so distributed that it may not be necessary to convey seriously injured victims or persons seized with grave illness long distances through the overcrowded streets.

Rapidly as the voluntary hospitals have, generally speaking, recovered from the pecuniary shocks of the war and of the years immediately following it, they still have before them tasks, notably of extension and rebuilding, which will place a heavy tax upon their resources and upon the generosity of those who provide them. The fruition of those tasks will enable many of them to provide more adequately for emergency cases, but, more often than not, fruition will be delayed for years, and the need is immediate and increasing. An important contribution to the solution of the

difficulty would be afforded by such a relaxation of law and regulation as would enable wider use to be made of the vacant beds which are so often to be found in Poor-law institutions. Questions, for instance, involving anything in the nature of what used to be called "Settlement," should be ruled out— injured persons should be entitled to be admitted to such institutions without formalities or inquiry into their place of abode and allowed to remain there until they can be removed without prejudice to their condition. Most important of all is that they should no longer be technically "pauperised" by remaining for a short time under the care of the guardians. The "pauper taint" in such cases is a relic of barbarism, and to sweep it away would enable the Poor-law infirmaries to give powerful help to the overburdened voluntary hospitals, not merely in this, but in many other directions, as well as giving the more backward of them an incentive to improve their scientific and nursing equipment.

MYOPIA, A DISORDER OF GROWTH.

THE cause of that over-distension of the sclerotic coat of the eye in its posterior half which results in myopia is a perennial subject for discussion among ophthalmologists. It is generally taught that the main factor in its causation is an intermittent increase of intra-ocular tension during the period of growth, due either to the pressure of the extra-ocular muscles on the eyeball during convergence, especially in the stooping position, or to vascular engorgement due to the too constant use of the eyes for near work. Dr. F. W. Edridge-Green holds, and has recently enforced his argument in our correspondence columns, that the main factor in the causation is the increase of blood pressure which is attendant on the performance of any undue muscular effort. A lecture recently delivered to the British Optical Association by Sir Arthur Keith takes us back to fundamental consideration of anatomy and physiology in a way which those who are accustomed to confine their thinking to the bony limits of the orbit cannot but find both refreshing and helpful.

Starting from the premise, which will be generally admitted, that it is exceedingly rare for an eyeball which has remained normal until the twentieth year then to commence to elongate, Sir Arthur Keith lays it down that myopia should be ranked amongst the disorders of growth. Now the eye shares with the brain the peculiarity that there is in both, during the early years of life, a precocious growth. "By the end of the fourth year the brain has grown to 84 per cent. of its full size, the eye to about 78 per cent., while at this age a child's body attains only 21 per cent. of its adult size." After the fourth year growth, both of eye and brain, proceeds slowly and steadily, the adult dimensions being reached about the twentieth year. The brain is enclosed within a strong fibrous capsule in which are developed the cranial bones. How does the growing brain succeed in making its bony capsule grow in the required shape? Just how the activity of the osteoblasts is regulated is a problem that Sir Arthur Keith says he has not yet fathomed, but he is sure that in the gradual expansion of the outer coat of the eyeball we have an exactly similar problem. To realise the complexities of the problem he proposes to take the model of an artificial baby-eye, making the outside coat of a tough material woven out of an inelastic fibre like the outer cover of a pneumatic tyre. If we copy Nature, he says, we shall build the outer coat in such a way that it will withstand pressures and tensions ten times above that to which an eye is normally exposed. To do this it will be necessary to arrange the fibre-strands meridionally, equatorially, and diagonally in all directions, and also so that they pass from each layer to the next to bind them securely together. Having thus set up a baby-eye, and distended it with pressure equal to that which supports a column of mercury 25 mm. high, how are we to

bring about in it a gradual and regulated enlargement or growth?

This is the problem that has to be solved in the living eye, whose outer coat is formed in just such a fashion as has been indicated. We know that in every microscopic mesh of the fibre system there is a resident living unit. It is these fibroblasts that can bring about the required processes of growth and absorption and control the whole process by which the eyeball is shaped so as to withstand the internal pressure to which the eyeball is subjected. How the fibroblasts do their work we do not know. We may suppose that during the period of growth they are sensitive to the strains and stress imparted to their fibres by the intra-ocular pressure. But after youth has passed something happens and they are no longer sensitive; the process of growth ceases. To illustrate the sort of factors that influence the activity of the fibroblasts Sir Arthur Keith refers to the subject of acromegaly, a disease in which the mechanism which formally regulates the activity of cells or units which build fibrous tissue and bone is entirely thrown out of gear by some defect in the secretion of the pituitary body. Some comparable fault in the mechanism which normally regulates the growth of the sclerotic coat of the eye must be at the root of myopia. Neither excessive convergence, nor vascular engorgement, nor unusual muscular effort are in themselves adequate causes to originate myopia, though when once started all these may be adverse factors favouring its increase, a fact which justifies the advice usually given to myopes by the ophthalmic surgeon. Nor is it any real help to regard myopia as an adaptive action of Nature in an effort to bring the eyes of the moderns more into harmony with the requirements of civilisation. On the contrary, myopia is a defect due to a faulty action on the part of the fibroblasts which form the outer coating of the eye. What exactly causes that defective action is a problem as yet unsolved. Sir Arthur Keith has pointed out the direction in which we must look in order to solve it.

SANOCRY SIN IN TUBERCULOSIS.

Prof. H. Mollgaard, of the physiological department of the Veterinary College in Copenhagen, has recently introduced a new compound for the treatment of pulmonary tuberculosis. The substance is a double thiosulphate of gold and sodium, and has been named sanocrysin. It is used clinically in conjunction with a serum, the most valuable source of which has proved to be horses which have received injections of Dreyer's diaplyte tubercle bacilli. The steps which led to the combination of gold salt and serum were briefly these. Sodium gold thiosulphate was found to be a substance well tolerated by healthy animals such as rabbits or calves, in doses up to about 60 mg. per kilo. body-weight; the first serious symptom it produced was albuminuria, and the occurrence of this was avoided if injections were made of doses slowly increasing in size. A different picture was presented if doses of about 30 mg. per kilo. were injected into tuberculous animals; signs of severe shock appeared, notably fall of body temperature, serious albuminuria, and collapse; the animals suffered in a condition closely resembling that seen after the injection of tuberculin. Prof. Mollgaard arrived at the conclusion that in sodium gold thiosulphate he had an agent which produced in the body (as well as out of it) powerful lysis of tubercle bacilli, and that in order to make it of clinical value he had only to find a serum which was able to neutralise the effect of the toxins liberated when the bacilli themselves were lysed. He found serum prepared by the use of diaplyte bacilli the best for this purpose, and he succeeded in demonstrating a striking action of such serum in reducing the shock produced by the injection of the gold salt; the effect on the albuminuria was convincing. The practical outcome of Prof. Mollgaard's research has been to enable him to cure calves suffering from advanced pulmonary tuberculosis produced by the

injection of cultures of high virulence; the number of experiments made is sufficiently large to establish the therapeutic value of sanocrysin under these conditions. An extensive clinical trial has already been made in Denmark on about 450 cases. Dr. Secher has examined over 160 cases and has had a large number of striking successes in severe phthisis; it is at present not known which is the most favourable type of patient, but there is some indication that the acute though massively infected subject offers more hope than the long-standing chronic one. Dr. Secher is of opinion that the treatment will be of great value in ensuring the future health of cases of tuberculous pleurisy. Investigation in Denmark has shown that a very high percentage of such cases die within three or four years after leaving hospital. The further development of sanocrysin will be awaited with much interest. The *Northern News Service* reports the equipment of a factory in Copenhagen capable of dealing with 100 kilos. of metallic gold monthly.

SPECIMENS ILLUSTRATING SURGICAL METHODS OF EXPOSURE.

THE nucleus of a collection of anatomical specimens illustrating surgical methods of exposure has been prepared with considerable care by Mr. A. K. Henry and Dr. D. K. Milne Henry, and was shown by them on Dec. 12th last at a meeting of the Surgical Section of the Royal Academy of Medicine in Ireland. In the specimens demonstrated the various structures were appropriately coloured and labelled, and each specimen was accompanied by a legend which explained lines of incision, landmarks, and planes of cleavage by means of simple diagrams. This collection, through the courtesy of Prof. E. J. Evatt, was begun at the Royal College of Surgeons, Dublin, with the double purpose of helping students of operative surgery, and of creating what it is hoped may become something analogous to a library of reference for the practising surgeon. It was felt that the earlier the student is made to look to the disposition of parts as a thing upon which his own personal intervention might be acquired the better. Students learn and remember their anatomy with the skin off, and are often at a loss when a portion of a familiar dissection is screened off from the rest like a field of operation. It is easy to hang the anatomy of a whole region down to the minutest detail upon a surgical peg, and to demonstrate it by means of a surgical exposure. Again, actual preparations which can be studied at leisure may well give the surgeon information regarding the detail and depth of an exposure in a way that no picture could imitate. It is obvious that no amount of anatomical knowledge can replace the study of live pathology upon the operating table, but a clear appreciation of normal anatomy in the presence of pathological change is essential to good surgical work. Among the preparations shown at the meeting were: Exposure of the popliteal face of the femur from the outer and inner side, the Sprengel Smith-Peterson exposure of the hip-joint, and Royle's exposure of the lumbar sympathetic for rami-section in spastic paraplegia.

PUNCTATE BASOPHILIA.

AMONGST the many deleterious effects produced upon the body by chronic lead absorption, it has long been recognised that a moderate degree of secondary anaemia is a very constant one. The drop in the red-cell count is not generally great, the count being, as a rule, between 3-4,000,000 per c.mm.; but, as is usual in secondary anaemias, there is a more severe effect produced upon the haemoglobin content of the red cell and consequently the colour-index is low. Stained films show the presence of changes in size, shape, and tinctorial characters of the red cells; perhaps the most discussed and interesting of which is the presence of basophilic stippling which usually goes by the name of punctate basophilia. This condition, one of peppering with blue granules of

the erythrocytes whose ground colour is red when stained by the Romanowsky methods, is one of long recognition, having been described by Ehrlich in 1883, and it has been the subject of much research and debate both as to its origin and to its significance. It was early recognised not to be specific for any form of blood lesion, but to be found in a number of other conditions; it is present in the blood in embryonic as well as in early extra-uterine life, and it was noted by a number of observers as a frequent accompaniment of trench fever in the late war. Especial attention has been directed towards its presence in saturnism, in which it is frequently a well-marked feature of the anæmia. It may also be produced experimentally by lead, as well as by other toxic agents.

The nature of the condition has been widely discussed, its association with conditions of blood destruction and regeneration being generally admitted. One school held that it represented persisting fragments of nuclear chromatin, the residue of fragmented erythroblast nuclei, this being in conformity with the now generally rejected theory of fragmentation and disappearance of the normoblast nucleus. The second, and more modern school, considers it representative of a foetal stage in the development of the red cell in which the cytoplasm is largely basophilic, prior to the development of hæmoglobin. From this point of view the blue-stained granules would be persisting particles of a cellular structure, normal in the early development of the red cell, but absorbed and removed in its maturity. Their persistence indicates the production of imperfectly finished red cells by the bone marrow, a condition which in another slightly differing form is probably exemplified by polychromatophilia—a diffuse and abnormal bluing of Romanowsky-stained red cells. Such an output of imperfect cells might result from a marrow which is stimulated to increased production by the presence of an anæmia, and, at the same time, functions under the disabling effect of the presence of the anæmia-producing agent in the circulating blood and amongst its erythroblastic cells.

In a recent review of the specific effects of lead upon the blood cells, published in *Medical Science*,¹ the question of the mechanism by which lead produces these changes in the blood has been summarised from a series of papers published by Aub, Reznikoff, and Smith in the *Journal of Experimental Medicine*, this view of the nature of punctate basophilia, which is associated with the names of both Pappenheimer and Sabrazès, is accepted. An attempt is further made to analyse the direct effect of lead upon the red cells in the production of anæmia and, as the result of a long series of in vitro experiments, the somewhat mechanistic suggestion is put forward that insoluble lead phosphate is precipitated in the envelope of certain of the cells, which thereby renders these harder and brittler than the normal ones, with the result that they are rapidly battered to bits in the circulatory torrent; a theory whose simplicity appears to be its main attraction.

THE SUDAN SCHOOL OF MEDICINE.

THE twenty-second annual report of the Gordon Memorial College, Khartoum, contains an account of the opening of the Kitchener Memorial School of Medicine. It was one of the late Lord Kitchener's cherished projects that in addition to the College, in memory of Charles George Gordon, which he was so largely instrumental in establishing, the Sudan should also have its own school of medicine. On Feb. 29th, 1924, the new buildings of the medical school were officially opened by Major-General Sir Lee Stack, whose tragic death adds a third to the memories of great men associated with the Sudan. The cost of the new school was met partly by the generosity of private subscribers and partly by a munificent gift from the funds of the British Red Cross in Egypt, while an endowment fund is already well on its way

towards reaching the amount necessary to provide for the upkeep of the new medical school. The late Governor-General of the Sudan, who was also President of the Gordon College, made a significant statement in the course of his address at the opening ceremony when he said, "I am convinced that medical work is of the highest importance to administration." Such was also Kitchener's belief, and it is gratifying that six students from the Gordon College are amongst those who have commenced their studies at the new school under the direction of Dr. Oliver Atkey, Director of the Sudan Medical Department. The Gordon College continues to do useful work in the educational field, and from the medical point of view particular interest attaches to the work of the Wellcome Tropical Research Laboratories. Major R. G. Archibald, the director of these laboratories, contributes a brief report on the work which has been carried out. He himself was responsible for an important survey of the bilharzial problem, as a result of which bilharzia is now a notifiable disease, and measures for checking the spread of the malady have been established. The chemical section has carried out work on the chemical problems of cotton-growing, and the entomological section has continued its study of the various agricultural pests of the country. The Gordon Memorial College has lost much in Sir Lee Stack, for his sterling administrative qualities were of the greatest value in its varied activities, and he was particularly interested in the medical school.

TUBERCULOSIS OF THE KIDNEY.

A TUBERCULOUS infection which settles in the kidney is one of extreme gravity. Some authorities of weight, after prolonged investigation and research, have declared that the disease is never recovered from spontaneously. This is the accepted view of urologists, and the exceptions are of such rarity of occurrence that effective treatment can only be based upon the assumption that it is invariably true. There are some patients who, whilst incapable of eradicating the disease completely, yet localise the infection; the kidney is destroyed and replaced by a fibro-lipomatous mass containing encapsuled and inactive foci of bacilli, so that to all intents and purposes a nephrectomy has been performed. Such people may live to the end of their lives without any further sign of urinary tuberculosis appearing. Tuberculin therapy has been thought to contribute to this happy result, but success occurs too seldom for vaccine therapy to be considered preferable to surgery except under unusual circumstances.

As a rule, the diagnosis of unilateral renal tuberculosis demands nephrectomy without undue delay. It is therefore essential that diagnosis should take place early in the course of the disease and be capable of establishment beyond doubt. The discovery of tubercle bacilli in the urine alone may not be sufficient evidence, for Lüdhe and Kielleuthner were able to prove the excretion of bacilli by the uninfected kidneys of phthisical patients. H. Wildbolz maintains that in such cases the bacilli are so few in number that they are demonstrable only by guinea-pig injections, never by direct film examination. An essential finding in the urine is pus, or perhaps, in the earliest stages, endothelial or renal epithelial cells. "Aseptic" pyuria is characteristic of a tuberculous kidney. On the other hand, the collection of urine containing pus and tubercle bacilli from a kidney by means of the ureteric catheter does not always mean an infection of that kidney, for there may be an ascending ureteritis which has not reached the kidney, spreading across the bladder from the opposite ureter. This ureteritis, like secondary tuberculous cystitis, shows a tendency to spontaneous cure when the primarily diseased kidney has been removed. It therefore happens that some continental authorities do not lay stress upon ureteric catheterisation, and for the demonstration of the condition of the supposed healthy kidney consider it to be attended by danger and therefore contra-indicated; for a small abrasion of the ureteric mucosa

¹ The Effect of Lead on Red Blood Cells, *Medical Science*, vol. xi., No. 1, October, 1924.

caused by the catheter may allow of the implantation of bacilli, and so lead to the ascending infection referred to by Mr. C. A. R. Nitch in this issue of THE LANCET, an unfortunate result which may not become evident until some months after the cystoscopic intervention. These surgeons are inclined to pay great attention to the delay in the excretion of indigo-carmin as an index of disease of the kidney, and prefer to avoid altogether ureteral catheterisation.

The outlook after nephrectomy has been fairly well established by numbers of observers. About 60 per cent. of patients are cured. These results are improved somewhat, as Mr. Nitch has demonstrated, if the whole ureter is removed at the primary operation, whilst the mortality of the procedure is not increased thereby. Precautions should be taken not to infect the operation wound from the cut surface of the ureteral stump, and as much as possible of the perinephric tissues should be removed as they often harbour tubercle bacilli. The kidney should never be incised to verify a diagnosis, which can be made more certainly by previous investigations. Of recent years attention has been given to the possibility of affording relief by surgery to patients suffering from bilateral disease. Whether the more affected kidney should be removed or not is a question still sub judice. Eugen Joseph¹ recommends removal in bilateral cases of a closed pyonephrosis when the other kidney, by chromoscopy, appears to be only slightly injured, and he quotes one patient as living in health seven years later. Wildbolz² thinks intervention in bilateral disease is very seldom indicated, for the relief from pain and frequency afforded by the operation is only of short duration, the patient soon suffering as much as before. E. S. Judd and A. J. Scholl³ give the results in 18 bilateral cases; four died of uræmia after the operation and ten died during the succeeding 18 months. The results of operation upon bilateral cases should be scrutinised critically to be certain that the patients actually suffered from disease on both sides. Braasch, in 7 of 22 apparently bilateral cases, was able to prove by animal inoculation that bacilli were coming from the healthy side, and considered that such kidneys were infected. But, as we have seen, this may not be evidence of actual disease of the kidney, and the inclusion of such cases in statistics of bilateral cases may lead to error.

THE ODYSSEY OF FAT IN THE BODY.

THE importance of fatty foods and the rôle played by fat in the human and animal organism justifies the extent and variety of the researches into its absorption and assimilation. Apart from its great value as a source of energy arising from its oxidation into carbon dioxide and water, the amount and uses of the water so produced—the water so produced being greater in amount than the fat itself—has for some, and perhaps for all animals, a profound significance. The uses of this "metabolic water," as it is called by Dr. S. M. Babcock, are especially evident in hibernating animals and in those like the camel living for long periods in nearly waterless regions. Fat occupies a unique position amongst the food materials in the blood, for all except the fats are in solution; the major part of the fat, as soon as it passes through the wall of the intestine, appears in the lacteal vessels as a very fine emulsion—which has been termed the molecular basis of the chyle. The particles of this emulsion—the chylomicrons of S. H. Gage⁴—are mostly from $\frac{1}{2}\mu$ to 1μ in diameter and can be seen with great clearness and certainty by the dark-field microscope and can in that way be followed in the lacteals to the thoracic duct; and finally into the blood-stream and in the blood throughout the entire body. By the use of two non-poisonous red dyes—Sudan III. and scarlet red—which stain fat and which cling to its fatty acids through all the digestive changes, we have

been enabled to follow the odyssey of fat in the body—to trace its rebuilding when absorbed, and to chart its entire journey until finally the pink colour indicates where the fat is laid down in the body during the process of assimilation. The pink colour of the emulsion is visible in the lacteals, in the serum of the blood as well as in the fat reservoirs, and shows exactly where the fat is stored.

Experiments were made by Dr. Gage and Dr. Fish on healthy students who volunteered, as well as on cats, dogs, fowls, and rats. Healthy men and animals were fed with fat coloured red and mixed with carbohydrate food and in many cases protein was added, and every hour a drop of blood was taken and examined by the dark-field microscope during the digestive cycle. Neither protein nor carbohydrates, nor any combination of them give rise to fine particles in the blood. Fatty food is the only kind of food that gives rise to the emulsion of these fine particles in the chyle and blood. That the particles were fatty was determined by specific tests. The time after eating fatty food for the particles to appear in the blood is from one-half to one and a half hours. The time required for a given kind and quantity of fat to be digested, absorbed, and to disappear from the blood in any given individual or animal varies from about six to ten hours, but mental conditions were found to influence digestion. Whenever fat is present in any proportion, as in an ordinary meal, the blood of the man or animal shows a gradually increasing number of the fine particles for the first three to four hours, and a decline similar to the increase for the next few hours, till in eight to ten hours the blood is again practically free from the particles. Under normal conditions there is no increase of fat particles in the blood unless fat is taken with the food. The digestibility of castor oil was tested. After fasting from 12 to 20 hours 20 g. of castor oil were used with bread or potato, and a mineral oil (nujol) was similarly used. In both cases there was no increase in the chylomicrons, and it was concluded that there was no digestion of either substance. There was no purgative action until after the usual period for the digestion of fatty food. If a mineral oil is mixed with butter and eaten the butter-fat is picked out, digested and absorbed, and the mineral oil left behind. It takes a markedly longer time to digest and absorb fatty acids than ordinary fats. In a well-nourished man, after prolonged fasting, the remobilised fat appears in the blood as an emulsion of fine particles, comparable with those following the digestion of fat. It would seem that fat passes into the blood from the fat reservoirs as it is needed and at the rate it is needed. The dyes used attach themselves to the fatty acid part of the fat and not at all to the glycerol. As showing the persistence with which the dye clings to and remains with the fatty-acid radical after quitting the living animal, is the fact that if the eggs with red fat in the yolk are hatched, the chicks will utilise it and lay it down as pink fat in their reservoirs, and young mammals sucking the pink milk of mothers fed with red fat will digest the same and lay it down in their bodies as pink fat. In man the average time of a digestive cycle for fat is from seven to nine hours for 20 g. of butter.

This staining method can be used for studying the source of the fatty constituent of milk. Milk-fat in different groups of animals may be derived from different sources. In the cow and other almost purely herbivorous animals it is supplied most largely by the carbohydrates and proteins of the food. It is certainly only in a small degree due to the fat in the food. With carnivorous and omnivorous animals in which fat forms a relatively important place in the natural diet, the milk-fat is derived largely from the fat in the food—i.e., the fatty-acid radicals eaten with the food go to make up the milk-fat. By feeding rats and cats with Sudan-stained fat, pink milk was obtained, but on feeding cows with an abundance of the Sudan dye in the regular feeds, no pink cream was ever obtained from the samples of milk taken at every milking. Moreover, if laying hens are fed with Sudan dye

¹ Kystoscopische Technik, Berlin, 1923.

² Lehrbuch der Urologie, Berlin, 1924.

³ Ann. of Surg., 1924, lxxix., 395.

⁴ S. H. Gage and P. A. Fish: Amer. Jour. of Anatomy, September, 1924, v., 24.

in their food, the fat laid down in the yolk will be red, and if several feedings are given and the eggs boiled and cut across, there will be as many rings of the red yolk as there were feedings. In the domestic fowl the yolk contains about one-third of its weight of fat, and this fat is derived largely from the fat in the food. By the use of coloured fat as a label in the yolk one can tell exactly how long it requires for one of the smallest yellow yolks to reach full size, break from the ovary, enter the oviduct, and have added to its outside the white, the shell membranes, the shell, and be laid. For a hen laying every day it requires from seven to eight days. The stained fat in the yolk does not diffuse its stains into the neighbouring uncoloured fat particles. If hens' eggs with pink yolk are hatched the developing chicks, in utilising the fats, lay down pink fat in their fat reservoirs. If a mammal like a rat, while nursing its young, is given red fat with its food, the young rats fed on the pink milk will lay down pink fat in their adipose tissue. The main absorption of fat from the intestine is from the middle part of the small intestine—i.e., from the jejunum and the first part of the ileum. In rats, cats, and dogs fed on pink fat, pink-coloured fat begins to be laid down first in the peri-renal fat and in the omentum and mesentery; it appears lost in the popliteal, the orbital, and the epidural fat masses. In half-grown rats known to have a good supply of red fat in their adipose tissue and fed on a fat-free diet, it took about 20 days for the pink fat to disappear. This method makes it possible to determine whether a given fat or oil is at all digested and absorbed and to what extent; and in diseased conditions the dark-field microscope demonstrates with great certainty whether fatty food is digested, absorbed, and assimilated.

THE REBUILDING OF MIDDLESEX HOSPITAL.

AT its last meeting the Court of Governors of the Middlesex Hospital was called upon to consider an important communication from its Chairman, Prince Arthur of Connaught, who left England on a visit to India a few days before the meeting was held. For some time past it has been evident that certain portions of the old buildings were far from satisfactory, and as a result of an exhaustive survey conducted by the hospital architect in consultation with the then President of the R.I.B.A. and the district surveyor, two wards were closed. A complete examination of the whole of the old hospital buildings disclosed evidence that the fabric would have to be reconstructed at a cost of at least £60,000, and the question at once arose whether it would be justifiable to spend such a large sum on what at the best could only be the postponing of the rebuilding of the old hospital fabric, which had already stood for over 150 years, was not well adapted to modern requirements, and was so planned as to impede future development. The board decided to adopt a rebuilding scheme involving an expenditure of at least £500,000. Steps have been taken to ensure continuity, and the old Sick Asylum in Cleveland-street is being reconditioned as an annexe, where patients, displaced from the old buildings, will be accommodated. Meantime the wards in the old hospital structure have been rendered safe with timber strutting. The cancer charity, medical school, and research departments are in no way affected by the scheme, and during the transitional period, treatment, medical education, and research work will be carried on exactly as now.

THE DANGERS OF THYROID MEDICATION FOR THE OBESE.

RECENT research has taught us that obesity may depend on many different factors. It may be the outward and visible sign of the vices of sloth and gluttony, and as such it is apt to excite ridicule without pity. But it may also be the expression of a morbid condition, acquired or hereditary, over which the patient has no control; he cannot choose his diseases any more than he can choose his parents. The causes, therefore,

of obesity being varied, it behoves us to elucidate them in each case before we prescribe treatment. It is, perhaps, unfortunate as well as fortunate that we possess in thyroid extracts the means of reducing weight in most cases of obesity, whatever the cause. A panacea may be a very dangerous thing. This is the lesson which Dr. E. Mosler, of the Third Medical Clinic of the University of Berlin, drives home with some vigorous plain speaking in the *Deutsche medizinische Wochenschrift* for Dec. 12th. He writes with the exasperation of the physician who, having treated a number of patients carefully for many years, sees them go to some fashionable institution for the treatment of constitutional diseases, whence they return with slender figures and the well-defined clinical picture of thyroid intoxication. Dr. Mosler gives an account of six cases, observed during the last few months, in which the administration of thyroid extracts, given by the mouth or by injection, did great harm. He had known these patients for years and had withheld treatment by thyroid extracts because he had considered the chief cause of their obesity to be over-feeding. The treatment of such patients is, indeed, a delicate psychological problem. The physician of to-day is confronted by an embarrassing choice. He may think, and if he is rash he may say so to the patient, that his or her obesity reflects more credit on the skill of the cook than on the alimentary austerity of the diner. The difficulties which Dr. Mosler discusses are only a part of a larger problem which recent advances in medicine have made acute. The discovery of insulin and other potent agents in the metabolism of the body has created a very widespread impression that years of sinning against the laws of health may be atoned for with a few injections of an extract of some endocrine gland. There have been times in the history of the spiritual world when it was generally taught that the misdeeds of a life-time could be suddenly neutralised by the judicious employment of appropriate incantations, and at the present time this optimistic tendency to trust to the short cut to reform is very manifest in the world of medicine. Dr. Mosler's aspersions on the conduct of private hospitals will not, we believe, find any general echo in this country, but in his discussion of the dangers of wholesale thyroid medication he has undoubtedly given prominence to a danger which is not confined to Germany.

PULMONARY INFECTION WITH VINCENT'S ORGANISMS.

Dr. Clyde McNeill,¹ of the Medical Clinic of the Halstead Hospital, Kansas, remarks that the spirochaetes and fusiform bacilli of Vincent are widely distributed throughout the entire world, and have been known to cause a great variety of lesions in the human body, including infections of the skin, external ear, middle ear, gums, mouth, throat, gastro-intestinal tract, trachea, and bronchi. He now records a case of pulmonary infection with these organisms, of which no previous example to his knowledge has been reported in the literature. The disease was clinically and bacteriologically indistinguishable from pulmonary tuberculosis, but was easily diagnosed by a stained smear of the sputum, and cleared up like magic under treatment by intravenous injections of salvarsan. Dr. McNeill's patient was a man, aged 36, who on admission to hospital had been suffering for two months from progressively increasing weakness, loss of weight, constant cough with muco-purulent sputum, epigastric discomfort, and occasional attacks of diarrhoea or constipation. There was no trace of ulceration or inflammatory changes of any kind in the mouth or pharynx. There was diminution of resonance over the upper third of both lungs anteriorly and posteriorly with intensification of the whispered and spoken voice, and there were a few moist râles at the apices after coughing. X rays showed areas of consolidation of varying intensity in the parenchyma of

¹ Bulletin of the Johns Hopkins Hospital, November, 1924.

the lung involving both upper lobes and presenting a striking similarity to the lesions seen in advanced active pulmonary tuberculosis. When the sputum was examined several hours after collection various bacteria were found, but no fusiform bacilli or spirochaetes. When it was examined one to two hours after collection a few spirochaetes were found but no fusiform bacilli, but immediately after it was coughed up it was found to be an almost pure emulsion of spirochaetes and fusiform bacilli. The patient was treated by intravenous injections of neoarsphenamin, the first dose consisting of 0.6 g. and the next three of 0.9 g. on each occasion. After the second injection the general malaise, cough, expectoration, pulmonary consolidation, and gastro-intestinal symptoms disappeared. The patient gained 32 lb. and was hard at work two months later.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CIII.—THE TREATMENT OF CARBUNCLES.

A CARBUNCLE is due to a molecular necrosis of the subcutaneous tissue, the result of infection with the *Staphylococcus aureus* or, in about 10 per cent. of cases, with the *Streptococcus pyogenes*. Little liquefaction of the necrosed tissue takes place and healing can only occur after the large central slough has been extruded. Carbuncles occur only in debilitated patients, and are a frequent complication of constitutional disease such as diabetes. The aims of treatment can be divided into two main classes—general and local. General treatment must be directed at (1) increasing the patient's resistance to the spread of infection, (2) elimination of toxins, (3) the production of sleep. Local treatment must secure (1) the relief of pain, (2) the removal of all necrotic tissue, (3) the arrest of infection in the surrounding parts, (4) epithelialisation of the raw surface after separation of the slough.

General Measures.—The patient's resistance to infection is increased in proportion to the degree of control of any constitutional disease from which he may be suffering; his general strength must be kept up by judicious feeding, the feeds being light, nourishing, and given at intervals of two hours. Eggs and milk should be the staple articles of diet. In cases where the patient's resistance is much lowered resource should be had to blood transfusion as an initial step in treatment. Vaccine treatment in severe staphylococcal infections is disappointing, often resulting in a temporary depression of the patient's resistance; for this reason vaccine and serum therapy is not advised in the acute stage of the disease, although small doses of an autogenous vaccine sometimes produce benefit in the later and chronic stages. Elimination of toxins is accomplished by flushing out the kidneys and bowels and promoting gentle secretion from the skin. Treatment is started by a saline purge and the bowels must be kept open each day by an adequate dose of salts; where there is evidence of intestinal decomposition small doses of calomel, gr. $\frac{1}{4}$ hourly up to gr. 1, should be given for three days. Large quantities of fluid, lemonade, barley-water, or "imperial drink," must be taken; a gallon a day is not too much. Finally, where the patient is well enough he must have a warm bath once or twice a day, or failing this a blanket bath. Sleep must be obtained at all costs. Where pain is the predominant factor in keeping the patient awake an adequate dose of morphia should be given.

Local treatment may be operative or non-operative, but in all cases immediate steps should be taken to give the patient as much relief as possible while other arrangements are being made. The affected part should be kept at rest, as every movement causes pain; where a limb is involved it should be placed on a splint. A wide area around the carbuncle should be shaved and cleansed thoroughly with soap and water or ether,

and then large fomentations made by wringing out several layers of boric lint in boiling water should be applied to the inflamed area and covered with jaconet and a thick layer of cotton-wool. Fomentations should be changed at half-hourly intervals except when the carbuncle is situated in such a position as to necessitate moving the patient and causing him undue discomfort.

Operative Treatment.

This should be looked upon as an emergency operation; a delay of 24 hours or more so that the patient may be "properly prepared" entails a great deal of unnecessary suffering and intoxication. The enema is the only stage of the routine preparation that need be taken. A general anaesthetic, not simple gas, should be given, so that the operator may have ample time to attend to the details of his task and may secure the dressings in position before the patient comes round. When the patient is anaesthetised any further shaving that may be necessary is done and the operation area thoroughly cleansed with ether. It is better to avoid the use of any coloured antiseptic such as iodine or picric acid at this stage as the extent of inflammation in the skin may be masked by the stain. There are two main operations practised for carbuncle: total excision of the diseased tissue by a circular cut, and incision. The latter is the method of choice in the majority of cases. An incision is made extending throughout the whole length and depth of the diseased tissue; a second similar incision is made crossing the centre of the original incision at right angles to its course. Four triangular flaps are thus mapped out covering the whole extent of the carbuncle. Each flap is raised in turn and all necrotic tissue is removed with sharp scissors, so that a fresh bleeding surface is left on the inside of the flaps and on the base of the operation area. Oozing may be controlled by packing tightly for two minutes with gauze wrung out in hot saline. Where there is intractable bleeding it is best dealt with by touching the bleeding points with the actual cautery, and for this purpose there is no better instrument than an ordinary soldering iron.

When all hæmorrhage has been controlled the wound is packed with gauze soaked in a concentrated solution of magnesium sulphate; jaconet and then a thick layer of absorbent wool are applied and the patient returned to bed. The dressing must be changed at the end of 24 hours and after that will probably require renewing twice a day. The advantage of the magnesium sulphate dressing is that it promotes a free flow of serum which tends to wash out toxins from the wound and to limit the spread of infection. Healing appears to be more rapid with this than with any other method. Its great disadvantage is that it requires frequent changing.

An alternative to the magnesium sulphate dressing is bipp. A little bipp is taken on a piece of gauze and rubbed firmly into the walls of the wound, all excess of ointment is sponged away and the cavity packed lightly with gauze. This dressing may be left in position for two or three days and then renewed under gas.

A popular method of treating the wound after removal of the slough is by cauterisation with carbolic acid. Each of the four flaps is held back with a tissue forceps and then a tiny gauze mop is taken in a pair of pressure forceps and dipped in liquid carbolic acid. This is dabbed over the walls of the cavity, care being taken to avoid the skin edge. The cavity is then sponged dry and packed with gauze. It is claimed for this method that it arrests all hæmorrhage and kills off any organisms that may have been left behind after the excision of tissue. Also that carbolic acts as a local anaesthetic and the patient is spared much pain after the operation. The disadvantages of the carbolic treatment are that the new sloughs take a long time to separate and healing is correspondingly retarded. Again, if carbolic be applied over a large surface there is some risk of carbolism from absorption. As an alternative to carbolic acid, fuming nitric acid has been employed, but it has little to recommend it.

After-treatment.

All first dressings should be performed under gas anaesthesia. The gauze dressing should be soaked before being removed and then the wound cleansed by irrigation with saline, eusol, or hydrogen peroxide (4 vols.). In replacing the packing care must be taken that the edges of the wound are packed well open and are not allowed to become undermined. The skin around the wound should be well cleaned at each dressing with ether; this minimises the risk of infection of the neighbouring hair follicles, with the formation of a crop of boils. Too much emphasis cannot be laid on the importance of keeping "the injured part at rest" whether by splinting or sand bags. Should it be found at any time that carbuncle formation is continuing in the edge of the wound the diseased area must be completely excised at a second operation. After excision of a carbuncle the wound ultimately heals by granulation, epithelialisation taking place from the edge. Where there is a large surface to be covered the process may be considerably hurried by the use of the Thiersch graft or by secondary suture.

Non-operative Treatment.

The most successful method of treating carbuncles without operation is that devised by the late A. E. Morrison and is dependent on the brisk flow of serum induced from the tissues around the carbuncle by the application of a paste of magnesium sulphate. The following was his method of preparing the paste: "With 1½ lb. of dried magnesium sulphate are mixed 11 oz. of glycerine acid, carbolic, and pure glycerine. The dried magnesium sulphate is in the form of a white powder which contains 12 per cent. less water than the ordinary commercial Epsom salts. The glycerine is put in a hot mortar and the sulphate added, the paste being slowly stirred and mixed with a warm pestle. The result is a thick white cream, so hygroscopic that if exposed to the air it rapidly absorbs moisture and becomes fluid. It must therefore be preserved in a covered jar." The area round the carbuncle is shaved, cleansed with ether, and carefully dried. A thick layer of the paste is spread on a piece of lint and this is applied directly to the carbuncle and surrounding skin. The lint is covered by a piece of jaconet and then by abundant cotton-wool. A profuse discharge of serum is induced and it is generally necessary to change the dressing twice in 24 hours. There is great relief of pain after the first or second dressing, and in the majority of cases the central slough separates in a few days. In the meantime, with the discharge of serum, toxic symptoms are considerably abated, the temperature falls, there is less headache, and the patient feels generally better.

After separation of the slough Morrison recommended packing the cavity with strips of sterile lint wrung out in a saturated solution of magnesium sulphate to which glycerine had been added in the proportion of 5 oz. to the pint. The subsequent treatment is the same as that employed after operation. The one great advantage of this treatment is that an operation is avoided. Against this are the facts that it is slower and more uncertain than operative measures. It should be reserved for those patients who refuse operation or who are unsuitable subjects for a general anaesthetic.

"Malignant" Carbuncles.

Carbuncles situated on the nose, or on the surrounding part of the face, so frequently prove fatal that the term "malignant" has been applied to them. Infection from them is prone to travel through the angular vein and its connexions into the skull and cause cavernous sinus thrombosis. Radical operative measures should always be applied from the first in dealing with "malignant" carbuncle even if the plastic surgeon be required to complete the treatment.

H. ERNEST GRIFFITHS, M.S. Lond., F.R.C.S. Eng.,
Surgeon to the Albert Dock Hospital; Senior Demonstrator of Anatomy, St. Bartholomew's Hospital Medical School.

Medicine and the Law.

REX v. BATEMAN.

BEFORE MR. JUSTICE SHEARMAN at the Central Criminal Court, on Friday, Dec. 12th, 1924.

Counsel for the Prosecution: MR. PERCIVAL CLARKE, MR. H. D. ROOME, and MR. J. D. PURCHASE (instructed by the Director of Prosecutions). Counsel for the Prisoner: SIR EDWARD MARSHALL-HALL, K.C., and MR. ARTHUR DAVIES (instructed by Messrs. Amery Parkes and Co.).

Readers need no reminding that the charge here was that Dr. Percy Bateman, during conduct of a labour, had caused the death or accelerated the death of a patient by failure to call in a second medical practitioner and to arrange for an immediate operation. Sir Bernard Spilsbury, for the Crown, intimated that if the woman had been operated upon she might have survived, and that she would have been a fit subject for operation before her final removal to hospital, where she died. Dr. Bright Banister, obstetric physician to Charing Cross Hospital, and Dr. Hubert Roberts, obstetric physician to Queen Charlotte's Hospital, gave evidence for the defence, as did the defendant himself. Dr. Banister stated that in his opinion immediate removal to hospital would have destroyed any chances of survival and that he could see no evidence that any more favourable time for removal could have been selected, a point on which the practitioner must be the judge.¹ Dr. Roberts said that the woman was in acute danger from shock and a major operation would have been inadvisable.

The Judge's Summing-up.

The verbatim report of the summing-up of Mr. Justice Shearman follows:—

MR. JUSTICE SHEARMAN. Members of the Jury, this is a tragic case. It has been argued, and you have heard the evidence of very eminent people, and I am glad you heard it because it is a matter which demands your most anxious consideration, and I am sure will receive it. The charge against this man, who is a member of the medical profession, is that he by gross negligence has caused the death, or, if he has not caused it, has accelerated the death of a woman. It is a serious charge and I think you quite understand it. Although we are dealing with matters that laymen find it difficult to understand, I think some of you have been in the jury-box before and understand this, that the function of the judge is to explain the law to you, and also, to the best of his ability, marshal the facts and put them in detail to you, but the sole question as to what inferences are to be drawn from the facts which you find to be true and how far you believe or trust one witness rather than another, is entirely for you. I will endeavour to do my part of the matter, and I am sure you will do yours.

I want first of all to explain the law to you. The law is that anybody who causes the death of anybody else—it does not only apply to a doctor, it applies to motor drivers, railwaymen, or signalmen—it applies to a number of people—anybody causing the death of anybody else is criminally responsible. It is equally clear law that no one is criminally responsible for what I call, making a mere mistake, and it is really for the jury to draw the line between what is called making a mere mistake, an error of judgment, and doing something which is grossly and palpably wrong. I have only one objection to make to the law as put before you by the Counsel for the defence: that a man is bound to do to the best of such skill as he has. That is not quite accurate. A medical man who practises for profit the medical profession professes skill; he does not come and say: I am an unskilled person—he is engaged and

¹ See p. 51.—ED. L.

professes skill. Of course, you will understand it is not for every humble man of the profession to have all that great skill of the great man in Harley-street; but, on the other hand, they are not allowed to practise medicine in this country unless they have acquired a certain amount of skill; they are bound to show a reasonable amount of skill according to the circumstances of the case, and you have to judge them on the basis that they are skilled men, but not necessarily so skilled as more skilful men in the profession, and you can only convict them criminally if in your judgment they fall below the standard of skill which is the least qualification which any doctor should have. You should only convict a doctor of causing a death by negligence if you think he did something which no reasonably skilled doctor should have done. You have got to consider if this man in anything he did fell below the level which you expect of a doctor—below that degree of skill which you think you have the right to expect of a doctor—by no means the extreme skill which everybody knows of, but that degree of skill which you expect from a doctor who attends an accouchement and who is taken to know his business. There is one other thing about the law I have to say, and that is, some doctors at times have to deal with people who are very ill and are bound to die, and it is no good to say: "Oh, I gave the wrong physic, but she would have died afterwards"; and I shall leave it to the Jury to say whether the death was caused or accelerated by the treatment administered. In adopting the word "accelerated" you have got to act with great caution. It really means this: That you think by the treatment the patient died when otherwise she would not have died substantially at the time she did. You will consider carefully, and it is only right that you should consider carefully: Well, if he had done something else she would have lived a day longer, and whatever her chance was, her chance of living was taken away by his attitude. You will apply that test. That is all the law I will explain to you.

Members of the Jury, I want to shortly go through the evidence, because this, as I say, is an anxious case for all concerned. You must neither neglect the case of the woman nor neglect the interests of a man in an honourable profession; he is being tried criminally and alleged to be the cause of her death. This woman was the wife of a poor man, a builder's labourer. She had had four children and was acquainted with the pangs of childbirth. She expected her fifth child in the third week in July and she had provisionally engaged the services of a midwife. She had had pains on the Monday and they passed off in the afternoon and you may think, it is entirely for you, that she knew she was not going to be delivered at once because she was experienced. At any rate neither she nor her mother sent for the midwife. She had pains on the Tuesday and they passed off in the afternoon. It is said by the defence that these were three days of labour, and it is said by the prosecution these were ordinary preliminary pains. On Wednesday labour came on and in the afternoon she sent for the midwife. The midwife she had engaged could not come and the lady you heard yesterday afternoon came. It is entirely for you, you have seen the witness, and if she is to be belittled I am a little astonished because she gave evidence in favour of the defence. She said she had had over 30 years' experience, and she said she came in the afternoon before the doctor came in, and that if this delivery had gone off properly no doctor would have been sent for at all. She was there to assist the lady and she said she put her hand outside the stomach and she felt the living child. She also said in cross-examination that she did put her finger in and she felt, she thought, the symptoms of a head. In ordinary delivery a child comes through the womb either head first or feet first; either of them are proper modes of delivery. Putting her finger in she felt the head and for some time, more than an hour, nothing happened and the pains continued and she said: This is beyond me, I will send for a doctor,

and she asked the mother herself who she wanted, and Dr. Bateman was mentioned, and Dr. Bateman was eventually sent for, and some time after 10 o'clock in the evening he arrived. While I am dealing with her evidence let us recollect this, that what is called the vagina is the entry into the womb; what is called the uterus is the womb. The uterus itself is a species of bag with a mouth which is fastened, because the mouth down below is firmly fixed to the flesh; it is itself a sort of bag with muscles and full of blood-vessels and it is fastened at the top and sides with what are called broad ligaments. The doctor came in and took his coat off. When he found two other people in the room prepared to assist at this childbirth besides the midwife he, admittedly quite properly, ordered them out of the room. The midwife had dressed this woman in her nightdress and skirt, which is usual for childbirth. The woman was put on the bed and the doctor began to work away and the child would not come. It is admitted he worked away with her, and according to his account in the letter, he had to use great violence or great force. Do not take the "violence" against him, it means "great force." He worked at this for an hour. There is one thing, of course, you will notice, and that is that during the whole of the time the midwife was there; she was looking on and assisting, and she makes no complaint of his violence or force. You will bear that in mind, and that is why I wondered that this lady's evidence was attacked and they tried to say she was not able, when her evidence is for the defence, which is, of course, that there was nothing done by him in that room which was to her, as a midwife, anything that was improper. He worked for an hour and the child came out dead. During the whole of the time, and this is the evidence of the midwife, blood was flowing freely and the child was produced. Let me pass on till we come to the post-mortem to find out what really did happen. Because all the four doctors, the doctors called for the prosecution and the defence, happen to agree on a theory, that is no reason why you should accept it, but it may make you ready to accept it when you find the competing authorities agree. No one disputes that the bladder was ruptured and that there was a rupture of at least two inches. No one disputes that, the intestines being crushed against the sacral bone which comes near there, there was a wound in the intestines as well only done by pushing; at some time or another I should have mentioned that the doctor used instruments for a minute and then stopped, and he gave them up, and no one suggests any harm was done by the use of instruments. For about an hour he was pushing the child, this being what is called a difficult presentation, and at any rate the foetus or small baby was cross-wise across the womb, if nothing worse. "Transverse," as you know, means "across," and it should come head downwards or feet downwards and the proper business is to turn it and get it out. It would appear that during the course of the hour's work that this man gave to procure the childbirth the womb was broken, ruptured, and injury was done to the bladder, and injury was done to the intestines, and he produced the child dead. When he had produced the child dead the woman then was in a state of collapse; she had been bleeding freely and that was noticeable to him and the midwife as well, but the midwife does not recollect that he gave her some strychnine in order to revive her. She says she does not recollect it, but the doctor says he did. That is the midwife's account. I will give you the account of what happened after the child was produced; it was a full-time child. She says this: "Then he went for the placenta." That is a Latin word—it is a kind of membranous stuff which is in the habit, if things go all right, of coming out itself—or it is also called the afterbirth. "He delivered the child; he tied the cord and separated the child and I took it away and put it on the bed. He went for the placenta. This was going to be put into the chamber"—which she afterwards called a vessel. "I saw him remove the

placenta; he pulled it out sharply. I handed him the vessel to put it in. There had been a considerable flow of blood and after the placenta was taken away the bleeding ceased to a certain extent and Mrs. Harding seemed very feeble. After the placenta had been brought away the doctor said, 'Leave her in bed, she is very low and very feeble,' and then he got ready to go and I asked him to examine the placenta before he went and I put it on a chair. I looked at it and I did not know what it was. I said, 'What is this? I never saw anything like that before'; he said, 'Good God, what have I done?' I said, 'I do not know, what is it?'; he said, 'Do not you know?' and he then told me it was the uterus. I said, 'Surely not,' and he said, 'Whatever shall I do?' I said, 'I do not know,' and he removed the placenta and he said, 'Give me something to wrap it up in and I will take it away.' He put it in his bag and took it away. I asked him if he did not think the poor woman ought to go away. That expression is always used, and it means to be taken to the hospital, because you know that with these poor people the Harley-street or second opinion, or more skilful opinion, is obtained at the hospital and not by calling in an expensive doctor to give another opinion. He then washed his hands and went away. She remained a little while. She does not say in this court that the doctor told her not to say anything, but he admits that he told her not to say anything, and he says it was because "I thought the woman was going to die and I did not want to shock the relatives by letting them know what had happened." The woman was left in bed and the mother-in-law and sister-in-law came in the room. The woman was put on her side in bed and the midwife and doctor went away and she was left there and neither came back till the next morning.

That is the whole of the evidence with regard to what is called the first part of the case. It is said that this man so treated her that by his treatment he committed all these injuries, he ruptured the womb, he ruptured her bladder in pushing about, and he caused the injuries to her intestines; and in the same way it is said that when he came to pull out the placenta instead of pulling the placenta out of the womb he caught hold, not of the placenta, but of some tear or slit in the torn womb and with a tug, the expression was "a sharp pull," he pulled it away. It is said by the Crown that that shows that in doing this, and in pulling out the womb, he was guilty of gross negligence. It is said on behalf of the defence, and they called eminent surgeons—it is said on behalf of the defence: Well, the nurse saw nothing wrong with the way he treated her although the force was used and necessary, and it was unfortunate. It is said there was no gross negligence, and it is for you, if you feel any doubt, to see that the prisoner gets the benefit of the doubt, but are you satisfied on that that there was gross negligence? The doctors called for the defence say this; they say "Oh, it is quite reasonable to mistake a tear in a womb for the placenta." That is entirely a matter for you, and it is a view not entirely accepted by the doctors called for the prosecution, although they agree in cross-examination that after all this working a portion of the womb might be torn, but a reasonably skilful man might know the difference between pulling a womb and something that might be adherent to the inside, and the prosecution call attention to the fact of the steady outflow of blood and say that in pulling out the womb he was guilty of gross negligence, and the defence say, a very natural mistake in the circumstances of the case. The witnesses called for the Crown took this view; they took the view that the pulling out of this was a matter which people ought to see; and the witnesses for the defence take the view it is natural, there is no gross negligence, at any rate it is quite a natural thing under all the circumstances of this difficult presentation to make a mistake. Dr. Spilsbury said it would want some considerable force, whatever happens, to pull away the womb; it came away with one ovary and one tube attached to it. It was said by Dr. Spilsbury there must have been some considerable force to get

it away, and the defence say it might easily come away if there was some damage done before.

Let me pass on to the second question. The Crown first of all say there was gross negligence, and you will not find it unless you are quite satisfied of it, in pulling away the womb at all—in what he did before and in pulling it away. It is suggested by the defence nothing of the sort, at most and at worst it was a very difficult case, and at most and at worst it was a mistake, and we say it was not negligence, it was the sort of thing that might happen in this remarkable case. It is admitted that the coming away of the womb in the case of a child-birth is almost unknown. Dr. Spilsbury in his wide experience has only heard of it twice, and the doctor who was in charge of Queen Charlotte Hospital said: "I have had under my charge 60,000 cases and I have never heard of such a case," and the other witness said he had not heard of such a case. Dr. Spilsbury said when it has happened before, in his experience the child has died at once.

MR. DAVIES. Dr. Banister said he had two cases.

MR. JUSTICE SHEARMAN. I think he said as regards turning the womb inside out; certainly at the hospital he said there had been no case, but at any rate it does not matter whether they heard of one or two cases, it is an extremely rare case, and one of those cases where the experts differ. As you know, expert witnesses who come are called to say they have read the evidence and give their views and give their evidence on their instructions. Dr. Spilsbury for the Crown says this is what is called a transverse presentation and until evidence was given before the Coroner, in the letter and in the evidence given by the nurse, it was never said this was a difficult case—it is a transverse presentation, which means cross-wise. When this man gave evidence before the Coroner he made it much clearer that it was what is called a complex case, and that it was what is described as a transverse presentation. In ordinary language transverse means cross-wise, and he means the whole thing was doubled up. When you find differences in expert witnesses you must remember the Crown witnesses were giving evidence on the assumption that this was a transverse presentation and the whole of the evidence for the defence was given on the assumption that the child was doubled up in the way you saw the rubber doll doubled up. If you think it was not transverse at all you may consider that it weakens the evidence for the Crown, but on the other hand the evidence for the defence is considerably weakened if you believe it was given on the basis that there had not been one day's labour but three days, and, secondly, that the presentation, such as it was, was this extraordinary and difficult presentation of head and feet together when it is said the child was dead. The Crown say that is not true, that the child was evidently alive, and if the child had been all this time with its head and feet together it could not be alive, and that that story given at the inquest or to the expert witnesses at all events is not accurate.

Passing away from that and summing-up the first case, if you think and are quite satisfied that it was his treatment in tearing away the womb—previous to and up to tearing away the womb—you will convict him; if you are not satisfied and think there was no negligence at all, or if you have a reasonable doubt whether there was gross and culpable negligence up to that point, you will acquit him. Then this man went away, and let me trace the doctor's movements. He went away and came back the next morning and he never examined or did anything to the broken ligaments or the broken blood-vessels. The womb had gone and there were there injuries which he knew nothing about, and I daresay they could only be discovered by examination, but he did nothing. Afterwards he came twice every day and I think he sent a sleeping draught and came and called to inquire how she was. On the first day he called he saw the witness Miss Lehoux, I think it was, and he said "How is she?" and she said, "She is getting on." "Oh, that is very funny," he said, because he was surprised she was alive; and to another witness on the Friday, Mrs. Barwick, he said, "I am surprised to hear she is

still alive." He came again on the Saturday and on the Sunday and on the Monday, and on the Monday or the Sunday night the nurse came to see him and the nurse said, "Ought not this poor woman to go away to hospital," and he said, "I will see about it." Eventually three times during the course of the day somebody went round to the house and left messages for him, and finally, at 5 o'clock, he made an order for her removal, but before we get to the removal let us see what the other witnesses say, because there is a conflict of evidence which you have to decide. The nurse is not in the place all the time; she goes away. She knew what had happened; she knew the womb had gone; she was the only other person who did know. She came the next morning and she saw this patient once a day. Her view was that this woman was slowly and gradually collapsing; she never was any better. That was the nurse's view. On the other hand, that is not the view of the members of the family. This is the husband's account of it anyhow—I am mentioning this on the question of whether removal was possible or not; the husband said, "On Friday she was very weak and she continually vomited"—that is agreed—"that she did not keep anything down." Dr. Spilsbury's reason was: He said there was paralysis of the bowels; they were unsupported and she was paralysed; the other witnesses say it was not paralysis, but I do not know that it matters very much, but the witnesses say she could not eat anything. "On Friday she was bright, but still weak and vomiting." They say on the Sunday morning in the daytime she was much brighter, but night came on and she became worse and she had bad pains on Sunday night, and it may be that was the peritonitis, which is inflammation of the coating of the stomach, and she got worse and she was in continuous pain all the Sunday night. That is roughly the evidence. The doctor may have said, "I am surprised she did not die; I expected her to die at the time." But in the meantime from that time to this he had done nothing to her; he had sent her Epsom salts to try and clear her bowels and they were immediately ejected—she could hold nothing and there was nothing done by local injection. The case presented by the Crown is this; they say when once this womb was torn away there were broken blood-vessels, or whatever they are, and there may have been no flowing of blood afterwards because this poor woman's circulation was nearly gone and it may have been that these veins tend to clot and they do not go on bleeding. What is said by Dr. Spilsbury is this; he says here was the womb out and there was nothing to support the pelvic floor, and the intestines must drop as soon as she got up, and something had got to be done to see that the bowels were kept from prolapsing, which means falling down, and to see that these wounds which had been bleeding were in some way sewn up or fastened so that there was a chance of her recovery; and Dr. Spilsbury particularly says unless something was done recovery was hopeless—unless this floor was "restored," was, I think, his expression. He said there must have been death unless the floor was restored. All these experts I say are giving evidence on facts put before them; they were not present and did not see the woman. He says as soon as she rallied sufficiently from the state of collapse she ought to have been fit for an operation. What is said by the Crown is that what this man has done is this: That he knew he had pulled away something; and whether he was guilty of gross negligence in his conduct up to that time of pulling out the womb is a question for you, but knowing he had done it he was guilty of gross dereliction of duty in doing nothing for her thinking she would die, and she would not have died when she did if something had been done for her; and it is for you to say whether what he did in taking away the womb and telling nobody about it, not treating her in any way and not sending her off to the hospital, was because he thought he would avoid inquiry into his previous conduct by letting this woman die

of neglect. That, substantially, is the case for the Crown on the second part of the case, and they say substantially he was guilty of grave wicked neglect and culpable neglect of duty in not taking some steps to remedy what had been done by his own fault, or if you do not think it was gross negligence they say he ought to have done something to try and save this woman's life, but he did not do anything because he wished to save his own reputation.

That is the case for the Crown. The case for the defence is admittedly she was very weakened: "I could not get Harley Street to help me; I did not take her to the hospital because she was up four flights of stairs and it would have killed her to take her down." It is admitted that she was taken away four or five days afterwards; she was taken away and lived for something like 30 hours after she went from there to the hospital on Monday morning and she died very late on Tuesday night. She lived 30 hours after she had gone, and if on the Thursday or Friday she had gone they might have done something to save her life; but the case for the prosecution is: You did nothing and accelerated her death at the time it was caused. If you have a doubt the prisoner gets the benefit. The case for the defence is: This was hopeless and the only thing to do was to leave her quietly to die instead of taking her to the hospital and that he thought the best thing was to let her die and leave her where she was. The experts for the defence agree it would have been a good thing to try something in the nature of drainage, but an operation was hopeless. But they had not seen the woman, nor had Dr. Spilsbury, and they are only giving such advice on the material put before them. The material put before them is that the woman was very weak, and it is said she was rallying a bit on Friday up to the Sunday morning and something ought to have been done. What is clear, and that you will have to bear in mind, is that admittedly she had not a very good chance once the womb was removed. But the case for the Crown on the second part of the case, which it is for the Crown to prove to your satisfaction, is that owing to the breach of duty in concealing the fact and not letting anybody do anything to help her, not communicating with the hospital, doing nothing, and it is suggested with an expectation that she would die, he substantially accelerated her death and took away any chance this woman had of being saved or having her life prolonged by an operation. Whether she could have had an operation and what was her state of body and health depends on the inferences you draw.

Let me pass on to what evidence there is from this man himself. When he did send her to the hospital his view was she would die at once if sent. Admittedly she got very much worse on the Sunday evening. The nurse sees him on the Monday, and on the Monday afternoon sends a letter, and this letter runs as follows: "Dear Dr. Wiggins"—we only saw his assistant Dr. Buchanan—"Dear Dr. Wiggins, I was sent for on Wednesday last by a midwife to attend a Mrs. Harding, of 25, Norfolk House, Deptford; she had been in labour for over two days; the labour was transverse"—you notice there is not a word about it being doubled up; I will say something about that again later—"I delivered her after considerable trouble. On extracting the placenta I found to my surprise that the uterus came with it." I will hand this letter to you, you are the judges of it. It is said that was not a candid letter. It is said a certain impression would be given to the doctor—for the placenta to come away with the uterus is an almost unheard of thing—and that the meaning of those words is that he extracted the uterus and put it in again. This is his story: "Evidently the uterus had been expelled into the pelvic cavity sometime previously and the uterus had contracted firmly on the placenta; she was very collapsed"; and then comes this remarkable statement: "She has been doing fairly well until the present but is now in a bad way and cannot be looked after at home. I am therefore sending her to the infirmary." If that means anything it means "I thought she would recover at home, but now she has got worse and I am sending her

to the infirmary." It is said it is not the real truth, but he was trying to keep something back. You are not trying the question of whether he was keeping something back, but whether he was guilty of gross negligence. The woman was taken to the hospital. She was very bad when she got there but she was conscious. On the Tuesday she was becoming rapidly unconscious. She lingered till about 2 A.M. on the Tuesday night and she died. Then there was inquiry made and there was a post-mortem examination. The matter was brought before the Coroner about a week afterwards. This man was not summoned before the Coroner, but a message was sent by the Coroner's Officer that there was going to be an inquest on this woman and he went, and the uterus was asked for, and he said he had got it and went back for it; there were some snips at the side of it and he gave the explanation that when he took it home he thought of this extraordinary thing and he cut it up to see what it was and there was nothing. Those are the historical facts. Do you think, assuming you are satisfied by the prosecution that in pulling away the womb at all and the acts preceding, that he was guilty of gross negligence and culpable negligence in causing her death?

Then you come to the second head: Was he guilty of gross or culpable negligence in accelerating this woman's death by so neglecting her from the time that he knew her uterus had been removed? If you are quite satisfied that the woman wanted treatment and, from the history of the case, that if she had had some treatment her life would have been prolonged, you will find him guilty; if you have any doubt about it you will find him not guilty. I will remind you of what I said to you at the outset, that you have to be satisfied, not only that he was guilty of gross and culpable negligence, but that he caused or accelerated her death; and there again is this difficulty, and you have to weigh it, that Dr. Spilsbury says that in his view her life would have been prolonged and she had a reasonable chance, not a strong chance, of surviving, if those tears and wounds had been attended to and the danger of blood poisoning by septic poisoning had been attended to by treatment. Even the doctors for the defence admit, although they do not say it was culpable negligence, that if there had been some effort to drain—an operation, they say, was impossible from their view by the facts put before them—if something had been done—(there was urine coming through—there was a crack or small hole in the intestines and stuff was coming through and was likely to cause the peritonitis which afterwards ensued)—it would have been better. There is only one other matter, and you have to be satisfied before you convict the prisoner, and that is the evidence he gave before the Coroner. It runs as follows, and I will hand it over to you: "I was called to see the deceased on Wednesday, July 23rd, shortly after 10 P.M. I found her in labour and was informed that she had had pains for two days previously. I could feel the head quite easily. I gave chloroform and applied instruments; they slipped at once." Then he adds this: "It was a transverse position, the feet, head, and cord were all presenting together." There is no hint of that in his letter; there is no hint until he comes before the Coroner. It is said by the Crown when he is on his defence and he is called to explain that, then he is giving a different account to what he gave before. The account he gave then was: "It was not, strictly speaking, a transverse presentation, it was head and feet together," what one of the doctors said was a complex presentation, and then he says, "Immediately I put my hand into the vagina I found a foot. I had great difficulty in turning the body because the child was outside the uterus; it was in the pelvic cavity; it had been expelled into the pelvic cavity." Everybody agrees now, his experts and himself, that when he says "When I put on the instruments I did get hold of the head, but I maintain that the child was in the pelvic cavity and outside the uterus at that time"—I do not want to go into the difficulties as to what is meant by the

pelvic cavity, because I think it is now admitted by the defendant and his witnesses that obviously he was wrong in that statement; and, of course, the fact that he put up a statement or defence which is wrong makes you scrutinise more closely his conduct, but it does not necessarily prove because he made a mistake in his account of it that he was guilty of gross negligence in what he did. Then he goes on to say: "When I first saw the patient she was not collapsed." Then he says: "I found it difficult to push the head back because it was outside the uterus but eventually I did deliver her after being under chloroform for at least an hour, feet first by manual traction. I had to use tremendous violence. I had to wring my shirt when I went to bed, I had sweated so much over the job. It was the hardest case I have ever had. After delivering the child I extracted the placenta immediately. It was in the uterus, it came away quite easily. The room was badly lit at the time and the mother was practically dead at the time. I placed the placenta and what I thought was the membranes hurriedly in the chamber and attended to the mother in order to save her life. I felt the woman's pulse and found it was absent. I gave her a hypodermic injection of strychnine after which she rallied slightly. Both Mrs. Cleak and I placed our hands over the abdomen to see if the uterus was contracting and to our surprise we could not find the uterus. Mrs. Cleak then brought me the chamber and I found that the uterus was there and the placenta was inside the uterus which had thoroughly contracted over it. Therefore when I saw what had happened I did not want to shock the relatives and I told her (Mrs. Cleak) to say nothing about it." So that only about a fortnight afterwards he then did not present the same story which he presents here, that this was not strictly a transverse presentation but it was this head and feet presentation which caused so much difficulty, and which is admittedly the most difficult of all the presentations, and almost unknown in the history of childbirth, and which is very, very rare at any rate. I give that to you at the last because it again presents his case as it is put here, and his case as put here is this. He says: "I concealed the fact that the uterus was taken away. I said in this letter the uterus was away and I told the hospital authorities that on the Monday, but I did it for the best. The motive, the reason, I left her there was I thought if I took her away she might die; it would kill her on the spot to take her away—and therefore it was a legitimate exercise of my opinion to let her stop there." It is said by the Crown: Nothing of the sort, he should have done something, and the reason he left her there unattended to was to save his reputation and not to save or benefit the patient.

That is the whole case. If you are satisfied that either in the way he delivered the child or in the way he acted afterwards he acted with gross negligence and thereby caused her death, you will find him guilty; if you are not satisfied you must acquit him on that part of the case. If you think after the womb had come away his conduct and neglect of her substantially accelerated the date of her death—if you are quite satisfied of that you will convict him on that part of the case. If you feel any reasonable doubt on either theory you will give him the benefit of the doubt and acquit him. Will you please retire and consider your verdict?

(The jury retired at 4.5 and returned into Court at 5.15, a bailiff being sworn to take charge of the jury.)

THE CLERK OF THE COURT. Members of the jury, have you agreed upon your verdict; do you find the prisoner, Percy Bateman, guilty or not guilty on this indictment?

THE FOREMAN OF THE JURY. Guilty, my Lord.

THE CLERK OF THE COURT. You say that he is guilty and that is the verdict of you all?

THE FOREMAN. It is.

Mr. JUSTICE SHEARMAN. Have you anything you want to say, Mr. Davies? There is nothing against this man: there is no justification for calling the police or anything of that sort?

Mr. DAVIES. I feel the agony of this verdict is sufficient and nothing I can say will—

Mr. JUSTICE SHEARMAN. I appreciate what a serious thing a conviction is. I hope nobody will think I treat a charge like this with levity in giving a short sentence. I appreciate with a professional man what a crushing blow a conviction is itself, and the sentence of the Court is six months imprisonment in the Second Division.

Special Articles.

INFECTIOUS DISEASES ABROAD.

THE following general summary is compiled from the monthly Epidemiological Reports published by the Health Section of the League of Nations, supplemented, when possible, by more recent information from other sources.

Plague.—The most important occurrences since the issue of the last summary¹ are a new outbreak in the Azores and the apparent cessation of the outbreaks at Lagos (Nigeria) and Los Angeles (California). In the Azores the locality affected is about three miles from Ponta Delgada, the chief port of the island of St. Michael. Eight deaths were reported during the week ended Dec. 12th. The epidemic at Lagos, which began at the end of July and attained its maximum during the week ended Oct. 13th, is reported to have ceased in the second week of December. The total cases notified during the epidemic were 406 and the deaths 337. In the Los Angeles outbreak² the pneumonic cases apparently ceased during the week ended Nov. 5th, but they were followed by several cases of bubonic type. The latest information available, dated Dec. 6th, reports one new case of bubonic type from the area originally infected. Other recent occurrences in different parts of the world were: United States, one case at New Orleans week ended Dec. 9th; Brazil, two cases at Bahia week ended Dec. 11th; Peru, 24 cases during October, of which 14 occurred at the port of Lima; Egypt, one case at Port Said week ended Dec. 2nd; Algiers, three cases during November; Senegal (French West Africa), 161 cases between August 11th and Sept. 10th; Union of South Africa, in four States or Provinces between Oct. 7th and Dec. 4th 24 cases, of which 20 in the Cape of Good Hope Province were reported to be of pneumonic type.

Cholera.—In India as a whole the curve of cholera incidence for the year began to slope downwards after August and is now approaching its lowest level, but it is evident that when the total figures of cases and deaths for the present year are known, they will greatly exceed those of 1923 and 1922. Outside India there are very few cases at present.

Yellow Fever.—The cessation of yellow fever in the Republic of Salvador was officially notified on Nov. 13th, when 19 days had elapsed since the last reported case in Ahuachapan and 29 days since the last case in San Salvador City. Measures for the reduction of *Stegomyia fasciata* have been prosecuted energetically for several months and it is now considered that the risk of spread has ceased. In British Honduras three cases, one being fatal, were notified between Nov. 18th and 22nd in a locality 19 miles west of the port Stann Creek. The colony was officially declared free on Dec. 12th.

Typhus.—There has been no noteworthy change in the incidence of typhus in the various countries of Eastern Europe since the issue of the last summary. At Constantinople between Nov. 9th and Dec. 6th five cases with one death were notified.

Small-pox.—The small-pox situation remains favourable in nearly all European countries. In Switzerland the cases notified up to the end of November this year numbered only 1226 as compared with 2119 during the same period last year. No case was notified during the week ended Nov. 29th. In Spain the epidemic, which had caused over 900 cases in Madrid and neighbouring towns during the three months from August to October, was officially reported on Nov. 14th to be at an end. Jugo-Slavia was free from the disease from July to the end of October, but in November a new outbreak occurred in Bosnia-Herzegovina.

Enteric Fever.—The usual autumn wave of enteric fever is obvious in the monthly returns from most countries and is more pronounced in several countries than it was last year, particularly, for example, in Sweden, Finland, Poland, Czecho-Slovakia, Hungary, and Bulgaria. In Germany enteric fever was more prevalent during the whole summer than in 1923 or 1922, but the incidence declined rapidly after the middle of September. In Italy the incidence during September and October compared favourably with the incidence during those months of 1923.

Scarlet Fever and Diphtheria.—The increased prevalence of these diseases continues in Germany and Poland, but in the Balkans the situation is more favourable than last year. The following are some recent statistics of deaths in certain European cities: Paris, Nov. 20th to 30th, four deaths from diphtheria, four deaths from scarlet fever; Berlin, week ended Nov. 22nd, three deaths from diphtheria, one death from scarlet fever; Warsaw, week ended Nov. 22nd, three deaths from diphtheria, ten from scarlet fever; Copenhagen, week ended Nov. 22nd, two deaths from diphtheria, one death from scarlet fever; Vienna, week ended Oct. 11th, three deaths from diphtheria, one death from scarlet fever.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Minister of Local Government and Women Doctors in Asylums.

THE Ministry of Local Government and Public Health appears to have been unfortunate in the drafting of a letter sent recently to the committee of management of the Grangegorman Mental Hospital, in reference to the filling of a vacancy among the medical officers of the Portrane Branch. According to the reports of the meeting of the committee, as given in the daily press, instructions were received that as regards medical officerships only men were to be appointed, although the vacancy was due to the resignation of a woman doctor. When questioned on the matter in the Dail, Mr. Burke, Minister of Local Government, stated that his letter gave no general order as to future appointments, but was a particular order dealing only with the existing situation. At the present time, he said, in Portrane Mental Asylum there were two lady medical officers, and there had been considerable indiscipline amongst the male patients of the asylum, and it was considered desirable that a male doctor should be appointed to the next vacancy in order to get over that difficulty.

The Woman Medical Officer's View.

The Minister's explanation might have been considered adequate if the duties of the officer to be appointed were on the male side of the asylum. That this is not so is made clear by a letter from Dr. Kathleen Meade, the medical officer who has

¹ THE LANCET, Dec. 6th, 1924, p. 1198.

² THE LANCET, Dec. 13th, 1924, p. 1251.

just resigned. The letter was published in the daily papers, and stated:—

"I note that the Minister said: 'It is quite obvious that where male patients have got out of hand it is more desirable that a male medical officer should be appointed to deal with them.' To avoid the misunderstanding that may arise from this statement, perhaps you would allow me to point out that my duties at Portrane since my appointment comprise the charge of the female patients and female staff, and relief duty for the male medical officer who has charge of the male patients and male staff, the latter only being emergency medical attendance. The question of 'discipline' amongst the male patients was not within my province."

"As the vacancy occurs on the female medical staff, it should be obvious that, in the interests of the public and the patients, a woman medical officer ought now be appointed."

It looks as if the Minister of Local Government were trying to escape from a false position into which he had been led by some of the more reactionary members of his staff. It is well, however, that he was tackled on the subject at once, as it would be deplorable if any obstructive policy on the part of his department were to interfere with the employment of women doctors in asylums.

Payment of Asylum Medical Officers.

It is not only in regard to the employment of women doctors in asylums that the Ministry of Local Government is tending toward a reactionary policy. In the same letter to the Grangeogorman Committee as was mentioned above, it was laid down that future appointments to assistant medical officerships should be made at a salary of £300 without allowances for a period of two years' probation. At the end of that time the salary should be increased by £50 a year. The chairman of the committee pointed out that if such a salary were adopted, the medical officer would be paid less than the head attendant. The resident medical superintendent added that it would be impossible to go to the medical profession with such a proposal, as the pay would be less than that given to the carpenter. It does not appear whether the Ministry thinks that the discipline which it so much desires would be promoted by making the tradesmen superior to the medical officers.

Queen's University, Belfast.

Sir William Whitla was appointed a Pro-Chancellor of Queen's University, in place of the late Sir Samuel Dill, at a meeting of the Senate on Dec. 23rd. Sir William Whitla resigned his active duties as professor of materia medica and therapeutics a few years ago, and was then elected to represent the University in Parliament, when the ability which he had shown in the science and practice of medicine became equally evident in his work as a politician.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Is Nervous Disorder Blameworthy?

I HAVE been asked by a prominent Edinburgh citizen whose work, though he is not a doctor, brings him in contact with nervous disorder, why it is that in Scotland such disorders—hysteria and the like—and even definite insanity are regarded in some way as criminal or as highly blameworthy. His point is this, and I give it as far as possible in his own words:—

"I have known one case of suicide from this cause. The victim's relatives could not rid themselves of this notion, and though they were affectionate in their behaviour, they nevertheless conveyed the idea to the unfortunate patient of being a guilty encumbrance upon the earth. To take a less serious example, I have heard a man who spent three years on the Western Front complain bitterly of the contempt with which certain persons at home treated him when his nerves finally broke down. Another individual who had suffered from several severe attacks of depression and had been treated with considerable injustice both by his near relatives and business acquaintances, finally decided

to emigrate from the country in the hopes of finding a more humane atmosphere elsewhere. Cases also occur where an organic incurable disease is treated as a mere nervous symptom which could be got rid of by an effort of the will. It seems to be certain that in melancholic cases the condemnation of relatives and of the world is a confirmation of the patient's own condemnation of himself and exerts an enormous pressure against him. Such persons often behave in public, it is true, in an excited manner and give the impression of conceit, when they are in fact only in a state of extreme morbid anxiety and depression."

"The cases I have mentioned occurred in Scotland, where the effect of the severe Calvinist religion still lingers. The Sheriff-Substitute of Ross and Cromarty at Stornoway, in Lewis (i.e., the county court judge) stated in letters to the *Scotsman* some months ago that religious melancholia is more frequent in Lewis than in the other islands of the Outer Hebrides whose inhabitants are Catholics, and I have heard this opinion confirmed by a doctor who had made some investigations into lunacy in these islands. In England, life is more humane and civilised than in Scotland, owing to the gentler type of religion and the long period in which tradition and culture have had the opportunity of development, and it is possible that such cases as those I have mentioned are in comparison with Scotland less frequent. In glancing at the literature on this subject I have not noticed many references to the effect of the hostile attitude of the world upon the nervous or the mentally diseased, except in Clouston's 'Hygiene of Mind.'"

My informant, further, is of opinion that much might be done by the medical profession to create a more humane and intelligent public opinion. He feels that condemnation has a demoralising and even fatal effect in alienating the victim from the world, whereas respect and consideration have the opposite effect. In the Middle Ages the insane were flogged. He considers that the treatment which the mentally disordered often receive nowadays is less violent, but essentially no less brutal.

St. Andrews Institute for Clinical Research.

The work at the Institute, St. Andrews, for the spring term will deal with various aspects of the question of renal efficiency. The meetings are held in the Institute on Tuesdays at 4 P.M., and the syllabus promises an interesting series of papers and discussions. The subjects for discussion during January are the following: Metabolism with special reference to the Kidney, on which Prof. E. P. Cathcart, of Glasgow, will read a paper; the Eye and the Kidney, a lantern demonstration by Dr. Maitland Ramsay; the Clinical Application of Tests for Renal Efficiency (Prof. Adam Patrick). On Thursday, Jan. 22nd, Prof. F. J. Charteris will give a demonstration of kidney cases in his wards in the Royal Infirmary, Dundee, and a meeting of the Association for Clinical Investigation will be held in the Royal Infirmary, Edinburgh, on Saturday, Jan. 31st. All practitioners are cordially invited to all meetings of the Institute.

Edinburgh University Extensions.

At a recent meeting of the Edinburgh University Court, the Principal, Sir J. Alfred Ewing, announced that substantial donations had been recently made to the University in response to repeated appeals. At the time of the graduation of the Prince of Wales last month it was announced that Sir Alexander Grant had made a gift of £50,000, and more recently other donors have given sums amounting to £16,600. Much more, however, is still required to allow the most urgent wants to be met. It was decided to proceed at once with the scheme for the alteration and extension of the department of surgery in connexion with the grants recently received from the Rockefeller Foundation for the development of clinical teaching and research.

Royal Infirmary, Edinburgh: Retiral of Mr. Alexander Miles.

At a meeting of the Edinburgh Royal Infirmary on Dec. 22nd, at which the Lord Provost presided, the retiral on Dec. 31st, 1924, of Mr. Alexander Miles, senior surgeon to the infirmary, was announced, in accordance with the infirmary regulations as to tenure

of office. Mr. Miles was appointed house surgeon to the Royal Infirmary in 1889, his chief being Mr. Alexander G. Miller, now the doyen of the surgical profession in Edinburgh. Ten years later he became assistant surgeon and in 1910 was promoted to the rank of surgeon, his retirement at the present time marking a milestone of 15 years' service in the wards. The board expressed their gratitude for Mr. Miles's services by asking him to allow his name to be placed on the roll of consulting surgeons, and in the minute which embodied this request a sincere tribute was paid to his professional judgment and skill. Mr. Miles, in conjunction with the late Prof. Alexis Thomson, was the author of one of the best known text-books produced by the Edinburgh School of Surgery, and wrote an admirable monograph on the history of the school. For many years he was surgical editor of the *Edinburgh Medical Journal*.

Glasgow Western Infirmary Jubilee.

At the annual Christmas meeting of the friends of the infirmary and members of the staff, Colonel J. A. Roxburgh, Chairman of the Board of Managers, announced in his report that the financial position of the infirmary was in a more satisfactory position than it had ever been at any other period of its history. Colonel Roxburgh said that 50 years ago last month the Western Infirmary had opened its doors for the reception of patients, and since 1874-75, when the number of indoor patients was 1253, the infirmary had been growing in usefulness and in accommodation. In the first year the number of outdoor consultations was 5916, while last year it was 149,325. The wards in the original building numbered eight, to-day the number of wards was 32. Originally intended as the clinical school for the University on its then new site at Gilmorehill, the infirmary had throughout its history maintained a close connexion with the University, and the Regius Professor of Medicine and the Regius Professor of Surgery still conducted their clinical teaching in the wards of the Western. The Western Infirmary was one of the earliest hospitals in the country to start an X ray department and this had been in active operation for a number of years. In the research department the progress from the small room in which Dr. Coates began the work in 1875 had been almost beyond belief had they not the splendid buildings of the pathological institute and the clinical laboratory and the work done in them as a reminder of the strides made in this connexion within the last half century. One of the latest additions had been the massage and electrical department which was now a recognised school for training. The teaching of nurses had also of late years been very much developed and rendered more efficient. With regard to finance the Chairman said that although the ordinary income had never been wholly adequate, yet it was encouraging to note the way in which the employees in the public works had within the last few years come to recognise their responsibility in the matter of helping the various charitable institutions carried on for their benefit. Although the finances for 1924 were satisfactory, nevertheless the gap between ordinary expenditure and ordinary income still remained very wide.

New Operation Theatre for the Royal Infirmary, Montrose.

At a recent meeting of the board of the infirmary a resolution was passed permitting the erection of a new operation theatre at an estimated cost of £17,000, and to devote £500 donated to the infirmary by Sir James Warwick, of Edinburgh, and also part of £2500 bequeathed by the late Mr. W. Slogie, of Montrose, for this purpose. At the same meeting it was announced that the late Mrs. McCay, of Londonderry, a native of Montrose and daughter of the late Adam Burnes, a well-known Montrose solicitor, had left the residue of her estate to Montrose Infirmary, Londonderry Infirmary, and St. Dunstan's Hospital. The sum bequeathed to the Montrose Infirmary is understood to be considerable.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENTS.)

Public Health Congress.

DELEGATES from all over the Union of South Africa gathered on Nov. 24th at the Scientific and Technical Club, Johannesburg, for the second annual Public Health Conference. Dr. Ernest Hill, the medical officer of health, East London, presided, and many interesting communications were made.

Municipal Milk Control.

Durban is at the present time in the throes of controversy over the new draft Milk By-laws. The dairy-keepers declare that these by-laws will bring their ruin, and contend with some reason that the milk-supply of Durban is not inferior to any in the world. The whole subject of milk control was dealt with by Dr. S. J. Clegg, formerly deputy M.O.H. for Newcastle-on-Tyne and now M.O.H. for Durban, at the Johannesburg Congress. The dairy inspector, Dr. Clegg contends, is not to be regarded as a policeman. The sanitary conditions of Natal are good, and the milk by-laws in South Africa generally already in advance of those in force in England and Wales. Everything turns on the firm and sympathetic administration of these by-laws. Medical opinion at the Congress was, on the whole, in favour of pasteurisation, although recognising the value of raw milk.

Plague in South Africa.

A conference on plague, called by the Minister of Health of the Union of South Africa, was held at Bloemfontein on Nov. 13th under the presidency of the Minister of Health, the Hon. D. F. Malan.

The Minister, in his opening address, recalled that it was over 20 years since plague had been first introduced into South Africa, and referred to the fact that in India since its reintroduction in 1896 11 millions of persons had perished from the disease in that country. The Government had decided to increase their grant to the South African Institute for Medical Research with a view to further research on the subject, and to equip a mobile field laboratory. The elevator system of handling grain was proving a blessing in this connexion, but a year or two would elapse before it was in full operation. Dr. J. Alexander Mitchell, Secretary for Public Health and Medical Officer of Health for the Union, reviewed the ætiology of plague, its history, and the present position of the disease in the country, giving a table of its regional and colour distribution for the last 24 years. In 1924 the districts concerned included Albert, Colesberg, Bloemfontein, Boshof, Brandfort, Bethulie, Hoopstad, Kronstad, Lindley, Senekal, Heilbron, Philippolis, Smithfield, Winburg, Wolmaranstad, and Krugersdorp. The incidence so far recorded this year was 51 whites with 27 deaths, and 303 coloured with 195 deaths. No definite evidence was obtained as to what agency was keeping the infection alive, but veld rodents were suspected. In 1920 an investigation into the rodents and small animals in the affected districts was begun by Mr. Austen Roberts, naturalist to the Pretoria Museum, and Mr. Powell, an expert tracker and trapper. In February, 1921, a farmer in the Kronstad district sickened and died of plague. He had been in the habit of taking a mid-day siesta under a clump of bush near his farm, and a large colony of gerbilles and multimammate mice were found close by this, thoroughly infected with plague, and several dead bodies of the animals were found on the surface of the ground. Since then the existence of widespread plague infection of veld rodents had been demonstrated. It was regarded as probable that the present outbreak was the result of the recrudescence of plague infection amongst wild rodents that had been acquired by them during the plague prevalence of 1900-05. The infection had been found most commonly in the gerbille, which was

a purely nocturnal animal, rarely seen by man, and rarely or never entering dwellings. The other animal principally affected was the multimammate mouse, which lived sometimes in gerbille burrows and sometimes in dwellings or outhouses, taking the place of the domestic mouse in these districts. The area in which the veld rodents were infected with plague measured 50,000 square miles. The growth of the rodent population had been greatly encouraged by the destruction of their natural enemies, the jackals, lynxes, and cats, the clearing of bush which used to harbour owls and hawks, and the great development of mealie growing. During the epizootic certain areas were kept free from rodents so as to form "plague fire-belts." These held good for a time, but later the infection spread around them.

Having set out the existing situation, Dr. Mitchell discussed future risks in regard to local spread, spread to the large towns, and spread overseas, and in the discussion after his address the main conclusions arrived at were the following: (1) That persistent and well-organised propaganda should be undertaken with a view to enlightening farmers and others as to the mode of spread of plague and the means of combating it. (2) That scientific research into the problem involved should be undertaken and subsidised. (3) That the number of expert rodent inspectors and demonstrators should be increased. (4) That all buildings should be made rat-proof, so as to "build out" the rodents. (5) That plague-carrying rodents on farms should be controlled and limited in numbers. (6) That the natural enemies of these rodents should be protected and fostered. (7) That by the use of grain elevators and the rat-proofing of grain stores precautions should be taken against conveying rodents from infected areas. (8) That vigilance committees should be formed in infected areas to institute and coördinate measures for dealing with plague and rodents.

The First Doctors Trained in the Transvaal.

Johannesburg has this year, for the first time, produced its own doctors. The medical students of the Witwatersrand University recently held their final examination, when the four successful candidates out of an entry of 13 were Messrs. B. I. Kany, L. Klein, G. F. Slade, and G. C. Thompson. It is understood that all these recently qualified men will shortly take up appointments at the Johannesburg General Hospital.

A dinner in honour of the Faculty of Medicine of the Witwatersrand University was given by the final year students at the Trocadero, Johannesburg, on Nov. 15th. Mr. C. Duthie presided, and among those present were Sir William Thomson (Principal of the University); Dr. A. J. Orenstein, President of the local branch of the British Medical Association; Prof. J. M. Watt, Dean of the Faculty of Medicine; and Dr. R. P. Mackenzie, superintendent of the General Hospital.

The Leprosy Committee.

The Minister of Public Health (Dr. Malan) has appointed a leprosy committee to consider and advise the Union Government regarding leprosy research and other matters relating to leprosy in the Union. The personnel of the committee is as follows: Dr. J. A. Mitchell (Secretary for Public Health and Chief Health Officer), chairman; Dr. W. Watkins Pitchford (Director, South African Institute for Medical Research, Johannesburg) or his deputy; Prof. A. W. Falconer (Professor of Medicine in the University of Cape Town); Prof. O. K. Williamson (Professor of Medicine in the University of the Witwatersrand); Dr. A. Pijper; Dr. F. C. Willmot (Assistant Government Health Officer); and Dr. G. W. Robertson (Government Pathologist).

Medical School for Natives.

At the last meeting of the Council of the South African Native Conference, held at Alice, Cape Province, the question of a medical school for natives

was discussed at some length. The principle of erecting such a school in connexion with the College has already been adopted and approved by the Union Government, and classes for the first year of the course will be opened in 1925. In this connexion the appointment of Mr. J. Macdonald, M.A., of Greenock, as lecturer in botany and zoology was confirmed.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

"Impregnation" by the First Husband.

A CURIOUS case of insanity which has recently occurred has started Parisians discussing a very old problem. A man married a widow by whom he had a son, and in this son the second husband found more and more points of similarity to the first husband who had been dead some five years before the child's birth. The idea that this child was born "impregnated" by the mother's first husband became fixed in the mind of the second husband, who spent his time comparing the gestures and features of this child with those of the alleged "impregnator." This retrospective and, as the Parisians call it, "uterine" jealousy, provoked its victim to acts of violence, necessitating curtailment of his personal liberty. Cases such as this are not unknown to alienists, and less interest attaches to the incident itself than to the discussions to which it has given rise. What, it may be asked, does even the average educated man of the middle classes know of the modern teachings about such matters? To put the matter crudely and concretely, what would a gentleman farmer say if a thoroughbred bitch were mated with a mongrel dog and a year later with a thoroughbred? Would he be able to say definitely whether the second litter would show no evidence of its mother's previous mesalliance? The fact of the matter is that the "knowledge" of the man in the street, not to mention the man in the country, is biblical and traditional rather than Mendelian in this matter.

Virisection Filmed.

Thanks to the initiative of Mr. Desvieux, who is on the Municipal Council, credits have been voted for the preparation of six educational films showing some of the lessons to be taught by vivisection. Recently one of these films was demonstrated by Dr. Laugier, Prof. Lapique's assistant, and the spectators collected in one of the amphitheatres of the Sorbonne followed with great interest a film showing a dog being operated on under a general anaesthetic. It is hoped that this and similar films will prove of considerable educational value to students of medicine, and that this device will *ipso facto* reduce the number of operations performed on animals for teaching purposes. A committee of physiologists has taken part in the preparations of these films, the technical details of which must have strained the ingenuity of even the best cinema experts. The first films will assuredly not prove to be technically perfect, and even when they become so, if this ever happens, it is doubtful if their teaching value will be great.

The Anti-venereal League.

A general meeting of the National League against Venereal Diseases was held recently in the large amphitheatre of the Faculty of Medicine in Paris. Mr. Le Beau, Councillor of State and Director of Public Hygiene, was in the chair, representing the Minister of Public Hygiene; representatives were also present for the Minister of War and the Cardinal Archbishop of Paris. Alongside Dr. Jeanselme, President of the League, were seated delegates from the French Red Cross, from the International League of the Red Cross, and from the International Union against Venereal Disease. Dr. Jeanselme outlined the work of the League during the past year, and Mr. Le Beau then detailed the present position of the

campaign in France. The financial credit accorded to the League was, he said, insufficient for the work it did. Dr. Queyrat gave a lecture on the organisation of the fight against syphilis, and the meeting concluded with a demonstration of a cinematographic film entitled Syphilis, the Social Scourge.

Communal Vitality.

It is laid down in French law that when the mortality-rate for any one commune exceeds for three consecutive years the average mortality-rate estimated for the whole of France, special steps must be taken to deal with factors causing such unsatisfactory state of local public health. Dr. René Martial pointed out recently to the Academy of Medicine that this formula was somewhat rudimentary, on the grounds that, even if there is a direct relationship between the mortality-rates and the health of a commune, this relationship may vary greatly, nor does it constitute the only indication of health conditions in the commune. In fact, the mortality-rate may be normal, whereas the actual conditions of life in the commune are very unhealthy. The health conditions of a commune should not, therefore, be assessed by the mortality-rate alone. The assessment should be based on a knowledge of the morbidity of the commune from the individual point of view as well as from the collective standpoint. This view-point gives due proportion to health and social aspects, and allows a proper appreciation of the vitality of the commune. Further, it is of great practical importance, as to reduce the mortality-rate—a relatively easy matter—is alone not enough. To this conception of the racial characteristics of the commune coupled with living conditions, Dr. Martial gives the name of communal vitality.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Jubilee of the Deutsche Medicinische Wochenschrift.

THE *Deutsche Medicinische Wochenschrift*, commonly called *D.M.W.*, has recently celebrated the fiftieth anniversary of its birth. The journal was founded in 1874 by the late Dr. Börner, of Berlin, and from the beginning it differed from other journals of the time in that, apart from scientific articles, it dealt extensively with hygienic, social, and professional questions. When Dr. Börner died in 1885, his journal had already obtained a firm footing, and under his successor, Dr. Gutmann, its position was further strengthened by the fact that one of its most distinguished contributors was the late Prof. Koch, who contributed his fundamental articles on the tubercle bacillus, tuberculin, and the cholera bacillus in the *D.M.W.*; also the articles of Prof. v. Behring on the diphtheria bacillus and on diphtheria antitoxin appeared in that journal. Dr. Gutmann died in 1893, after eight years in the editorial chair, and his successor was the well-known Prof. Eulenburg, with Dr. Schwalbe, then a young man, as co-editor. Prof. Eulenburg retired from the *D.M.W.* in 1903 to devote himself exclusively to his great standard work, the "Realencyclopädie der gesammten Heilkunde," and Dr. Schwalbe is now sole editor. The works of Prof. Ehrlich on chemotherapy, of Prof. Wassermann on immunisation, and of Prof. Bier on regeneration appeared in the *D.M.W.*, where also the first Röntgen photograph of a hand was published in 1895. During the war the journal was thinned down to about half its former size—from 1352 pages per half-yearly volume to 778—but in the past five years the *D.M.W.* has regained its full vigour and will certainly continue to be one of the leading medical journals of the world. On the occasion of the jubilee a special number has been published, containing a history of the journal, together with articles written by leading medical men on the development of medicine and its branches and on the history of the medical profession in Germany during the past 50 years.

Juvenile Coronary Sclerosis.

Before the Berlin Medical Society Prof. Klemperer described a case of sclerosis of the coronary arteries in a girl, aged 13 years. In the history of the case measles, varicella, and an attack of hæmaturia five months previously were recorded. The patient was brought to hospital in September for dyspnoea, general debility, and sleeplessness: examination showed bilateral dilatation of the heart, murmurs at the mitral valve, swelling of the liver, oedema, and cyanosis. Slight albuminuria and cylindruria were stated to be present. After ten days the condition became suddenly worse, pericardial frictions were heard, and radiography revealed a pericardial effusion. Under cardiac tonics there was a temporary improvement only and the child died with increase of oedema, dyspnoea, and anuria. The post-mortem examination findings were somewhat surprising; there was a large hæmopericardium, caused by a rupture of the heart over the apex of the left ventricle which proved to be aneurysmal. The coronary arteries showed sclerosis and fatty degeneration of the intima, the lumen being obstructed by thrombosis. Sclerosis was further present in the aorta, the subclavian and the carotid arteries and in the arteries of the brain. Cases of arterio-sclerosis in children have been observed in a few instances as an accidental symptom, but the special feature of this case was that the sclerosis of the coronary arteries was primary and had led to a rupture of the left ventricle.

The Battle of the Clubs.

While the battle of the clubs described in these columns has come definitely to an end in the greater part of Germany with the retention of the free-choice system, in Berlin the position is only that of an armistice. Notwithstanding this armistice, the Berlin clubs continue to take measures which are detrimental to the interests of the profession. They have established surgeries of their own and pretend that these surgeries are more comfortable, in a better hygienic condition, and better provided with modern apparatus than the consulting-rooms which the medical men use to attend their club patients. In these surgeries the medical attendants are full-time medical officers appointed with a fixed salary, who by their contracts with the clubs have renounced the right of private practice. It is obviously the aim of the clubs to spread the system of surgeries owned by the clubs and worked by full-time medical officers, who in this way are totally dependent on the goodwill of the club boards. The medical profession have protested against these measures as being contrary to the terms of the armistice. They point out that it is not by new apparatus and lavishly furnished consulting and waiting rooms that a patient is cured but by the skill of the medical attendant. Proceedings before a court of arbitration have not given a decisive result and the Government has kept a neutral attitude toward that important question. At a great protest meeting held in the town-hall of Berlin, in the presence of representatives of the Government, the medical faculties of the German universities, and the leading medical societies, a resolution was passed that the independence of the medical profession was absolutely necessary for the welfare of the nation.

Death of Prof. Trendelenburg.

The death is announced of Friedrich Trendelenburg, one of the most celebrated surgeons of the old school in Germany. He was born in 1844 in Berlin, a son of the renowned professor of philosophy at the university, who was a fervent antagonist of Hegel's doctrine. He studied medicine in Berlin and on qualification he went for post-graduate study to Glasgow and to Edinburgh. He then became an assistant to the great surgeon, Prof. Langenbeck, in Berlin, and in 1874 was appointed chief surgeon to the newly opened municipal Friedrichshain Hospital in the capital. Having held that office for one year only, he became ordinary professor of surgery at the

University of Rostock and then at Bonn. In 1895 he succeeded the late Prof. Thiersch as professor of surgery in Leipzig, where he lived until 1912. In that year he retired to his native city to enjoy there an *otium cum dignitate* in one of the fashionable suburbs. His work concerned operations on the larynx and the abdomen; the Trendelenburg tampon cannula devised by him to prevent blood from entering the lung after tracheotomy, and the Trendelenburg position for laparotomies will connect his name for ever with the great progress of surgical technique. Other works of his concerned operations for strictures of the oesophagus and cancer of the stomach. After his retirement from office he wrote a history of the German Surgical Association, of which he had been president, a work which was in fact a history of general surgery during the past 50 years.

NATIONAL HEALTH INSURANCE.

APPEALS FROM MINISTERIAL DECISIONS: THE NEW RULES.

PROVISIONAL rules have been drawn up by the Rule Committee of the Supreme Court for regulating appeals and references to the High Court under the National Health Insurance Act, 1924. The proposal involves the repeal of Rules 1-11, both inclusive, of Order LV, B and the substitution of the following rules and title:—

NATIONAL HEALTH INSURANCE ACT, 1924.

1. An appeal under Section 89 of the National Health Insurance Act, 1924, from a decision of the Minister of Health shall be instituted in the King's Bench Division of the High Court of Justice by originating notice of motion.

2. Any person who is aggrieved by, and is desirous of appealing against, a decision of the Minister of Health may, within 21 days from the date of the decision, or within such further time as the Minister may allow, by notice in writing addressed to the Minister, stating the grounds of his appeal, require the Minister to state a case setting forth the facts on which his decision was based, and his decision thereon, and the Minister shall, as soon as may be, state the case and send it by registered post to the person aggrieved. A case stated by the Minister shall be signed by him or by such person as he may authorise in that behalf.

3. An originating notice of motion shall be filed in the Crown Office at the Royal Courts of Justice within 21 days of the despatch of the case, or within such further time as the Court may allow, and the notice of motion shall at least 21 days before the time fixed by the notice for making the motion be served upon the Minister and, together with a copy of the case, upon every party to, or person served with notice of, the proceedings before the Minister. The notice of motion shall be in the form No. 18B set out in Part II. of Appendix B, and shall state the grounds of the appeal. The case shall be entered in a list to be kept at the Crown Office for that purpose.

4. Proceedings on a reference of a question under proviso (iii) to Section 89 (1) of the National Health Insurance Act, 1924, by the Minister of Health to the High Court for decision shall be instituted in the King's Bench Division by originating notice of motion in the form No. 18C set out in Part II. of Appendix B. The notice of motion shall be filed in the Crown Office at the Royal Courts of Justice and shall be entered in the list referred to in the last paragraph.

5. The Minister shall state the question referred by him to the Court, together with the facts relating thereto in a case stated and signed in the same manner as on an appeal.

6. The Minister shall serve the notice of motion, together with a copy of the case, upon the person or one of the persons as between whom and the Minister the question has arisen, at least 21 days before the time fixed by the notice for making the motion.

7. Upon the hearing of an appeal or reference the Court shall have power if it thinks fit to amend the case or to order the case to be sent back to the Minister for amendment or to receive further evidence.

8. The Court in all cases of appeals or references shall have power to draw inferences of fact from the facts set forth in

the case, and shall determine all questions arising thereon, and in all cases of appeals shall have power to reverse, affirm, or amend the decision appealed against or to make such other order as it may think fit, including any order as to costs.

9. The decision of the Court on an appeal or a reference shall be embodied in a certificate to be signed by the judge at the hearing and the original thereof shall be filed in the Crown Office and a copy thereof sent by the Crown Office to the Minister of Health and to the parties appearing at the hearing of the appeal or reference respectively.

10. The ordinary practice and rules of the King's Bench Division shall in so far as the same are applicable and are not inconsistent with this Part of this Order apply to proceedings under this Part of this Order.

11. Nothing in this Part of this Order shall be construed to affect any right vested in the Crown by virtue of the Royal Prerogative.

(New forms of notices of motion are set out in an appendix to take the place of the old forms 18B and 18C which are annulled.)

These Rules, which may be cited as the National Health Insurance (Procedure on Appeal) Provisional Rules, 1924, will come into operation as from Jan. 1st, 1925. The Rules are dated Dec. 16th, 1924, and are signed by Viscount Cave (Lord Chancellor), Baron Hewart (Lord Chief Justice), Sir Ernest Pollock (Master of the Rolls), Sir Henry Duke (President, P.D. & A. Division), Lord Justice Sargant, Mr. Justice Sankey, Mr. Justice Roche, Mr. Justice Lawrence, and the following well-known barristers, Mr. T. R. Hughes, Mr. E. W. Hansell, Mr. C. H. Morton, and Mr. Roger Gregory. They may be obtained from H.M. Stationery Office, price 1d.

ENCEPHALITIS LETHARGICA IN MANCHESTER.

Dr. W. St. C. McClure, of the Public Health Office, Manchester, has prepared a special report on this disease in Manchester during 1924. It attacks young people especially; the mortality is heavy, and in many of the survivors the disease is progressive and destructive. During the nine months ending Sept. 30th, 1924, 263 persons were reported to be suffering from this disease in Manchester, and 230—122 males and 108 females—after investigation were accepted as true cases. Persons of all ages were attacked, but the incidence fell most heavily upon those under the age of 21 years; 24 males and 19 females died. No particular occupation influenced the spread of the disease. This evidence obtained during this epidemic does not support the view that there is a direct association between an outbreak of influenza and this disease. As to the frequency of certain symptoms, vomiting occurred at the beginning of the illness in about 10 per cent. of the cases and headache in 36 per cent. Pronounced lethargy with or without nocturnal insomnia was present in 70 per cent. Insomnia and delirium without lethargy was a marked feature in about 30 per cent. of the cases. Paralysis of one or more cranial nerves occurred in 40 per cent. Double vision was complained of by 101 persons, or about 44 per cent. of the total, and in addition 18 persons complained of hazy vision. Nystagmus was noted in 10 per cent. Spasms and twitches occurred at the beginning of the illness in 31 per cent.; hiccup in eight cases. The outstanding feature of the epidemic was the frequency of diplopia as a symptom of onset. In a considerable number, diplopia and some drowsiness were the only symptoms displayed. Of the 230 cases, 102 were removed to Monsall Hospital, 60 were treated in other institutions, and 63 were nursed at home. The duration of stay in Monsall Hospital of non-fatal cases varied from 14 to 104 days, the average being 38 days. As to the sequelæ, it is too soon to determine the end-results of the illness upon those attacked during the present year. Of 55 survivors whose illness began at least six months ago, 19 have been recorded as totally incapacitated, 26 as partially incapacitated, and 10 as recovered. There were 50 cases in the years 1920-21. Of these, 28, or 56 per cent., died. Examination has recently been made of the 22 survivors, and it has been recorded that five were totally incapacitated, the disease rapidly progressing towards complete helplessness; four were able to do housework only, and 13 were able to follow their employment or attend school, though not all of them had completely recovered. Complete recovery was noted in seven cases.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH: A BRIEF SURVEY.

THE usual circular has been issued by the Ministry of Health with regard to these reports. The circular points out that the annual report for the year 1924 will be an ordinary report, but that the report for 1925 will be a survey report, in which the medical officer will be expected to deal comprehensively with the progress made in his area during the preceding five years, with the extent and character of the changes made during that period in the public health services of his area, and with any further action in the development of the public health services contemplated by the local authority or considered desirable by the medical officer himself.

We have commented at some length in previous issues on the reports of medical officers of health for 1923. This year was noteworthy both for the lowness of the death-rates from all causes and the low infant mortality-rates which were the rule. Owing to the comparative absence of influenza the death-rates from the respiratory diseases were considerably lower than in 1922. The reports generally showed that the introduction of the Milk Designations Order had stirred up considerable interest in the milk problem. In many districts there were clean milk competitions which secured the coöperation of dairy farmers in the production of a clean milk-supply. The reports from the districts where the milk clauses are in operation do not, however, indicate any lessening in the proportion of tuberculous milk. Prof. J. B. Buxton, F.R.C.V.S., dealt with this matter in an interesting paper read before the Farmers' Club on Dec. 8th, 1924. He showed that there was no reason to suppose that the prevalence of bovine tuberculosis or the frequency of tuberculous udders had in any way lessened in recent years, and he made out a strong case for the reintroduction of the Tuberculosis Order of 1914 or some amendment thereof. In the discussion which followed Prof. Buxton's contentions were not gainsaid.

The particulars which medical officers are asked to supply for 1924 are, in general, similar to those asked for in previous years. One of these is the number of women dying from the effects of childbirth. Study of the 1923 reports suggests the continued need for more uniformity in the classification of these deaths. At the present time England compares unfavourably in this respect with Scotland and many continental countries. The Scottish Departmental Committee made a recommendation that representation be made to the International Committee concerned with the classification of causes of death with a view to securing uniformity of method as well as of nomenclature in compiling official statistics of puerperal deaths. In addition to the variation of method as between one country and another, there is no uniformity when comparison is made between the various districts in England and Wales. For example, the figures given by the Registrar-General differ considerably from those given by the medical officers for the same districts concerned. No doubt the method of classification accounts for the difference. It is natural for the local medical officer to wish his district to appear in a favourable light as regards maternal mortality, but the Registrar-General is rather in the position of an impartial umpire whose decision is final.

Full particulars of the effect on vision resulting from ophthalmia neonatorum are asked for by the Ministry; a perusal of past reports shows that such particulars are frequently not supplied in full with the result that the extent of the damage done by this disease year by year remains unrevealed. The reports for 1923 did not indicate any progress in housing matters, rather the reverse.

OPHTHALMIC BENEFIT FOR MEMBERS OF APPROVED SOCIETIES.

ONE of the subjects before the Royal Commission on National Health Insurance now sitting is the best way to dispose of the surpluses which some of the approved societies possess and which are available for the granting of certain additional benefits to their members. There are 18 of these "additional benefits," and according to an official statement prepared for the use of the Commission and already published as a Blue-book¹ the most popular of the additional benefits, next to dental treatment, is the so-called "optical benefit." For the year 1924 nearly £40,000 is available for it. In one very large society, already, the claims have numbered 500 a week. A "model schedule" provides that "payment in respect of the cost of an optical appliance shall only be made on the production of a prescription from a qualified practitioner or a hospital." In some instances, says the statement, and in particular in rural districts, it has been found that to insist on this condition is impracticable and its strict enforcement has been relaxed. If we may believe a writer in the *Optician*, as a matter of fact, all the largest approved societies (and many of the smaller ones) send their members to an optician, and not to a qualified practitioner or a hospital. Whether or not this statement of the case requires qualification, there is, at any rate, sufficient truth in it to demand the attention of those medical bodies whose duty it is to have regard both to the professional interests of their members and to the preservation of the nation's eyesight. Three such bodies exist and are at present jointly concerned in considering the various problems under review with the object of ensuring that the model schedule of the Ministry of Health, just quoted, which at present, unfortunately, is in danger of becoming a dead-letter, may become really effective. The first of these three bodies is the Council of British Ophthalmologists, formed in 1918, representative of the Ophthalmological Society and the Ophthalmological Section of the Royal Society of Medicine; the second is the Ophthalmic Committee of the British Medical Association, and the third is the "Ophthalmic Benefit Committee," which has been formed during the past year, membership of which is open to those who hold or have held posts as surgeons, assistant surgeons, clinical, or refraction assistants at the ophthalmic hospitals or general hospitals with ophthalmic departments, and are in regular ophthalmic practice. The chairman of this Committee is Mr. H. L. Eason, senior ophthalmic surgeon to Guy's Hospital. It is understood that the aims of these three bodies with regard to the matter at issue are in perfect harmony.

Last spring a joint committee was formed by the first two bodies, which drafted a scheme for ophthalmic benefit, and this committee has now agreed to allow equal representation to the Ophthalmic Benefit Committee in any approach to the Ministry of Health and in considering the various problems under review. It is proposed that a list of ophthalmic medical practitioners qualified and willing to see insured members of approved societies should be prepared in accordance with the following principles. Anyone desiring to join in the scheme will have to furnish evidence (a) that he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; or (b) that he has had special academic or post-graduate study of a subject which comprises the service rendered, and has had actual recent practice as aforesaid; or (c) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

¹ Appendix to Minutes of Evidence, Part I. Statements prepared by certain Government Departments. H.M. Stationery Office. 8s. 6d.

We understand that in the opinion of the three bodies there will be no difficulty in providing a satisfactory ophthalmic service on these lines. At one time it was thought that this could only be done in London and in the larger towns, but with the development of school clinics and duties in connexion with the Ministry of Pensions, ophthalmic surgeons are arranging not only to have their consulting-rooms at these larger centres where they are usually engaged in some capacity in the ophthalmic departments of the hospitals, but they visit, periodically, minor centres, and as soon as the demand is apparent there is little doubt that the supply will be equal to it. This is the first essential. The second is of at least equal importance—that the standard of work should be maintained at a high level. At a recent meeting of the Ophthalmic Benefit Committee, three members representing the North of England Ophthalmological Society were elected on to the executive, the conditions on which they agreed to serve meeting with general approval. They were as follows: (1) That there should be no lowering of the standard of work of ophthalmic surgeons, but that, on the contrary, it should be rendered more highly efficient; (2) that there should be an adequate fee for those taking part in the service; and (3) that their society should be responsible for the organising of the work in their area. A note in the supplement to the *British Medical Journal* for Dec. 13th states that the Medical Secretary would be glad to receive the names of medical men habitually doing ophthalmic work and complying with the conditions already mentioned, whose names are not already in the list, and who are willing to do the work. This list, the note states, can be supplied to the approved societies on application. An agreed fee of one guinea for each completed case of refraction has been mentioned, and it is believed that this would prove generally acceptable. At present the most urgent necessity is to demonstrate to the Ministry of Health that there are enough men and women in the medical profession competent and willing to do this work. To this end further names should be sent without delay, either to the Medical Secretary of the British Medical Association or to the Secretary of the Ophthalmic Benefit Committee at 30, Finsbury-square, London, E.C.

GOVERNMENT COMMITMENTS IN PUBLIC HEALTH.

DURING the last three days of the short December session a number of questions were put to Ministers which covered a wide range of public health matters. The replies are here briefly set out.

Housing.—Mr. Neville Chamberlain admitted that figures were not available to show how many houses there were still inhabited which had been condemned, and which had not been closed because the occupants were unable to find other accommodation. He added: "According to the reports of medical officers for 1922-23, representations were made during the year with a view to closing orders in respect of 3155 houses. Orders were made in respect of 2331 houses, and in 640 cases orders were determined after works of repair had been carried out. In the same period repairs were secured in the case of 542,834 houses as a result of the intervention of local authorities."

Asked if the Government would offer assistance and encouragement to builders of blocks of hygienic self-contained flats of a low rental value, and thus meet the needs of a district like Hackney where the only available spaces of building were those to be obtained by the clearance of slums, Sir Kingsley Wood (replying for the Minister of Health) said: "Assistance is available, both by way of loans and subsidy, under the existing Acts of 1923 and 1924, for the building of self-contained flats, and my right hon. friend will be glad to consider any such proposals submitted to him by local authorities, whether as part of schemes for the clearance of insanitary areas or

otherwise. Blocks of flats have already been erected, or are proposed to be erected, with Government assistance, in London and elsewhere."

Tuberculosis.—The Minister of Health, questioned as to the necessity of the further extension of the scheme of village settlements in the neighbourhood of large cities and towns for tuberculous persons and their families, replied (through Sir Kingsley Wood): "The provision of additional accommodation at the existing village settlements for tuberculous persons and their families is already in progress. The Minister does not propose to consider further extensions until more experience is available as to the value of this particular method of dealing with the problem."

Silicosis.—The Home Secretary, asked to state the number of deaths which had taken place in Sheffield among cutlery and other grinders during the last ten years, replied: "According to figures supplied by the medical officer of health for Sheffield, the total number of deaths among cutlery and other metal grinders in Sheffield during the ten years 1914 to 1923 was 1136, of which 524 were due to pulmonary tuberculosis, silicosis, or other fibroid disease. These figures give two deaths as due to silicosis unaccompanied by tuberculosis, but do not distinguish between cases of tuberculosis combined with silicosis and cases of tuberculosis unaccompanied by silicosis. The average age at death varies between 45.9 in 1918 and 52.9 in 1920."

Maternal Mortality in Childbirth.—Lieut.-Colonel Fremantle asked the Minister of Health if he would state what further steps he proposed to take with a view to reducing the exceptional maternal mortality in rural and in textile and coal-mining areas respectively; and whether, in the event of its not being regarded as the duty of the medical officer of health to investigate all maternal deaths due to childbirth and all cases of puerperal fever, whether fatal or not, he would take steps to make good these omissions.—Sir Kingsley Wood referred Colonel Fremantle to the circular on the subject of maternal mortality, which was issued by the Minister of Health on June 30th last and continued: "Attention was drawn in the circular to the need for investigating all maternal deaths due to childbirth, and all cases of puerperal fever, and the local authorities were urged to take action with a view to reducing the risk involved in childbirth. It is proposed to await the results of the issue of this circular before considering further action."

In answer to a further question on the same subject Sir Kingsley Wood replied: "In 1923 there were 2892 deaths of women classed to pregnancy and child-bearing, or a ratio of 3.81 per 1000 births. The average annual numbers of deaths so classed in the years 1891-95 (the nearest available figure to that asked for in the question) represented a rate of 5.49 per 1000 births. The figure is, however, based upon the more restricted classification then in use; and the comparable deaths for 1923 represent a rate of 3.6, showing a decrease of mortality during the period in question by 34 per cent. During the same period the death-rate from all causes of females aged 15 to 45 years has declined by 45 per cent."

Diphtheria Prophylaxis.—Mr. Broad asked the Minister of Health whether he was aware that in the town of Dallas, Texas, in the year 1919, 10 children were killed and over 60 others injured by toxin-antitoxin, administered in connexion with the Schick test for diphtheria; whether a similar disaster which occurred in Vienna recently, when several infants were killed by an injection of toxin-antitoxin, had been brought to his notice; and whether, in view of the possibility of serious injury, and even death, resulting from the use of toxin-antitoxin, he would discontinue the issue of circulars by his department in favour of the extension of the Schick system to workhouse children.—Mr. Neville Chamberlain replied: The answer to the first two questions is in the affirmative. As regards the third, I am advised that these regrettable

occurrences appear to have been due to unskilled technique or the use of unstandardised matter. The necessity of great care in these respects is emphasised on p. 54 of the Report of the Chief Medical Officer of the Ministry of Health for 1923. In all the circumstances I do not think it necessary to take any action as to the memorandum (68/Med.) issued on this subject by the Ministry in 1922, which the hon. Member will see is not confined to Poor-law institutions but has general reference to residential schools and institutions.

HOSPITAL NOTES.

ARTIFICIAL SUNLIGHT FOR LEEDS.—Leeds General Infirmary, which claims to possess the largest X ray department in the kingdom, still lacks the means of giving "artificial sunlight" treatment, and the need is emphasised by the recent acquisition of a first-rate apparatus by its neighbour, Harrogate, and by the fact that other institutions in the city are already provided. The infirmary is too heavily in debt to be able to incur the cost—estimated at not less than £1000—to make a modest beginning, and a movement is on foot in Leeds to provide the money.

THE NEW BETHLEM HOSPITAL.—It has now been definitely decided to remove Bethlem Hospital from the Lambeth-road, where it was established in the year of Waterloo, to a site at Shirley, near Croydon. An estate of 340 acres has been purchased with amenities which, says Alderman Sir Charles Wakefield, the President, can be "conserved for all time." Deputations of officials and governors are to visit the leading mental hospitals in England and other countries, and perhaps America, to familiarise themselves with modern curative methods which it is impossible to adopt with any fullness in the present unsuitable buildings and still more unsuitable surroundings.

GOVERNMENT HELP FOR VOLUNTARY HOSPITALS.—Speaking at a Mansion House meeting of the Metropolitan Hospital Sunday Fund, Mr. Neville Chamberlain, the Minister of Health, emphasised the importance of maintaining the voluntary system, and added that he hoped, if he remained sufficiently long in his present office, to "do something to put the matter on some satisfactory and permanent footing." The £39,724 collected on Hospital Sunday is a decrease of £3443 on the previous year, a falling-off which Mr. Holland-Martin, the Chairman of the Finance Committee, attributed in part to the growth of the "week-end" habit.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 20TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely, small-pox, 76; scarlet fever, 1673; diphtheria, 740; enteric fever, 53; pneumonia, 1006; puerperal fever, 38; cerebro-spinal fever, 5; acute poliomyelitis, 10; acute polio-encephalitis, 2; encephalitis lethargica, 41; dysentery, 13; ophthalmia neonatorum, 83. There were no cases of cholera, plague, or typhus fever notified during the week. Of the 13 cases of dysentery, 2 were reported from Bristol, 1 from St. Albans R.D., 3 from Friern Barnet (Mx.), 3 from Woking, 3 from Reigate R.D., and 1 from Greetland (Yorks, W.R.).

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from enteric fever, none from small-pox, 13 from scarlet fever, 33 from diphtheria, 84 from measles, and 82 from influenza. In London itself the deaths from diphtheria numbered 9 and from infantile diarrhoea 14.

ROYAL SOCIETY OF MEDICINE.—The next social evening of this society will be held at 1, Wimpole-street, London, W., on Monday, Jan. 19th, at 8.30 P.M., when the President, Sir St. Clair Thomson, will receive the guests, and at 9.30 P.M. Miss Lena Ashwell will give an address on the Drama as a Necessity of Civilised Life.

Correspondence.

"Audi alteram partem."

INTUBATION OF THE COMMON BILE-DUCT.

To the Editor of THE LANCET.

SIR,—The case of intubation of the common bile-duct for stricture recorded by Mr. Zachary Cope in THE LANCET of Dec. 6th, 1924, and the comment thereon by Sir Hugh Rigby are of great interest. Examples of stricture of the common duct are, unhappily, not rare. They are due to maladroitness of performance of the operation of cholecystectomy. Portions of the common duct, or of the common hepatic duct, may be removed; or the cystic duct may be divided so close to the common duct as to cause an inflammatory thickening around the ligature, to be followed in a few months by stenosis. I have operated on several such cases by various methods, and I have left a tube in the common duct on four occasions. There need be no anxiety, I think, as to the permanent retention of the tube within the duct if a little device adopted by me is followed. A special tube should be inserted. I have had some tubing made for this purpose, with a thicker wall and smaller lumen than is usual, and of a diameter equal to a No. 4 catheter. The tube is fixed into the duct by a single stitch of finest catgut (8 or 9 nought), and about 3 inches of it, guided, if necessary, by a stylet, are passed through the ampulla into the duodenum. The "Jutte tube" serves this purpose well. The constant passage of food through the duodenum and the contractions of the gut pull upon the tube lying free within it. By degrees the tube is loosened and the whole length of it escapes into the intestine. I have known the tube to be discharged by the rectum as late as eight weeks after its insertion, and as early as three weeks. In no case has it been permanently retained. Too long a retention would no doubt lead to incrustation of the tube, and to disasters consequent upon this condition.

I am, Sir, yours faithfully,

Leeds, Dec. 24th, 1924.

BERKELEY MOYNIHAN.

REX v. BATEMAN.

To the Editor of THE LANCET.

SIR,—As I have had several letters addressed to me on the above case, may I be pardoned for addressing you in the matter? It would appear to me that there has been an unfortunate miscarriage of justice in a case admittedly difficult for laymen to view in a proper perspective.

The prosecution sought to prove:—

(a) That gross negligence amounting to criminal negligence must have occurred in removing a uterus together with the placenta after confinement, and, if this were not proved to the satisfaction of the jury, that

(b) It was criminally negligent not to have removed the patient for operation after such an accident had occurred.

The prosecution further inferred that in not removing the patient, the doctor was actuated by the hope that she would shortly die when a certificate would be given and nothing more heard of the matter. This insinuation was indignantly denied by the defendant.

With regard to the two specific points (a) and (b), as a witness for the defence, I should like to put the point of view held by a practising obstetrician to the profession at large.

(a) It was admitted that the presentation in this case was a complicated one, either a transverse, or a complex one of head, foot, and cord. It was my opinion that a rupture of the uterus must have occurred during the version which was done to effect

delivery. It is well known that a rupture of the uterus may attain very wide dimensions quite out of proportion to the force used in producing such a rupture. The wider such rupture be, the less force would be required for a doctor, mistaking the edge of the rent for the edge of the placenta, to remove the uterus together with the placenta instead of the placenta alone.

(b) When such an accident has occurred it will be obvious to anyone with any surgical experience that to move a patient down four flights of stairs (such was the position in this case) to a hospital would have been to ensure her death in transit. It is very strongly my view that absolute rest was the only chance of recovery such a patient would have, and that in enjoining that rest the doctor in charge could not fairly be said to have accelerated the patient's death. Whether there was a more appropriate time for removal between the date of confinement and the actual time at which this particular patient was removed no one can say except the medical man in charge. The evidence of the family "that she seemed brighter" was put to the jury in this connexion—surely not a fair direction.

In addition I would state that the above medical evidence of obstetricians was not put to the jury at all, the only medical evidence submitted to them being that of a pathologist.

I am, Sir, yours faithfully,

London, W.

J. BRIGHT BANISTER.

To the Editor of THE LANCET.

SIR,—In some respects Dr. Bateman was particularly unfortunate. The charge of negligence crystallised itself at the trial into two main forms, as the judge's direction to the jury indicates. The two heads may have been regarded either as alternative or as cumulative. In view of the characteristically fair admissions of the professional witnesses for the Crown, it seems unlikely that the accused can have been convicted upon both heads. The collective mind of a jury is an inscrutable instrument. Under which head did it give its verdict? Or was there a sort of compromise due to a half-persuasion on each of the two heads? It is a pity that the jury was not asked (as would probably have been done in a civil action for negligence) to make specific replies to specific allegations of negligence.

It is even more unfortunate that the summing-up contained no express warning that Dr. Bateman was not being tried for anything that he said (or did not say) after his treatment of the poor woman who died. His failure was that he gave way to a natural impulse to conceal a tragedy which was irremediable. This was, perhaps, the one feature which the jury could grasp unaided in a case full of complex surgical technicalities. Was there not a danger that the jury, if inclined to find Dr. Bateman at fault here, might forget that he was not charged with loss of nerve but with malpraxis?

I am, Sir, yours faithfully,

Dec. 28th, 1924.

A BARRISTER.

* * We publish elsewhere a full report of the summing-up of Mr. Justice Shearman in this case, which, it will be seen, follows the line fairly indicated by Dr. Bright Banister. The clinical side of this tragic case was not dwelt upon or explained to the jury. The jury never seem to have been informed of the strong medical support, that would have been forthcoming from obstetricians, to the view that immediate removal to the hospital for immediate operation might have meant immediate death; nor does it seem to have been explained to them that the size of a rent in the uterus is not dependent upon either the amount of force used or the extent of any miscalculation.—ED. L.

CONJUGAL TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 13th Dr. S. Rowland courteously criticises some of the views expressed by me (THE LANCET, 1919, ii., 606). With several of his observations I entirely agree. No doubt the personal factor comes largely into consideration when one observer is deciding whether a patient should be considered tuberculous, and the almost mathematical accuracy provided by positive sputum results, death certificates, and autopsies, is far the most desirable statistical basis. But it is to be doubted whether such accuracy is to be obtained in a problem so intricate and many sided, and the attempt may lead us seriously astray. Nor is careful experimental work, which shatters so many scientific illusions, possible in this instance. If we had a few more St. Andrews Institutes (to my mind the greatest clinical advance of the century) they could solve the problem for us in three generations and might well prove that my views are mistaken; but for the present we have only opinion and statistics to lean upon, and I cannot yet see sufficient evidence to disprove my views.

1. As pointed out in my paper, not every consort was examined, and there is no doubt that those most willing to submit to examination were those who already suspected illness; nevertheless, more accurate work is possible when contacts are examined in the home, as they are in Devon, than when they have to attend a dispensary for the purpose.

2. To found conclusions on positive and negative sputum results may be misleading unless some definite standard of negativity is adopted. The question is very difficult unless the patient is under direct hospital observation. To give a patient a sputum outfit for him to send off, and on the result to write him down as negative, is most unsatisfactory—yet how often this is done. I have obtained a positive result at the twentieth examination, after six years' observation, in a patient whose main disability was, and still is, bronchitis and emphysema.

3. A positive sputum after infection announces the danger of death from tuberculosis and implies that we are dealing with a patient of low resistance; still more is this the case if deaths alone are counted. The majority of the consorts of tuberculous persons have higher resistance than their mate; moreover, it has often seemed to me that their resistance is increased by the repeated small doses they receive before the massive infection which occurs in the terminal phases of the illness.

4. How often one sees the spouse of a tuberculous patient wilting and coughing, with physical signs in the chest and yet no sputum, or a negative sputum. Most of these cases clear up quickly when given a chance, but if we are for this reason to regard them uninfected, it distorts our statistics and leads to wrong conclusions.

5. Personal resistance varies very greatly; we constantly see examples of this in different members of a household equally exposed to infection. The great majority of people fortunately possess a high resistance, and the tuberculous person is generally married to one of the great majority. It is only when by coincidence a member of the low resistance minority is married to another, similarly handicapped, that conditions are provided that may lead to inclusion in a positive sputum or death series.

6. Dr. Rowland rightly states that I attach more importance to the seed than to the soil, but I by no means deny the importance of the soil, or of such serious factors as worry and subnutrition. It is the soil factor, indeed, which prevents the marriage of tuberculous persons universally ending in disaster for the mate. For the children of working-class patients the position is disastrous enough, for my figures lead me to believe (THE LANCET, 1923, i., 11) that these children are seven times more likely to contract the disease than those of healthy parents.

7. I do not in any sense disbelieve in a widespread tuberculous infection in childhood, and would attribute 50 per cent. of adult cases to reactivation of this focus as the result of accident or adverse circumstances; but the childhood infection does not confer a prolonged immunity, and I regard the other 50 per cent. of adult cases as due to a reinfection. An experimental infection does not confer prolonged immunity in animals, and it seems more likely that the immunity of adults exposed to massive infection is due either to a congenital high resistance, or a smouldering infection of their own, which is indeed far from uncommon.

I am, Sir, yours faithfully,

Paignton, Dec. 15th, 1924.

E. WARD.

SUCTION IN SURGERY.

To the Editor of THE LANCET.

SIR,—I have been much interested in the correspondence which has followed Mr. N. C. Lake's article on this subject in your issue of Dec. 6th, 1924. For some years I have been using suction in my own department of aural surgery and in routine otological work in place of syringing, which is still too much in daily use and should long ago have been discarded in favour of suction.

It is remarkable to learn how largely suction has taken the place of syringing and mopping up in general surgery, especially in clinics and operating theatres in America, and particularly in the region of the abdomen. If there is one region in the body above all others in which suction is eminently applicable as a method of preparing the field of operation and clearing away blood, pus, and debris during operation it is that of the ear and its annexes. The intricate anatomical arrangements in the middle-ear and its accessory recesses are, indeed, favourable for rapid and extensive progress of bacterial activity. To syringe forcibly a discharging ear may have the effect of driving purulent outflow into deeply-seated and dangerous positions, such as the attic, aditus, mastoid antrum, and mastoid cells, and may even precipitate such an almost invariably fatal complication as septic meningitis. It is striking to know how many years ago syringing out the abdomen during operation was gradually dropped—in my student days it was the usual custom—in favour of mopping-out. It was considered correct to flush the abdominal cavity with gallons of warm fluid.

I think it was the study of this change from syringing to sponging in abdominal work that first induced me to reflect on the disastrous results that often followed forcible aural syringing in the presence of septic discharge. Now, again, the abdominal surgeons are once more in the van in abolishing mopping and syringing out and substituting suction. It will be well for aural surgery when a similar change-over becomes universally recognised and adopted. I have found in my own work in aural and nasal surgery that a thorough clearing of the region about to be operated upon by preparatory suction, and so securing a clear field for operation, is the best way to get a good result and avoid serious complications such as septic meningitis.

Suction is always safe and effective. The suction of all discharging ears is what I advocate and am anxious to see carried out by practitioners and nurses in all hospitals and children's clinics. From a large experience of its use in the case of patients of all ages, in both acute and chronic discharge, I have no hesitation in stating that at least 90 per cent. of all patients would recover with dry, hearing ears, and the necessity for any operation would be avoided, if syringing were abolished and suction substituted. My experience justifies me in maintaining that no septic ear—whether acute or chronic—should ever be operated upon until suction has had a fair trial—in acute cases for 48 hours, and in chronic cases for at least a month. The only exception to this statement

would be where an acute case had been seen too late and an abscess had already formed in the mastoid region, in which case an operation would, of course, be imperative.

The easiest and simplest way to apply suction to the aural cavity is by attaching a short piece of rubber tubing to the nozzle of a medium-sized glass or larger metal syringe, inserting this into the ear and then drawing out the piston, when the purulent secretion is all sucked away. This can be done repeatedly until the ear is dry: it is just the opposite action to syringing with the precautionary addition of the rubber tubing. It is an advantage if this is done with the aid of a good bright reflected light. The more elaborate method, and, of course, more effective, is to use a motor suction pump with specially made fine pointed glass tubes, which, being bent in various directions, can under a good reflected light be inserted into the various recesses of the tympanic cavity up into the attic, back into the aditus, and down into the depressed floor of the tympanic recess.

These suction tubes, of various shapes and sizes, I have had made for me by Messrs. Allen and Hanburys, Wigmore-street.

I am, Sir, yours faithfully,

WM. STUART-LOW.

Wimpole-street, W., Dec. 22nd, 1924.

CANCER STATISTICS AND STATISTICIANS.

To the Editor of THE LANCET.

SIR,—In your leading article of Dec. 27th on this subject you point out the paucity of accurate data on the incidence of malignant tumours in the areas Mr. F. L. Hoffman classes as "uncivilised," including India, with probably the oldest civilisation in the world. This deficiency I have attempted to remedy in the Finlayson lectures of the Faculty of Physicians and Surgeons delivered in Glasgow last month, which will appear in due course in the *Glasgow Medical Journal*, including an analysis of 1190 tumours I cut sections of at the Calcutta Medical College Hospital and 1000 from the records of St. Mary's Hospital, London, which revealed a slightly higher percentage of malignant tumours, including sarcomata, in the tropical area, instead of eight times as many in this "civilised" country, which Mr. Hoffman assumes in support of his theory of cancer causation.

I am, Sir, yours faithfully,

London, Dec. 28th, 1924.

LEONARD ROGERS.

THE CLINICAL SIGNIFICANCE OF CONSTIPATION.

To the Editor of THE LANCET.

SIR,—In his letter in THE LANCET of Dec. 20th (p. 1310) Dr. Reginald Miller draws attention to the importance of abnormal permeability of the intestinal (colonic) mucosa as the essential factor in the production of intestinal toxæmia. He allows, of course, that abnormal toxicity of the intestinal contents—owing to constipation or other causes—is also an important factor. It is an old observation that in extreme constipation there need be no great excess of indican and similar bodies in the urine, whereas there is very great excess whenever inflammatory diarrhoea occurs. Chronic constipation may exist for many years in persons whose diet is relatively plain and who avoid excess, without causing obvious signs of intestinal toxæmia, but when, at length, owing to infection or habitual use of purgatives or chronic irritation produced by the constipation, the colon becomes damaged, then signs of intestinal toxæmia begin to appear. It is at the latter stage that in certain persons a feeling of fatigue, distress, or somnolence may be noted after the bowels act. Such symptoms are apparently of toxic origin and tend to occur in rather

feeble individuals who for years have been accustomed to open their bowels every other day with purgatives. Following the fluid action of the bowels the damaged mucous membrane permits abnormal absorption of toxic material, doubtless especially from the fluid material left in the rectum. Such persons usually feel at their best on the days between those on which the purgatives act. I referred to this point in a discussion, *Medico-Chirurgical Transactions*, London, 1907, Vol. XC., pp. 615-616.

I am, Sir, yours faithfully,

F. PARKES WEBER.

Harley-street, W., Dec. 20th, 1924.

PNEUMOCOCCUS MENINGITIS.

To the Editor of THE LANCET.

SIR,—At a combined section meeting of the Royal Society of Medicine, reported in your issue of Dec. 20th, 1924 (p. 1281), the opinion was expressed by Dr. J. G. Greenfield, and shared by Dr. D. Nabarro, that pneumococcal meningitis always kills. It may therefore be of interest if I give an outline of a case which fought a winning fight. My notes were made daily at the time.

In Washington, D.C., on Oct. 29th, 1921, I was called at 8.30 A.M. to see a lad of 16. During the night he had arisen, vomited, and gone back to bed, and at the hour named was found wildly delirious. Lumbar puncture was done at 9.30 A.M.

Dr. Clarence Rice, of Garfield Hospital, gave the following report on the fluid: "Markedly turbid. Protein: marked increase. Cells per c.mm. 16,000. Polymorphs, 92 per cent.; mononuclears, 8 per cent. Smears: many leucocytes, few lymphocytes, and a few Gram-positive, lancet-shaped, encapsulated diplococci having the morphological appearance of pneumococci. Culture: pure culture of pneumococci."

I called Dr. William Hough into consultation and asked him to assume control of the treatment. The same evening Dr. Hough drew off the spinal fluid. Next day this was repeated and again every day up to Nov. 7th, with the exception of Nov. 2nd. The fluid on the 7th was clear, contained eight cells per c.mm. and on culture was sterile. No further puncture was made. On Nov. 18th patient was out of bed for the first time. On the 22nd a note was made, "Somewhat slow in convalescing." He was eating well. There was ptosis of the left eyelid. On Dec. 5th, headache and vomiting; on the 7th, giddiness; on the 8th, much frontal headache with tenderness on percussion above right eyebrow. Blood leucocytes, which were 9100 on Dec. 7th, were now 14,200. On Dec. 9th Dr. Hough was again called. On the 11th Dr. Harry Kerr was also summoned, and it was agreed that there was cerebral abscess. On the 12th Dr. Kerr opened the skull at the spot tender on percussion, and at a depth of 4 cm. found pus. He drained with rubber tubing. Convalescence was anxious, but a fine recovery took place with unimpaired mentality.

An intranasal operation had been done 12 months before the illness, and since then life had been a burden to the lad on account of constant drip of presumably cerebro-spinal fluid. To the patient's great joy there was after the illness no return of the nasal flux.

I am, Sir, yours faithfully,

JAMES CAMPBELL, M.B., Ch.B.

Lerwick, Shetland, Dec. 24th, 1924.

THE ROYAL COMMISSION ON NATIONAL INSURANCE: AN APPEAL.

To the Editor of THE LANCET.

SIR,—It seems certain that the evidence to be tendered by the British Medical Association will assume the principle of the National Insurance Act to be sound, and ignoring the more subtle moral and social effects, will concentrate on benefits, even advise extension. It is clear that extension points in the direction of State Socialism. Of course, the Association cannot plead opposing views officially—i.e., it is pledged by a group to the support of a political theory.

It is fatally easy to feel that all is well with the world if all is well with oneself. There is no doubt that many panel doctors are the richer for the Act; nor do they realise that from the Exchequer point of view that is an a priori objection. That section of us is organised. The objectors are not organised, but scattered, and whether from esprit de corps or the feeling that it is ungenerous to point to the fact that they are being taxed for the panel doctor, they never act, scarcely ever speak. But it is past that now; here is a chance of helping a nation forward, and no man should shirk the question. Two recent instances have shown how dangerous a course we are on: (1) the order to make a doctor responsible for the default of a parent to notify a birth within a given time, and (2) the savage fine of £1000 on a doctor; in both cases by, not a judicial or a legislative but an executive body. Unless there is a change no man henceforward is safe from the bureaucracy.

The Act takes illness as the norm and promotes health by provision of medical benefit. But all history shows that national health depends on the standard of living, especially of the poorer classes. The effect of the Act on the standard could clearly be seen up to the war, and the result was the largest increase in phthisical mortality in our records. The war had an almost unique effect on that standard; it raised it among the poor. The mortality began a huge decline during the war. Similar effects have been noticed in the U.S.A.; its appalling mortality has suffered a record decline. Now it is a contradiction in terms to raise that standard of living by a tax on production. Such a tax bears hard on the small employer, hurts not at all the large employer when once he has readjusted prices, bears cruelly on the working man with a family, is trivial to the young unmarried, unless it cause unemployment. It is unjust where it strikes, it is futile when it aims at the strong.

I repeat it is a grave national question, and I appeal to those men who have stood aloof, feeling it is no concern of theirs, especially to the consultants. Every doctor knows, perhaps has deplored, how the Labour Party is obsessed by the notion that the State is a bottomless well, from which every need can be supplied. For humanity's sake, and England's, do not by inertia encourage that pathetic and dangerous fallacy. The Commission has consented to receive evidence on the principle. To make that evidence effective, it is desirable to have the support of a considerable body of doctors. Will any sympathiser send me a postcard with his or her name, and any medical friend's (not pledging themselves to any particular doctrine), to say that he, she, or they deprecate any extension of the Act until the basic principle has been thoroughly reconsidered?

I am, Sir, yours faithfully,

B. G. M. BASKETT.

29, Daniel-street, Bath, Somerset, Dec. 27th, 1924.

ENCEPHALITIS AND PLEOMORPHISM.

To the Editor of THE LANCET.

SIR,—Dr. F. G. Crookshank has commented favourably in your columns (see THE LANCET, 1924, vol. ii., p. 1311) on a recent communication of mine to the *British Medical Journal*.

He points out that Dr. Regan's case of atelectasis in poliomyelitis is a particular instance of a type of visceral paralysis which not infrequently occurs in this and allied diseases—for example, in encephalitis and in influenza with nervous symptoms. For is it not probably a fact that poliomyelitis and encephalitis are less distinct in nature than their names would suggest—that they tend, in fact, to run into one another, as also into the influenzas presenting cerebral and spinal complications, and so eventually into ordinary influenzas? Dr. Crookshank has provided us with an excellent example of that synthetic manner of thinking which medicine so badly needs after

several generations of analysis and pigeon-holing *à outrance*. And it is surely a hopeful sign that we have in the last three numbers of THE LANCET at least two other contributions in which this more comprehensive method of approaching medical facts is strongly evidenced. I refer to the "note" on alastrim and variola by Prof. Ricardo Jorge of Lisbon (pp. 1317 and 1366) and to the letter of Dr. James Young of Edinburgh on bacterial pleomorphism (p. 1207). Just as Dr. Crookshank presents encephalitis and poliomyelitis as offshoots from the common stock of influenza, so Prof. Jorge presents alastrim, varicella, cow-pox, and the "mild small-pox" of Gloucester as allied members of the varioloid family—different certainly, but no less certainly related. May it not be that *under certain conditions of time and place*, the different members of a group may run into one another—that one may in fact (i.e., clinically and for practical purposes) actually *become* another? Although such a conception undoubtedly militates against the dominant teaching—viz., that "exact diagnosis" (with its consequent opportunity for scheduling) should be the doctor's main concern, I am strongly inclined to believe that it is supported by a growing body of clinical experience.

Finally, the same principle which Drs. Crookshank and Jorge emphasise in the clinical and epidemiological field, Dr. Young illustrates from that of bacteriology, where he gives good reasons for believing that various of the best known forms of micro-organism may, as a result of various changes in the medium, develop from some kind of "bacterial plasm." I would press for a fuller recognition of pleomorphism in disease.

I am, Sir, yours faithfully,

Edinburgh, Dec. 28th, 1924.

A. J. BROCK.

PROF. JORGE AND CHRISTIAN SCIENCE.

To the Editor of THE LANCET.

SIR,—In an article by Prof. Ricardo Jorge (Lisbon), appearing in your issue of Dec. 20th, 1924, he makes a statement that Christian Scientists clamour for freedom from prophylaxis. The reverse of this is true, for Christian Scientists are taught in the Christian Science text-book, "Science and Health with Key to the Scriptures," by Mary Baker Eddy, p. 369, "The prophylactic and therapeutic (that is the preventive and curative) arts belong emphatically to Christian Science, as would be readily seen, if psychology, or the Science of Spirit, God, was understood." Christian Science teaches one how to gain the Mind of Christ, and to think as Jesus thought. This they find is the great preventive of disease as well as its curative method.

I am, Sir, yours faithfully,

CHARLES W. J. TENNANT.

Christian Science Committee on Publication,
Talbot House, Arundel-street, Strand, W.C.,
Dec. 20th, 1924.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—As the result of five minutes' courtesy to a correspondent introduced to me by friends in London, I have been made the subject of a blatant and vulgar article in a London daily paper. The article is full of errors, exaggerations, and inaccuracies. It was published without my having seen it and in the face of a specific request that my name should not appear in any article that the correspondent wrote. I have retired here for health, peace, and quiet, and the imagination and pertinacity of such correspondents will do much to frustrate my objects. I shall be grateful to you if you will publish this disclaimer.

I am, Sir, yours faithfully,

W. H. CLAYTON-GREENE.

Guernsey, Dec. 20th, 1924.

Obituary.

PROFESSOR HEDINGER.

MEDICAL science in Switzerland has to record a great loss. On Christmas Eve died at Zurich, after a short illness, Dr. Ernst Hedinger, University professor of pathological anatomy and histology. Born in 1876 at Schaffhausen, and educated in Berne, Hedinger studied medicine at the Universities of Berne, Munich, and Berlin, graduating in Berne. He then became in succession clinical assistant under such great teachers and research workers as Kocher (surgery), Sahli (internal medicine), and Jadassohn (dermatology). Having thus gained a wide clinical knowledge and experience he went to his favoured branch, pathological anatomy, becoming assistant to Prof. Langhans at the Pathological Institute at Berne. He was only 30 years old when he was appointed professor of pathological anatomy at the University of Basle, a post which he held till 1922, when he returned to Berne to succeed his late master. Hedinger was an indefatigable worker, the author of numerous dissertations chiefly on morphological subjects. His diagnostic skill was highly appreciated by all his clinical colleagues. In 1914 he undertook a special mission to South Africa on the invitation of the Union Government to investigate trypanosomiasis in cattle. This journey brought him into contact with General Botha and other South African statesmen, an experience which gave him a sympathetic understanding of the British Commonwealth at the beginning of the great conflict. Soon after his appointment to Basle Hedinger joined the editorial staff of the *Correspondenz-Blatt für Schweizerärzte*, the leading Swiss medical paper, which under his guidance was transformed into the *Schweizerische medizinische Wochenschrift* of enlarged size and raised scientific standard. Whether by mouth or by pen Hedinger had a natural gift for lucid exposition, and the present generation of Swiss medical men owes its working knowledge of pathology largely to his teaching.

ANDREW ROBERT WARNER, M.D. OHIO,

EXECUTIVE SECRETARY, AMERICAN HOSPITAL ASSOCIATION.

ALTHOUGH Dr. A. R. Warner had been ill with heart disease for nearly a year, his sudden death recently at his home in Dearfield, Illinois, came as a great shock to his colleagues, since he was apparently on the road to recovery.

Dr. Warner was born in Pulaski, New York, in 1875. He graduated from Hamilton College in 1899 and from Western Reserve University Medical School, Cleveland, Ohio, in 1906. Subsequent to graduation he practised medicine in Cleveland for a few years. The first hospital position Dr. Warner held was that of assistant superintendent of Lakeside Hospital, Cleveland, and in 1913 he became its superintendent, a position he held until his appointment as executive secretary of the American Hospital Association in October, 1919. Dr. Warner was always deeply interested and active in the development of organised hospital activities. He was one of the founders of the Cleveland Hospital Council and of the Ohio Hospital Association and served as President of the Ohio Hospital Association in 1918 and 1919. He was also instrumental in developing and organising the American Conference on Hospital Service and served continuously as Vice-President of the Conference from the time of its organisation.

From the beginning of his hospital career he was actively interested in the work of the American Hospital Association, serving on several of its important committees. In 1918 he was elected its President. His earnestness and enthusiasm in the organisation of hospital activities won for him not only nation-wide, but international recognition.

BERTIE RONALD GORDON RUSSELL,
M.D. ABERD.

THE death of Dr. B. R. G. Russell on Dec. 22nd, 1924, at the early age of 44, after a short illness, is a grave loss to the serious investigation of cancer in this country. Russell was educated at the Grammar School and Marischal College, Aberdeen, and was one of the younger members of the school of pathology founded by the late Prof. Hamilton. After graduation he studied for a year under Marchand in Leipzig and returned to Aberdeen to take up the McRobert Fellowship for Cancer Research. While holding this appointment he joined the staff of the Imperial Cancer Research Fund as a voluntary worker in 1907, and in 1908 became a member of the ordinary staff of the Fund.

During the war he served in the Royal Army Medical Corps, at first at Woolwich and later at Malta. His health broke down in his second year at Malta, and



DR. GORDON RUSSELL.

he was invalided home out of the army. After a year at Southbourne Sanatorium he returned to work in London till the end. Russell's contributions to the experimental study of cancer were notable, and all characterised by thoroughness and technical competence. The histological analysis of the immunity to tumour transplantation, the development of sarcoma in the stroma of transplantable carcinoma, and the phenomena of concomitant resistance during progressive growth, he found in tangled confusion and left in order. These contributions all belong to the period before 1914. In the period after 1918 his researches fall into two categories. To the first belongs the work on the production of sarcoma by the subcutaneous inoculation of tar. The second comprises his studies on respiration and carbohydrate metabolism of isolated tissues, normal and cancerous. These researches led to a recognition of apparently specific differences in pentose metabolism, between normal and cancerous tissues of the mouse and rat. He was engaged on chemotherapeutic experiments based on these differences at the time of his death.

The thoroughness and objective clarity of all Russell's work were expressions of his critical and original mind, qualities which made him a touchstone in the laboratory, for men or work. The flawless courage with which he faced the situation following his breakdown in health, rigorously husbanding his energies for the one purpose of his investigations, will remain an enduring memory to those who worked with him.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. A. Thompson is placed on retd. list, with the rank of Surg. Capt.
Surg. Lts. G. B. Tarring to *Spenser*, on recommg.; R. Burns to *Malcolm*; C. Joiner to *Royal Sovereign*; and E. J. K. Weeks to *Eagle*.

ROYAL ARMY MEDICAL CORPS.

Capt. T. Young relinquishes the temp. rank of Maj. on ceasing to be empld. as a Dep. Asst. Dir. of Hygiene.
Capt. F. A. Roddy retires, receiving a gratuity, and is granted the rank of Lt.-Col.

ARMY RESERVE OF OFFICERS.

W. G. Hazelton, late Cadet, Belfast University Contgt., O.T.C., to be Lt.

MILITIA.

Maj. A. R. Dale relinquishes his commn. and retains the rank of Maj.

TERRITORIAL ARMY.

Maj. A. Walker resigns his commn. and retains the rank of Maj. with permission to wear the prescribed uniform.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the undermentioned subjects:—

Surgery.—A. H. Allam, St. Mary's Hosp.; D. T. Jenkins, Edinburgh; A. Mishriky (Sect. I.), St. Mary's Hosp.; and J. Wilson, Leeds.
Medicine.—S. W. Cuff, St. Bart's Hosp.; D. T. Jenkins, Edinburgh; T. McD. Kellough and F. R. Ratnagar, Guy's Hosp.; C. C. Taffs, St. Thomas's Hosp.; and R. D. M. Tims, Cambridge and St. Thomas's Hosp.
Forensic Medicine.—C. L. Copeland, Univ. Coll. Hosp.; T. G. L. Davies, St. George's Hosp.; R. Norrie, St. Andrews; K. Samaan, Manchester; P. B. Skeels, Guy's Hosp.; W. T. Swanton, Cork and Charing Cross Hosp.; C. C. Taffs, St. Thomas's Hosp.; R. D. M. Tims, Cambridge and St. Thomas's Hosp.; and C. W. Warne, Guy's Hosp.
Midwifery.—W. T. Swanton, Cork and Charing Cross Hosp.
The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: K. Samaan, W. T. Swanton, and R. D. M. Tims.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

R. S. Adam, J. K. Barr, C. E. W. Bower, C. V. Brown, Stella H. Brown, Elsie Catlow, William Chadwick, S. F. Clegg, Jenny D. Craig, Mary S. Davies, T. E. Davies, Stanley Devine, Florence M. Duckworth, Charles Eccleston, J. D. Farquhar, Leo Fay, R. A. Ferguson, Anne H. Glancy, G. H. Hayle, A. H. Heyworth, J. N. Hudson, Elizabeth G. Humble, P. G. Johnson, A. M. MacGill, H. T. Simmons, A. B. Slack, Robert Slater, A. R. Somerford, Ronald Walshaw, S. E. Ward, Hugh Whittle, R. M. Williams, S. P. Wilson, Frank Yates, and J. M. Yoffey.
Forensic Medicine and Hygiene and Preventive Medicine.—Madge E. Edwards and Ethel Morris.
Forensic Medicine.—A. R. Adley-Redfern.
Hygiene and Preventive Medicine.—William Mottershead, Samuel Whalley, and P. B. Wood.
Obstetrics and Surgery.—C. H. Bamford, Solomon Bernstein, N. W. Bolton, Lilian Bond, G. H. H. Booth, Geoffrey Coope, John Crook, T. A. Danby, A. A. Davis, N. E. Delaney, Kathleen Dickinson, L. F. Evans, Mary Evans, Miriam Florentin, J. B. Fulton, E. A. Gerrard, E. St. G. Gilmore, Riad Girgis, Mary Harburn, May Johnson, Walter Johnson, J. T. C. Keddle, Barbara M. Knight, G. F. Langford, G. H. March, C. T. Marshall, E. A. Marson, S. L. Micklow, R. M. Pearce, Archer Pearson, Joan Robinson, M. P. Sagar, N. F. Seed, W. H. Shepley, Joseph Shlosberg, Agnes G. Smiley, F. H. Smirk (distinction in Obstetrics), Lois Stent, Jane B. Stubbs, Jacobus Viljoen, J. C. Wilson, Reginald Wood, and N. A. J. Young.
Obstetrics.—Frances H. Bowden, T. K. Clifford, S. J. Firth, I. H. Freedlander, T. S. Hanlin, E. P. Johnson, W. D. Mitton, Francis Reynolds, B. R. Sandiford, A. D. Shubsachs, and W. S. Slater.

THIRD M.B. AND CH.B. EXAMINATION.

Pathology.—J. K. Anderson, Frank Appleton, R. H. Barnes, Helen G. M. Bennett, Solomon Bernstein, George Bridge, Gladys Brocklehurst, R. S. Davidson, Margaret Dyson, Ernest Firth, Alec Fleming, C. F. Garfit, J. S. Goller, Basil Haring, Fanny Howe, George Metcalfe, C. T. Mills, Joseph Parness, Richard Pendlebury, Marjorie Reekie, Leonard

Rosenthal, Kathleen Sheehan (with distinction), Maurice Sheehan, Florence V. Stephen, R. H. Tootill, Vera Urnson, G. R. Walker, and Florence Whitrow.
Pharmacology.—Doris Bernard, Solomon Bernstein, Frank Cort, H. V. Crabtree, Margaret Egan, Arthur Hancock, Ernest Heard, H. H. Jackson, Nora Ridchalgh, and Herbert Townley.

UNIVERSITY OF DURHAM.—At a recent Convocation the following degrees were conferred:—

Doctor of Medicine for Practitioners of Fifteen Years' Standing.—Percival Henderson and Ernleigh G. D. Milsom.

Bachelor of Medicine and Bachelor of Surgery.—Elizabeth M. Anderson, Siegfried Annecke, Kathleen A. M. Ayton, Dorothy I. Brown, Alfred H. F. Cole, Joseph Davis, William H. Denholm, Charles F. Fairlie, John Farnilton, Bertha Flintoff, Donald R. C. Grey, James B. Hartley, Robert E. Holme, Harold V. Ingram, Alan G. Ogilvie, Frank P. Rust, and John Stokoe.

Licence in Dental Surgery.—Frederick J. Gilbertson.

UNIVERSITY OF LIVERPOOL.—Vice-Chancellor J. G. Adams, in his address to the new graduates of the University of Liverpool on Dec. 17th, said that the mere obtaining of a degree of bachelor was insufficient for a student who wished to make his mark in the world and to serve his country. More and more was it necessary, he said, especially in science, for a man or a woman to undertake a period of special work and special research. For the first time the University now conferred the degree of Master of Orthopaedic Surgery. The degrees of Bachelor or Master in Medicine and Surgery qualified men and women to be practitioners of medicine, but for those who wished to specialise, the preparation was inadequate. If a man was interested in a particular branch—and the number of specialists in medicine was increasing year by year—the only way he had of showing himself an expert, and it was a most imperfect way, was by his joining the staff of one of their large hospitals and then awaiting an appointment as one of the members of that staff. The universities of this country did not offer any special training to such a man in his particular subject, and did nothing to show to the public that he was thoroughly well trained.

GUY'S HOSPITAL.—The bicentenary service of commemoration will be held in St. Saviour's Cathedral, Southwark, London, on Tuesday, Jan. 6th, at 12 noon.

CHRISTIANIA, the capital of Norway, will from Jan. 1st, 1925, resume the ancient name of Oslo, borne by the capital founded by Harold Haardrade in 1058, which was destroyed by fire, and replaced in 1654 by Christian IV. of Denmark.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—From Jan. 5th to 31st the Royal Eye Hospital (Southwark) will hold a course in Ophthalmology, consisting daily of the exhibition of clinical cases, followed by a lecture on Important Diseases of the Eye. There will be a special course in the Diagnosis and Treatment of Common Diseases of the Nervous System at the West End Hospital for Nervous Diseases from Jan. 5th to 31st. The course will take place in the Out-patient Department at Welbeck-street. Dr. Porter Phillips and Dr. Thomas Beaton have undertaken a series of nine lecture demonstrations on Psychological Medicine, beginning on Jan. 6th. Copies of the syllabus may be obtained on application to the Secretary to the Fellowship, 1, Wimpole-street, London, W. 1.

THE NEW YEAR HONOURS.

A SHORT list of New Year Honours reaches us as we go to press; it includes the names of five members of the medical profession on whom a Knighthood has been conferred. They are Dr. John Campbell, senior surgeon to the Samaritan Hospital, Belfast; Dr. T. Morison Legge, Medical Inspector of Factories, Home Office; Mr. Holburt J. Waring, formerly Vice-President of the Royal College of Surgeons of England and Vice-Chancellor of the University of London, surgeon to St. Bartholomew's Hospital; and Prof. Gowland Hopkins, Professor of Biochemistry in the University of Cambridge. Dr. Henry J. F. Simson, obstetric surgeon, West London Hospital, receives the K.C.V.O. We tender our congratulations to our justly distinguished colleagues.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Jan. 7th.

SURGERY: at 8.30 P.M.

Papers:

Mr. Geoffrey Keynes: Fat-Necrosis of the Breast.
 Mr. H. S. Souttar: Carcinoma of the Oesophagus.

Thursday, Jan. 8th.

TROPICAL DISEASES AND PARASITOLOGY: 5.30 P.M.

Lieut.-Colonel Sir Leonard Rogers: Points of Resemblance in the Epidemiology and Treatment of Leprosy and Tuberculosis.

Dr. Nathaniel S. Lucas: Some of the Infections of Captive Animals.

Dr. Lucas will show Microscopic and other Specimens to illustrate his Paper.

COMPARATIVE MEDICINE } Members of these Sections are
 DERMATOLOGY } cordially invited to attend this
 EPIDEMIOLOGY AND }
 STATE MEDICINE } meeting.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Mr. A. C. Palmer: Primary Carcinoma of the Urethra in a Woman aged 56.

Mr. W. McK. McCullagh: Two Specimens of "Pseudo-Ovarian Cysts."

Paper:

Mr. J. Preston Maxwell (Peking): Osteomalacia in China (illustrated by means of photographs and lantern slides).

NEUROLOGY: at 8.30 P.M.

Paper:

Dr. R. M. Stewart: On a Case of Organic Spinal Hemianesthesia, showing the Persistence of a Form of Sensation hitherto undescribed, and the Occurrence of Allocheiria and Heteresthesia.

Friday, Jan. 9th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)

Cases will be shown.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Papers:

Dr. S. Russ and the President (Sir Arnold Lawson): A Note on the Influence of Ultra-violet Radiation of Nocturnal Animals.

Mr. F. A. Williamson-Noble: Inflammatory Pseudo-tumours of the Orbit.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, Jan. 5th, to SATURDAY, Jan. 10th.—ROYAL EYE HOSPITAL, St. George's-circus, Southwark, S.E.

Lectures and demonstrations on Diseases of the Eye. Daily, at 3 P.M., clinical cases, followed at 5 P.M. by a lecture.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W.

Intensive Course in the Diagnosis and Treatment of Common Diseases of the Nervous System. Daily, at 5 P.M., lectures, including clinical demonstrations upon selected cases.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E.

TUESDAY and SATURDAY, at 11 A.M. Lecture demonstrations by Dr. Porter Phillips and Dr. Thomas Beaton.

ROYAL DENTAL HOSPITAL OF LONDON POST-GRADUATE LECTURES.

FRIDAY, Jan. 9th.—5 P.M., Mr. E. Rhodes: Some Clinical Aspects of X Rays in Dental Practice.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Jan. 9th.—8.45 P.M., Clinical Meeting at the Miller General Hospital, Greenwich, S.E.

MANCHESTER MEDICAL SOCIETY.

WEDNESDAY, Jan. 7th.—4.30 P.M. (at the University of Manchester). Dr. J. M. W. Morison: Radiography of the Heart; Dr. R. Ollerenshaw: Surgery of the Astragalus; Dr. G. J. Langley: The Use and Abuse of Digitalis.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURES (at Whitworth-street, West Branch).

FRIDAY, Jan. 9th.—4.30 P.M., Dr. H. Clifford: Some Causes of Post-Climacteric Haemorrhage.

Appointments.

DELAFIELD, M. E., M.B. Camb., D.P.H., has been appointed Acting Head of the Department of Hygiene and Public Health, University College, London.

HANNA, W., M.D., B.Ch. Belf., D.P.H., Deputy Medical Officer of Health for the City and Port of Liverpool.

JACKSON, W. A., M.D. Liverp., Medical Officer of Health for the Compstall Urban District.

LOW, R. BRUCE, M.R.C.S., L.R.C.P. Lond., Medical Officer to the Welsh Board of Health.

MARSHALL, R., M.D. Durh., Hon. Physician to Noble's Isle of Man Hospital and Dispensary.

The Royal National Orthopaedic Hospital: CLARKE, J. J., M.B. Lond., F.R.C.S. Eng., Honorary Consulting Surgeon; JONES, A. R., F.R.C.S., Honorary Surgeon; and PERKINS, GEORGE, M.Ch. Oxf., F.R.C.S. Eng., and HIGGS, S. L., B.Ch. Camb., F.R.C.S. Eng., Honorary Assistant Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: BARRETT, C. P., M.R.C.S., L.R.C.P. Lond. (Folkestone); MCCLELLAN, A. G. (Cinderford); and BATE, J., M.R.C.S. (Bethnal Green).

Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Marks Lectureship in Applied Physiology and Sheridan Fellowship. £750.

Belfast, Joint Nursing and Midwives Council, Northern Ireland.—Examiners of Midwives.

Bermondsey Borough.—Asst. M.O. for Maternity and Child Welfare. £600.

Birmingham and Midland Eye Hospital.—Res. Surg. O. £150.

Bristol Mental Hospital.—Second Med. Asst. £400.

Cape Town University.—Asst. to Prof. of Bacteriology. £500.

Chiswick Hospital, W.—Hon. Med. O. in charge of X Ray Dept.

Derbyshire Royal Infirmary, Derby.—Hon. Dent. S.

Hampstead General, &c., Hospital, Haverstock-hill, N.W.—Electro-Therapeutist. £50.

Harrogate Infirmary.—H.S. at rate of £150.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. Six months. £50.

Liverpool Port Sanitary Authority.—Asst. Port M.O. £700.

London Homoeopathic Hospital, Great Ormond-street, W.C.—Res. M.O. £100.

London Jewish Hospital, Stepney Green, E.—Clinical Assts.

Lord Mayor Treloar Cripples' Hospital and College, Alton, Hants.—Second Asst. Res. M.O. £250.

Manchester Royal Infirmary.—H.S. to Aural, &c., Depts. at rate of £50.

Manor House Hospital, Golders Green, N.W.—Jun. H.S. £150.

Mount Vernon Hospital for Tuberculosis, &c., Northwood, Middlesex.—Asst. Res. M.O. at rate of £200.

National Hospital for the Paralyzed and Epileptic, Queen-square, W.C.—Hon. Anaesthetist.

Northampton General Hospital.—Third H.S. at rate of £150.

Nottingham General Hospital.—Res. Cas. O. at rate of £200.

Parish of St. Mary, Islington Infirmary, Highgate Hill.—Asst. M.O. £350.

Pendleton, Infectious Diseases Hospital, Ladywell Sanatorium.—Asst. R.M.O. £350.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Dental S.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. P.

Stoke-on-Trent, North Staffordshire Infirmary.—H.S. £150.

Swansea County Borough.—Asst. M.O. £600.

Swindon Borough Education Com.—Oculist. 2½ guineas per session.

Sydney University, New South Wales.—Professorship of Obstetrics. £1100.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each at rate of £100.

West London Hospital, Hammersmith-road, W.—Hon. Med. Registrar. £100. Also Hon. Obstet. Reg.

West Riding Mental Hospital, Menston, near Leeds.—Fourth Asst. M.O. £400.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ayton, in the County of Berwick; at Bovey-Tracey, Devon.

Notes, Comments, and Abstracts.

INDIVIDUAL INSURANCE IN THE FUTURE.¹

By HAROLD S. BEADLES, M.R.C.S.,

CHAIRMAN OF THE WEST HAM INSURANCE COMMITTEE.

THERE is not the least doubt that as time goes on the public services provided under the National Health Insurance Act are unfolding to the view of the student of social affairs a vista of health activity, more beneficial in its results than the promoters of the Act dared to anticipate at its inception. In spite of the many vicissitudes suffered by National Health Insurance administration since 1911—arising mainly out of the war—the financial assistance and medical attendance and treatment provided thereunder, has clearly demonstrated that with steadfastness of purpose, and the power of careful organisation, there is a possibility of achieving results in this phase of human life which must not be ignored by those responsible for the welfare of the community, if the peoples of the more thickly populated areas of the country are to be rendered capable of withstanding the unnatural strain put upon their bodies and minds by the present artificial existence known as modern civilisation. The elements of insurance have been provided for 15,000,000 persons as against 5,000,000 previously insured voluntarily. Nevertheless, we are even now only in a position to discern the fringe of the true health standard. The full splendour of good health can only be enjoyed by the establishment of well-defined and effective relationship between the various participles now wandering more or less haphazardly around the central and local administration of public affairs. The systems of health and public welfare administration which have been built up in this country during generations past, each very good in its service of that particular need which caused its creation, have now become much too numerous for the individual, whom they are intended to benefit, to thoroughly understand and use to the best advantage. The creation of funds for the operation of such systems is to-day also a matter of considerable complexity. The operation of the National Insurance Act has unmistakably demonstrated that continuance of this multiplicity of systems and complexity of finance is entirely unnecessary. It has shown the necessity of providing complete insurance for workers without the possibility of such workers being at any time "out of benefit." That which has acted so smoothly in health and unemployment insurance during the past 12 years can operate equally effectively and efficiently in other public welfare services. There are taxes for some services, local rates for others, precepts, rates and voluntary subscriptions for others, whilst compulsory contributions in other forms now play a big part in the social scheme. A number of the services have bases of incidence of charge peculiar to themselves and differing materially from those of others.

Imperial and Individual Services.

It is claimed that there is no need for all these varieties. All public services might well be divided into two main categories—viz., (a) Imperial—i.e., those applicable to the community as a whole, and (b) individual—i.e., those applicable to and enjoyed by the individual particularly. In the former there would be included the navy, army, air force, and other defence services, diplomacy, government (central and local), police protection and allied services, education, construction and maintenance of roads, water-supply, housing, drainage and sewage, sanitation, prevention of pollution of air, water, and food, control of agriculture, shipping and transport, medical research, and many others. Under (b) would be grouped financial assistance in time of sickness and accident, maternity and unemployment, widows and orphans and old age pensions and allowances, medical attendance and treatment in the fullest sense, including all institutional, dental, ophthalmic, and specialists' services and nursing. It is the (b) group with which I am now dealing. To-day all political parties have announced their intention to alter and extend national insurance against sickness, unemployment, and accident, and to coördinate measures to these ends with provision for old age, widowhood, and orphanage. Yet of all the schemes so far expounded not one would seem to aim at total insurance for all social "individual" services.

Different Payments for Different Conditions.

The Insurance Acts have further shown the inequity of having different payments for different conditions. It is

¹ An address delivered to the West Ham Insurance Committee.

Births, Marriages, and Deaths.

BIRTHS.

LAING.—On Dec. 21st, 1924, at a nursing home in London, the wife of Major F. R. Laing, R.A.M.C., of a daughter.

MACLEAN.—On Dec. 25th, at Newcastle, Staffordshire, the wife of Dr. Bruce Maclean, of a daughter.

MARRIAGES.

FORBES-PYMAN.—On Dec. 19th, 1924, at Holy Trinity, Brompton, Dr. A. Keith Forbes, M.C., to Esther Pyman, daughter of Mr. F. H. Pyman, Fitzjohn's-avenue, Hampstead, and Dunsley, Whitby.

DEATHS.

CLARKE.—On Dec. 27th, 1924, at Montana, Switzerland, Cecil Clarke, M.D., M.R.C.P.

HAMMOND.—On Dec. 20th, 1924, William Hammond, M.R.C.S., L.R.C.P., of Park Drive, Golders Green, N.W., many years Chief Librarian to the Grand Lodge of England, aged 76.

PENTLAND.—On Dec. 21st, 1924, suddenly, in London, the result of an accident, Charles James Pentland, M.D. T.C.D.

THORPE.—On Dec. 19th, 1924, at Frogham, Fordingbridge, Hants, Arnold Edward Thorpe, L.R.C.P. & S. Edin., aged 63.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

difficult to see why, if sickness is to be the subject of insurance, the benefit derived therefrom, when sickness falls upon the insured, should be something short of the benefit derived from employment. Sickness places a far greater strain upon the household exchequer than good health. Therefore sickness pay should at least bear adequate proportion to good health pay. At present the sick pay is 15s. per week, whilst unemployment averages 50s., compensation for accident 30s., and that for old age 10s. Similar benefits of insurance should apply to old age, unemployment and the other ills to which the great majority of the working people are heir. Subject, of course, to family responsibilities, these should be equal to say 30s. for the man: when it would be unnecessary to distinguish whether a person is prevented from working by illness, unemployment, accident, old age, or any other disability. The standard of living given by the insurance benefits should be regulated according to the disability which the benefit is created to counteract. At the same time all the necessary means available for the removal of the disabilities insured against should be brought into full operation on behalf of the individual as part of the insurance scheme. These would include domiciliary medical attendance and treatment, institutional treatment—surgical and otherwise, and nursing, and also the finding of employment. National insurance must primarily be for the benefit of the community and not for the individual, and for this reason the premium should cover all time of unemployment from whatever cause it may owe its creation. It must include all those who now come under the Poor-law. Many of these are the same people, temporarily unemployed, whilst others are unemployable for various reasons; but the State cannot afford to leave these out, if it desires a healthy nation. Some of the unemployable are now the greatest danger to the community.

Administration Problems.

The funds required for the provision of these individual services should be raised in manner somewhat similar to the present system of national insurance so far as they would be collected through the medium of stamps purchasable at the post office. There should, however, be one form of stamp for all purposes, the face values being graduated from a minimum to a maximum by not less than one penny. The primary function of the stamped card would be the check it would furnish upon the proper payment of contributions on behalf of the person employed. Contributions should be payable in respect of every person reaching employment age—viz., at the expiration of his or her school age; and should continue to be payable until either the age of 65 is reached—when the old age pension would be payable—or until certain agreed earning has been attained, or until proof that a certain standard of living was assured by private means. Such contributions should be at a rate per pound of earnings, probably sixpence to the worker, and could be charged in suitable proportion between the State, the employer, and the employed. During periods of unemployment through sickness or otherwise, the rate of contribution should be paid by the State and the insured person concerned, out of his cash benefits. The State's contribution to the benefits and administration, representing the State's interest in the social welfare of the individual, would be drawn from the funds derived by special taxation and revenues for imperial purposes, or as a first charge upon income tax.

The monies accumulated by the sale of stamps would pass through a central fund, controlled by the State, to local pools controlled by the administering local authorities.

How to Meet Expenses.

It is estimated that about £280,000,000 per annum would meet the expense of the personal services requirements of the community. This figure being arrived at as follows: Health £94,500,000, employment £85,500,000, both including cash payments, pensions (old age, &c.) £100,000,000. To meet this annual charge a levy of 2s. 6d. would have to be made in respect of every £1 earned in the country; apportionable between the State, employer, and insured person. This seems at first sight to be a large proportion of the country's wages bill, but it must be remembered that under this scheme the poor relief rates, a considerable proportion of the ordinary local rates, hospital contributions, and other central and local taxes and rates would disappear, whilst the present contributions under the Health and Unemployment Insurance Acts would also be merged. Moreover, much of the present wasteful method of collection of revenues—State and local—would be swept away.

Control and Supervision.

The State would control the collection of funds and supervise the apportionment thereof amongst the local authorities responsible for the actual administration of the benefits. The local authorities referred to should be constituted mainly of persons appointed by and from the present councils of counties and county boroughs supplemented by persons

appointed by such councils and nominated from various interests concerned with the working of the scheme, due regard being paid in the making of such appointments to experience acquired by the persons selected in the public services which are to be absorbed thereunder. Medical benefit is at present administered by insurance committees, but only general practitioner attendance is provided for most of the insured and then only "if in benefit." Additional benefits are provided by some approved societies for some of the insured. It is now clear that the only way to provide complete medical attendance for the whole community is to place it under the control of one body, not separate approved societies or the present insurance committees, but an "ad hoc" committee of the county or borough council on the lines of the educational committees—which committee could administer all health matters and properly coordinate them. When contributions are taken compulsorily from a portion of the community, the contributors have a right to expect to be provided with equal benefits and on equal terms. The position of the deposit contributors is a serious menace to the general health, and so long as there exists a number of societies approved for the purpose of administration and giving different benefits to their members the name of "National" becomes a farce. The working of the Act has shown some of us that we cannot continue permanently to have such societies approved and that here again we shall have to set up committees of county and borough councils, which committees will administer not only health insurance but all other forms of social insurance, including those for sickness, accident, unemployment, old age pensions, and widows' pensions, when there will be no necessity for the present Poor-law system.

Our thanks are due to the approved societies for all the work they have done in the past, the friendly societies as the pioneers, and the great industrial insurance companies for the assistance of their wonderful organisations, but we and they must recognise that the time has come for changes marking the next stage in the development of the great social amelioration; and that they, as well as you as members of insurance committees, must give way to some administrative body more comprehensive in its constitution and more effective in its power.

PUBLIC HEALTH OF GIBRALTAR.¹

THE "fixed civil population" of Gibraltar (i.e., the number of British subjects) at the end of 1923 was estimated at 16,165; in addition some 10,000 aliens and 1500 British subjects resident in La Linea come into Gibraltar daily. The birth-rate in 1923 (for the fixed population) was 22.57, and the death-rate 17.63 per 1000. The former was lower than in the preceding years since 1917, when it had been 22.3. The latter was lower than in the five years preceding, except 1921, when it had been 15.74 per 1000. With regard to the prevalence and control of infectious diseases, it is stated that not a single case of small-pox was notified throughout the year. Primary vaccination is compulsory, and since 1906 all children on arriving at the age of 12 years have to be revaccinated. "The population of Gibraltar is now one of the best protected communities in the world against small-pox, and although constantly exposed to the menace, a case of small-pox rarely occurs in Gibraltar." There were 19 cases of enteric fever, with two deaths; four cases in addition were landed from the Bay (one fatal). The local cases (with one exception) were all sporadic, and no direct evidence was obtained as to the cause. The water-supply was not incriminated. Diphtheria (21 cases, two fatal)² was more prevalent than in any year of the decennium (1914-23) except 1922, when there had been 30 cases with three deaths. Only 31 cases of measles were notified (two fatal), in contrast with the considerable prevalence in 1921 and 1922, when the cases had numbered 388 and 305 respectively. Twelve cases of Mediterranean fever were notified (one fatal). From 1914 to 1922 inclusive the total cases had only numbered 24, with two deaths. The notifications of pulmonary tuberculosis (48) were more numerous than in any year since 1913, when they were 63; but the deaths numbered only 22, a lower figure than in any of the ten years preceding. Influenza of a mild type prevailed throughout the year. The cases numbered 545, of which 394 occurred in the three months April to June; there were only two deaths in all. Scarlet fever appeared in epidemic form during 1923, for the first time, as far as can be ascertained from the city records. The cases numbered 218, of which 188 were under 15 years of age. The disease was generally of a mild type, and only five cases were fatal (2.3 per cent.). The cause of the outbreak was not clear. It was probably imported. A large amount of milk is brought into Gibraltar from Spain, but all such milk is boiled

¹ Gibraltar Garrison Library Printing Establishment, 1924.

² As stated on pp. 28 and 32. On p. 31 the deaths are stated as three.

before being distributed. In regard to the infantile mortality Lieut.-Colonel W. C. Smales, D.S.O., R.A.M.C., who presents this report, considers that the year was "an unsatisfactory one," the ratio being 109.5 per 1000, as compared with 69 for England and Wales (1923); wasting diseases and diarrhoea were the chief causes of death. A child welfare centre has been of great service, granting assistance to poor families, providing milk or virol, and instructing mothers in the preparation of food, nursing, &c. Under the "Destitute, Sick, and Tuberculosis Scheme" some 224 families have received outdoor relief, a large quantity of meat and milk has been distributed, and some 700 visits paid by the nurse.

SOMALILAND.

A REPORT on this British Protectorate (which contains about 68,000 square miles, and has a population consisting mainly of Mohammedan people estimated at 300,000) for the year 1923 has been issued by Mr. H. B. Kittermaster, O.B.E., secretary to the administration. It states that owing to the excellent rainfall throughout the year there has been a very small influx of natives into the coast towns during the winter months, as compared with previous years, and this accounts for the fewer cases admitted to hospital. The health of the European population was good, and there were no deaths or invalidings; 1100 in-patients and 22,817 out-patients were treated in the hospitals of the Protectorate—viz., for scurvy, 6; ulcers, 4000; malaria, 205; relapsing fever, 96; small-pox, 0; influenza, 50; dysentery, 34; diarrhoea, 360; tuberculosis, 215; whooping-cough, 63; measles, 10; chicken-pox, 32; syphilis, 946; gonorrhoea, 266.

THE PACKING INDUSTRY.

A SERIES of lectures delivered at the University of Chicago in the spring of 1923 have been published in book form.¹ They aim to give a generalised survey of the American meat packing industry, its background, its service, and its operations, intended for the instruction and assistance of those interested in this industry. They purport to replace by systematic instruction what the author of the introductory lecture describes as the casual mouth-to-ear system. They form part of the structural development programme of the Institute of American Meat Packers. The ground covered includes live-stock, the history and general economics of the packing industry, the packing plant; two lectures on what are termed "operations," an expression covering the conversion of the raw animal to the marketable food, the finance of the industry, science in the industry, and distribution of meat products.

The book contains little or nothing of direct interest to medical readers, but is full of information of a curious kind. Those who wish can learn the proper method for chilling hogs, the significance of "frozen credits," and that the well-meaning people who launched an eat-no-lamb campaign on the grounds that no lamb now would mean more mutton hereafter were guilty of an economic waste. It is fitting that from Chicago should emanate a glowing tribute to the hog—"that noble vertebrate, the hog—a most excellent fellow, not merely from a cold economic standpoint, but as a personality. Though calmly independent, he is always approachable; he does not curry favour; he is never forward; he lives and lets live. He is thrifty, but believes there is a time for rest and leisure. Democratic in his tastes and instincts, he would be a Liberal in politics. He accepts man as his friend and equal—truly a great and magnanimous fellow." The lecture upon science in the packing industry is of interest, and shows that science came into the industry late in the day long after it had been established on empirical lines. In consequence, we are told that much of it was thoroughly unsound and irrational, and could have been corrected at the start by a reasonable application of scientific methods. While chemistry and physics are given an important place, bacteriology is scarcely mentioned and would appear to be neglected.

SANITARY PROBLEMS OF TROPICAL AMERICA.

As official delegate to the International Conference on the sanitary problems of tropical America, held in Kingston, Jamaica, July 23rd-30th, 1924, Dr. A. Agramonti gives a short account of his experiences in the *Revista de Medicina y Cirugía de la Habana* of Oct. 10th, 1924. The Conference seems to have owed its origin to the initiation of Dr. W. E. Deeks, the P.M.O. of the United Fruit Company—a great American trust with branches all over tropical America. To him and to Dr. G. Vincent, head of the International Committee of the Rockefeller Foundation, Dr. Agramonti pays a high tribute of praise. The usual tropical subjects were discussed—malaria, yellow fever, amebiasis, as well as various problems in general medicine. The point which seems

to have struck Dr. Agramonti most was the general agreement that every case of malaria must be treated on its merits and that no standard method, as taught in the United States, is possible. There seems also to have been a consensus of opinion that "alastim" is only a modified form of variola, though the Jamaican doctors dissented. Dr. Agramonti compares the medical institutions of the Jamaican Government unfavourably with those of Havana, excepting only the mental hospital. After the Conference the delegates visited officially Honduras and Guatemala.

ANTHOCYANINÆMIA.

THE condition of anthocyaninæmia, and the allied one of anthocyaninuria, give rise to a symptom almost as alarming as their names, for the patient's urine is coloured a brilliant red. However, anthocyanin is nothing more than the name of a pigment found in the common beet. Dr. H. O. Ruh and J. A. Garvin, of Cleveland, Ohio, U.S.A., have seen¹ as many as 30 children in whom the only complaint was red or "bloody" urine, in each case due to eating beets. Attempts to produce the condition experimentally were eventually successful. They find that the production of anthocyaninæmia depends not only on the quantity, but also on the quality of the beets ingested. Presumably, although no such case is recorded by the authors, a patient whose urine happened to be alkaline and who ate sufficient beets, would complain of a bright blue urine, for the pigment is an unstable compound of the nature of a glucoside, and has been suggested as an indicator on account of its property of changing colour according to the acidity or alkalinity of its solution.

COLOURED BOOKS.

To the Editor of THE LANCET.

SIR,—I notice that when referring to various Government publications in your columns you occasionally speak of them as blue books, white books, green books, and so on. My ignorance of the ways of officialdom prompts me to ask whether these chromatic titles must vary to express the truth as regards H.M. publishers' taste in binding, or whether the term "blue book" is not sufficiently generic to include all official motley. To put the question concretely: can a blue book be pink?

Yours faithfully,

PUZZLED.

Dec. 28th, 1924.

*** The term "blue book" is often used to cover publications of different hues. Perhaps it should not be so employed.—ED. L.

TEXT-BOOKS AND INSTRUMENTS IN RELATION TO INCOME-TAX ASSESSMENT.

THERE appears to be a doubt in the minds of some of our readers as to claiming allowance in their income-tax schedule in respect of expenditure on books and instruments for professional purposes. The following exchange of letters is typical:—

Practitioner to H.M. Inspector of Taxes.—Last year you told me in conversation that a claim for allowances of income-tax in respect of the purchase of books or instruments was not allowable except in the case of renewals, and that no books or instruments purchased for use for the first time would be allowed for. I have recently been given to understand that this is not so. The Regulation appears to make no reservation or exception but to apply to any books or instruments which are required for professional purposes.

H.M. Inspector of Taxes to Practitioner.—I beg to inform you that renewals and replacements of books and instruments are only allowable for income-tax purposes. Additions, as distinct from renewals and replacements, are not allowable.

The opinion of the Inspector of Taxes is in accordance with the present law and practice on the point. No allowance is made for additions or improvements, but only in respect of repairs, renewals, and replacements.

WHO WAS JACQUES?

SURGICAL literature frequently uses the name spelt phonetically Jakes to denote a flexible catheter, but hesitates how to spell the name. The catalogues of surgical instrument makers contain numerous variants, sometimes in the same list. After considerable inquiry we learn that the right spelling is Jacques, and that the bearer of the name was head of the British rubber firm of Jacques, Coles and Fanshaw, now defunct. The catheter which goes by his name is of soft rubber, and is now made by other rubber firms in this country. So far as we can ascertain the name though French in form is not known in French literature, where the soft catheter goes by the name of Guyon.

¹ The Packing Industry. By various authors. Chicago, Illinois: University of Chicago Press. 1924. Pp. 357. 83-00.

¹ Ohio State Medical Journal, December, 1924, p. 763.

A Surber

OF

PRESENT-DAY ELECTRO-THERAPEUTICS.

An Address to the Section of Electro-Therapeutics of the Royal Society of Medicine

By STANLEY MELVILLE, M.D. BRUX.,

M.R.C.S. ENG.,

PRESIDENT OF THE SECTION; RADIOLOGIST TO ST. GEORGE'S AND BROMPTON HOSPITALS.

THE DISCOVERY OF X RAYS.

LESS than 30 years ago—to be precise, on Nov. 8th, 1895—Prof. Rontgen, of the University of Würzburg, startled the whole of the scientific world by his announcement of the discovery of the new rays. Working as he was at the time on electrical discharges *in vacuo*, he noted, among other things, that paper coated with a layer of barium platino-cyanide fluoresced if brought near to an excited Crookes tube which had been covered with black paper. From this experiment he deduced the existence of certain rays which were able to traverse black paper and, by inference, other opaque bodies, and these rays were named X rays by the discoverer. No more striking example of evolution in a discovery of great scientific interest has ever been known. It was by no means a haphazard or accidental discovery, but the logical sequence of continued work in a perfectly orderly manner. Rontgen himself always admitted the ancestry of his discovery. In the first place, the great work of Sir William (then Mr.) Crookes, the stimulation of this work upon Prof. Jackson in designing focus tubes and experimenting with various salts for fluorescent screens, later the work of Lenard on cathode rays, and finally Rontgen himself. In a paper read before the Rontgen Society at one of its early meetings in 1898 by Mr. Webster, this debt to the earlier workers was handsomely acknowledged. "But for Crookes's early experiments," he said, "Jackson would not have experimented with his focus tubes and fluorescent screens, and but for both of them Rontgen would probably not have completed his discovery. I venture," he added, "to say that the Union Jack can be placed almost entirely over the discovery."

The inaugural address given by Prof. Silvanus Thompson at the newly-formed Rontgen Society in 1897 must have been very inspiring to his listeners. "November the 8th, 1895," he said, "will ever be memorable in the history of science. On that day, 'a light,' which so far as human observation goes, 'never was on land or sea,' was first observed. The observer, Prof. Wilhelm Conrad Röntgen. The place, the Institute of Physics in the University of Würzburg in Bavaria." Würzburg, a small university town of less than 50,000 inhabitants with a magnificent block of buildings, well endowed, and devoted to the study of physics, and contrast it with our own position at the same date. We have cause to be thankful that at any rate the realm of physics has now come into its own.

The first focus tube was constructed in this country in 1894, to the design of Prof. Jackson. To Mr. Campbell Swinton, F.R.S., we owe a great deal of experimental work, especially on his proof that the penetrative power of X rays was dependent upon the degree of exhaustion of the vacuum of the tube. It is interesting to note that the theories enunciated by Prof. Jackson have remained the basis for all gas tubes up to this day. Sidney Rowland, Special Commissioner to the *British Medical Journal* for the investigation of the application of the new photography to medicine and surgery, and the first editor

of the *Archives of Skiagraphy*, wrote as follows: "Whatever may be the scientific explanation of the exact character of the X rays, their discovery is invaluable to physicians and surgeons. By means of the new radiation it is now possible to render visible certain of the interior structures of the body, and their precise condition of disease or of health can be objectively demonstrated. Facts which heretofore could only be known or guessed at by a complicated system of inference are now *oculis subjecta fidelibus*." (I fear the cynic may laugh at the eye of faith, which we are still accused in some quarters as possessing.)

In the same paper he warns his readers to beware of many extravagant stories and reports, chiefly from transatlantic sources, as to the results of the Würzburg professor's discovery. It is interesting to read the correspondence columns in the earliest numbers of the *Archives*.

J. L. is advised that the minimum spark-gap required is 2 inches and that it is necessary to have a coil giving a nominal 3 inches.

J. L. P. is advised to wrap his plates in black paper and to push development to the utmost.

Ignoramus is told that he will recognise that his focus tube is working correctly when one half is fluorescing a yellowish green and the other half remains comparatively dark.

J. N. is advised to place the object to be skiagraphed as near the plate as possible, and the sage advice (equally necessary to-day) is given—namely, to treat the whole matter as a shadow in order not to go wrong.

EARLY ADVANCES.

Following rapidly upon Rontgen's discovery, medical men and others began to work with the new rays, and very soon names appear, names that are now household names, Thurstan Holland of Liverpool, Mackenzie Davidson, David Walsh, Hall-Edwards of Birmingham, and MacIntyre of Glasgow, among others. To show with what determination these pioneers set to work, it is interesting to note a paper written by Thurstan Holland in 1898. Between June, 1896, and Dec. 31st, 1898, he had taken no less than 728 skiagrams, working, as he tells us, with Apps-Newton coils giving 3.6 and 10 inch spark, using Watson's or Cossar tubes, and giving exposures varying from a few seconds to an hour. The tubes were placed at varying distances from the skin, from 4 to 12 or 14 inches. It is most interesting to learn from the lips of Thurstan Holland that during the whole of the period in question he had never seen the slightest damage of any kind, not even the removal of a hair, nor any redness of the skin.

In the earliest days attempts were made to demonstrate the presence of renal calculi. These attempts were apparently unsuccessful, for Mr. Henry Morris found that owing to the position of the kidney, close to the vertebral column, the depth of the cavity, and the thickness of the overlying tissues, it was impracticable to obtain a radiograph of renal calculi. Fortunately for the credit of radiography, just about the same time Thurstan Holland demonstrated successfully the presence of calculi in the pelvis of the kidney.

Discovery of Therapeutic Uses of X Rays.

Equally early the use of X rays as a therapeutic agent was begun, and cases of lupus and rodent ulcer were treated with success. Cases of epithelioid ulcer of the mouth were reported as doing well, especially in regard to alleviation of pain. A case of cancer of the stomach was treated, resulting in disappearance of pain and some diminution in the size of the tumour. Lortet and Genoud (reported in *Comptes Rendus*, 1896) gave an interesting account of their experiments on the effect of Rontgen rays in tuberculosis. Eight guinea-pigs were inoculated with the virus of tuberculosis. Of this number three were exposed daily for six weeks to irradiations. In the five not irradiated abscesses formed and the general health was deranged. In the three irradiated, no abscesses

were formed and the general health remained good. Two Italian physicians about the same time did somewhat similar research on guinea-pigs with intraperitoneal injections of cultures of human tubercle. Repeated experiments led them to the conclusion that exposure to X rays retards the development of tuberculous infection, chiefly by raising the body resistance.

Both these series of experiments at a somewhat later date were reviewed critically by Bergonié, of Bordeaux, and Teissier, of Paris. They came to the conclusion, however, that animals infected with tuberculosis, even if subjected for more or less long periods of time to the action of the rays, die for the most part, and without any appreciable modification of the lesions and without any retardation of the evolution of the disease.

I mention these experiments to show how much scientific work was being attempted in the early days and all in the right direction.

X Rays in Military Surgery.

I think I am correct in stating that X rays were made use of in military service for the first time in the Tirah campaign, and later with the Nile expeditionary force in the Soudan in the summer of 1898, in which campaign Surgeon-Major Battersby was in charge of the X ray work. In this campaign a modification of Mackenzie-Davidson localising apparatus was used with much success. "X rays," wrote Dr. Haughton, of Dublin, "have furnished the military surgeon with a probe which is painless, which is exact, and, most important of all, which is aseptic, qualities not possessed by the older, though ingenious, instrument bearing Nélaton's name."

As an instance of early difficulties met with in making the higher powers appreciate the necessity of X ray assistance in warfare, it is of interest to note the answers given in the House of Commons, when the question of supplying the Soudan expeditionary force was being discussed. Surgeon-Major Beever, who had been in charge of the X ray equipment during the Tirah campaign, had reported favourably on their use. A few days later, Mr. Brodrick, in answer to questions, replied that the senior medical officer had gone carefully into cases cited, and had been unable to trace any single case among the wounded where the apparatus would have been specially useful or in which an operation would have been more successfully carried out by means of the rays. The Director-General of the Royal Army Medical Corps, whose name I cannot at the moment trace, but he was a man whose name deserves the highest honour, brought the weight of his authority to bear, and, better counsel prevailing, the Soudan campaign was equipped with as good apparatus as was at that time to be obtained. Surgeon-Major Battersby's account is well worth reading.

DIFFICULTIES OF EARLY WORKERS.

Such, then, briefly, was the beginning of our work—of our great and absorbing specialty. Just a handful of enthusiasts working under great difficulties and with no little discouragement. Their apparatus was feeble for the most part; very soon they became aware of danger attending their work and this before any means of combating it was known. Considerable controversy took place as to the nature of the injurious effects of exposure to irradiations. These were described variously as being due to ozone, to particles of platinum, and even to heat. From time to time vexatious actions in the law-courts all but succeeded in arresting progress. In 1899 the first lawsuit was heard in Paris, the plaintiff claiming heavy damages for injuries as the result of exposure to X rays. Bardet (of La Pitié Hospital) stated at the time that if any responsibility is attached to the use of X rays they cannot be utilised. The question of individual susceptibility to X ray irradiation was much discussed at this time and as a direct result of the lawsuit. In spite of all the early difficulties, the pioneers

held on and have piled up a debt of gratitude which future generations will find it difficult to repay.

Possibly in nothing was the early radiologist more handicapped than in the paucity of literature. Such as there was would have been even more difficult to obtain but for the most excellent bibliography (and indeed much more than a mere catalogue of current literature) brought out by our friend C. E. S. Phillips. There were no Rutherfords or Braggs or Kayes in those days to help, and I think the joint author of that most illuminating book—"Radium, X Rays and the Living Cell"—must still have been in the chrysalis stage. The physicist was, I think, more interested in trying to solve the burning question as to the nature of the rays than in taking the line so material to the future of our work that we see to-day. The great controversy on the nature of X rays lay between those who (like Prof. Thompson), though non-committal, declared in 1896 that there was nothing in the effect known to be due to these rays that was inconsistent with their being a variety of light, and those other physicists, such as Goldhammer, who took the view that X rays were not of the nature of longitudinal light waves, but were ultra-violet rays of extreme shortness. Somewhere between these two views (as is often the case) lay the truth, and we know now that X rays are ether waves or disturbances of the ether akin to light, but with a wavelength some ten thousand times less than similar disturbances known as light.

We have passed from a position of doubt and uncertainty to a position of security. A properly equipped X ray department is a vital necessity to the hospital of to-day, and the keen radiologist is now a not unimportant member of the hospital staff. There is still much to be desired in some hospitals in this respect, but time, and, above all, the enthusiasm of the radiologist will set this right. Well known are the researches of men like Barclay, Hurst, Jordan, with Case, Carmen and Miller, from the other side of the Atlantic, on the alimentary tract; of Knox and others on radiation therapy; of our late friend, Hugh Walsham, on the respiratory tract (to whom, with Harrison Orton, we owe the first book on the subject). No longer has the radiologist of to-day to go out, like the Israelite of old, into the fields to gather stubble for his brick-making, but it is all provided for him in the shape of good straw, possibly more than he can find time to digest.

THE WORK OF THE ELECTROLOGIST.

I would that I felt competent to touch upon the work and the evolution of the other and equally important half of our section—I refer to the work of the electrologist. It is one of the curious anomalies of our day that not even was the great work of Lewis Jones sufficient to make hospital authorities recognise that the two branches of work must be separated. I have never been able to appreciate the reason—possibly it was because we were both utilising current from the electrical mains? Was it because there was a very limited number of men really qualified to take up the highly specialised work of the electrologist? Was it (I say it with bated breath) that they did not believe in either of us very much? Or was it analogous to the teaching of that great subject—forensic medicine—which was regarded as a subject that anybody could teach, and the lectureship was given to any member of the staff for whom no other work could be found? I know not. This I do know, that until the late war the necessary cleavage had not taken place except in certain of the larger schools. I only ask you to imagine where we should be had Cumberbatch and his associates, for instance, been so busy with X ray work as to leave them no time for their work on diathermy. How much the poorer should we not have been but for the labours of W. J. Turrell on the physiological aspect of electrical discharges and his theories on ionisation, and men like Bourguignon of the Salpêtrière? Ten years ago, I make bold to say, that such

a successful bi-lingual Congress as that held in 1922 would have been impossible, at any rate on the side of the electrologist and our brothers in other fields of physical medicine.

"Evolution," as has been well said, "is not a force but a process, not a cause but a law." Its progress is slow, but it follows upon definite lines. In nothing has the gradual evolution of radiology been better demonstrated than in the growth and equipment of an X ray department. No longer is a cupboard in a basement considered satisfactory for modern requirements. Much improvement still is necessary in many places, and several factors have recently been at work giving the necessary impetus towards the provision of properly ventilated, efficiently protected and roomy X ray departments.

Of these factors two in particular I may mention. First, the invaluable work and research undertaken at the National Physical Laboratory by Drs. Kaye and Owen. Secondly, the recent decision of the Home Office to include or rather to extend the provisions of the Workmen's Compensation Act, 1906, to include and cover certain injuries and diseases caused by exposure to X rays or other radio-active substances. Well do I remember being shown two largish cupboards which had been allocated for the X ray department at the King George Military Hospital in 1915. They were literally nothing but cupboards, without any outside ventilation whatsoever, but they were conveniently near to the operating theatres. Fortunately my colleagues, Ironside Bruce and Harrison Orton, saw eye to eye with myself, but we had to stand much criticism about our pig-headedness in insisting upon the excellent and well-ventilated department we eventually secured. Shall I tell you how Thurstan Holland annexed, first the large dispensary at the Royal Infirmary, Liverpool, then the great recreation hall, in which other members of the section as well as myself remember playing Badminton in our leisure time as house physicians? The last time I visited Liverpool I found other large portions of the hospital had been annexed; indeed, I believe it was his intention to have the hospital attached to the X ray department—a very laudable scheme.

Those of us who were privileged to visit the new X ray department of the Royal Infirmary, Manchester, had their eyes very widely opened. I could wish that Dr. Barclay would see his way to inviting the chairmen and secretaries of the London hospitals and demonstrate to them his conception of what a modern department should be. In fairness, however, let me say that only lack of funds, and what is perhaps more serious—namely, lack of space, militate against our getting what we require.

One of the most interesting of the forward movements of to-day has been that which owes its conception to the farsightedness of our senior secretary. Together with Prof. Stopford, Dr. Woodburn Morison has equipped a room for X ray study in the Anatomical Schools of Manchester University. He was appointed lecturer under the scheme, and has drawn up an excellent scheme of lecture-demonstrations. Dr. Salmond gave us a very good account last session of similar work being done at University College, and I think we may look forward to the time when, in all our great medical schools, the subject of applied anatomy will be taught from the radiological standpoint also.

THE PHOTOGRAPHIC SIDE OF THE WORK.

At times I am inclined to wonder whether from the very beginning we may not have been wrong in allowing the purely photographic side of our work to assume a position of too great importance. I refer in particular to the routine custom of making prints—an unfortunate custom, which has given the patient the impression that in some way or other he had a vested interest in the radiograph as part of the contract. I do not wish to be misunderstood. In the early days one has to remember that the discovery of X rays caused the very greatest commotion

throughout the entire community, and the patient naturally desired a memento to show to his admiring relatives and friends. We are, however, medical men and women engaged upon the definite and serious work of assisting in diagnosis. Anything that tends to lower our prestige or to emphasise any other aspect of our work is, in my submission, to be deplored.

Plates or films after all are only of use for two purposes: (1) to aid us in arriving at correct interpretation; (2) to enable us to give ocular demonstration to those of our colleagues who ask for our help. Sooner or later the routine giving of prints leads to undesirable results, as most of us have experienced. Many of us have had to face more or less unpleasant arguments affecting the legal ownership of plates, and although the law of copyright is very definite, such discussions ought never to arise. I do not wish to labour the point unduly, although it is a subject upon which I feel strongly. Instances occur to many of us of the undesirability of the practice. I think, however, the pathologist in his generation was wiser than ourselves—the children of light. Can you conceive of the public desiring a microscopic slide, or even a microphotograph, say, of a section of a tumour? Yet this is quite a logical analogy. The latter would be about as helpful to a patient as would be the print of an abnormal chest.

I fear there are causes upon which I cannot dwell which militate against the counsel of perfection to which I have referred. I can only hope that my colleagues will think over the pros and cons of the matter.

EDUCATION IN ELECTRO-THERAPEUTICS.

As will readily be appreciated, the radiologist of to-day is in a much better position than was his predecessor. At the beginning of the war, we, in England, at any rate, were not prepared on the radiological side. Many of the younger men with stout hearts but (I know they will not mind my saying so) with colossal ignorance, stepped into the breach. At the conclusion of the war many of these men decided to take up the subject seriously, but they found very speedily that war conditions and the requirements of the civil radiologist were very different things, and they were but ill-equipped for the work. There was no kind of systematic teaching, and many of us know how difficult it was to try and cope with the men who visited X ray departments, hoping to acquire knowledge. Thus it was that the Universities of Cambridge and Liverpool decided to institute a special diploma. I am well aware that the multiplication of diplomas is undesirable. This much, I will say, that the man or woman who takes the trouble to work for the diploma is a much better man than his neighbour who does not do so. It is obvious that it is impossible for anyone to learn the whole of a vast subject in the six months' course allotted to it, but he will gain a good grounding in the physics of the subject and the general routine of X ray and electrical work. With such a grounding he will soon learn by experience, and experience, after all, is but the sum total of our own "and other people's" mistakes. At both Universities already a large number of men and women have taken the diploma, and we can leave the future of our work with great confidence in their hands.

"Oh! that mine enemy would write a book," as the cynic remarked. Fortunately, there is no ill-feeling among the members of our section, and such a condition could not exist. I am, however, above everything especially interested in the educational side of our work, and I should like to relieve my mind of a few comments respecting our text-books. For the beginner, at any rate, may I suggest that there is frequently something lacking in the dogmatic teaching which he desires, especially in regard to "differential diagnosis." Knox's excellent work will naturally be studied by everybody. In the recent edition of Muir's "Manual of Practical X-Ray Work" a great step forward has been taken in this essential.

I should like to stimulate Bythell and Barclay to give us a new edition of "X-Ray Diagnosis and Treatment." The first edition was so full of good stuff that I feel sure a new edition is overdue. Some more specialised text-books are needed. I wonder if the time has not arrived when it might not be possible and advantageous to have a carefully edited book comprising the lectures already given in preparation for the diploma. A recent work by Wesseler and Jaches has been published in America on the radiography of the chest. It is the first real attempt to combine the clinical with the radiological side of diagnosis, at any rate in a pleasantly readable form. I have referred to one book that in my opinion no radiologist ought to miss the opportunity of reading; I refer to "Radium, X-Rays and the Living Cell," by Russ and Hector Colwell. So orderly is the sequence of this, the second edition, I think, that reading it is a pleasure. Surely the biological aspect of irradiation therapy is the one possible avenue by which we shall find the light we are seeking. In spite of all the amount of careful research and the immensity of trouble the authors must have taken in the preparation of the book, they very modestly wind up with a statement which seems well worth recording. They write as follows: "The way towards any working theory of action must be gained by accurate observation; with such a basis theory will predict how further facts may be ascertained. It may be realised that we are only at the threshold of the subject; ever-increasing coöperation between the chemist, the clinician, the pathologist, the physicist, and the physiologist will help to solve the problems involved in considering the mode of action of the rays. In radiology applied to biological problems there is a double difficulty, for the intensity of the irradiation, be it X ray or radium, is a quantity which under experimental conditions presents very considerable difficulties in its accuracy of measurement, and the animal itself represents a complex which refuses to be reduced to simple terms."

HIGH-VOLTAGE THERAPY.

It is difficult to discuss at the present time the great advance that would appear to have been made by the researches of Wintz and his associates at the Erlangen School. The method of high-voltage therapy was introduced into this country by Reginald Morton. So impressed was he by what he had seen that in order to devote himself to this work he was courageous enough to throw up all his other work—all honour to him. It is difficult, however, to appreciate how far we are sailing on the right tack. It seems to me, and this was the impression conveyed not only to myself but to many others during a most interesting discussion on the subject during the last session, that by this method we have approached a good deal nearer to precision as regards skin dosage at any rate, but that we are at the present time engaged in a strategic retreat in order to improve our position in the future. We are, I suggest, very properly doing some careful reconnoitring with a view to the question as to whether all cases for which radiation therapy is required are of necessity those for which rays of short wave-length are always indicated. Before very long I would submit the profession in general will require an answer, and an answer in no uncertain terms, on questions such as the following:—

1. Has high-voltage therapy given better or more promising results than have been obtained by the older methods?
2. Has high-voltage therapy given better results in the class of case that has hitherto baffled the ordinary methods or the technique of such places as the Radium Institute, for example?
3. Has high-voltage therapy done more to prolong life (quite apart from any question of "cure"—a word which, for the present, we have very wisely left out of our vocabulary)? I do not refer to such incidental cases as are familiar to all of us who have been engaged for a number of years in radiation therapy. From the very earliest days, radiologists can point to many cases of apparently wonderful arrest of new growth,

4. Has high-voltage therapy succeeded in arresting the progress of recurrent carcinoma of the breast in the fat and plethoric woman?

I am not going to attempt an answer, but I feel sure that you will agree that, for the next few years at any rate, no session of our own Section ought to pass without at least one evening being spent in a discussion upon this most important subject.

DOSAGE.

The term "lethal" dose I think ought to be dropped, except in the limited sense of "inhibiting growth," and, incidentally, the expression "stimulating" is misleading as having little or no ground in a scientific sense for its use as applied to radiation therapy. If one works upon the theory so well expounded by Dr. James Ewing (a précis of whose illuminating paper can be read in a recent number of the *Archives*) that the clinical results depend not only on the injurious effect to the tumour cells but also on the defensive action of the body and the tissues, the results may be more satisfactory and the possible harm to the patient less. By employing less than the so-called "killing" dose of Wintz and Geitz, repeated at intervals, most of the embryonic and lymphoid tumours react as well as with heavy dosage and without notable disturbance. If there are any who have not read the paper to which I have referred I think the conclusions are worth stating. They are as follows: (1) That no uniform dose can ever be established, each case requiring individual consideration; (2) that results will not improve with increase of dosage; (3) that deep therapy cannot safely proceed upon the direct killing of the cancer cell. I think the very instructive and fair résumé written by Knox in a recent number of the *British Medical Journal* ought to be studied by all of us.

THE BRITISH INSTITUTE OF RADIOLOGY.

Lastly, I would say a few words about the British Institute of Radiology, which we hope may in some way be linked up with the Royal Society of Medicine. You all know that the Institute has come into being by the absorption of the British Association for the Advancement of Radiology and Physiotherapy—a title as long as it was comprehensive. It forms the very keystone of the latter Society. Alas! the untimely death of Archibald Reid came at a very bad time for the Institute. There are two very distinct types of men. One, the type that goes full steam ahead and budgets later; the other, the type that budgets carefully and then slowly steams away. Reid was one of the former type, and to his infectious enthusiasm and optimism we owe the fact that the Institute is in being. Suitable premises on favourable terms have been secured at 32, Welbeck-street, and only more enthusiastic members and money are needed to give it a good send-off. Reid's dream, as he often said to me, was that the Institute should become a central information bureau on all matters affecting radiology, and that it should form a nucleus for a world-wide organisation, and should be the meeting place for all our international colleagues when they visit England.

Should there be any present who are not already associated with it, I am sure I am voicing the wish of the Council in giving them a very cordial invitation. Not only do we want radiologists and our good colleagues in other branches of physical medicine, but we need, above all, the help and counsel of the physician and the surgeon. It is hoped in time to have a good reference library, but, above everything, a complete record in the shape of lantern slides of the whole of the normal and abnormal body. New blood, especially young new blood, is vital. Are all the younger radiologists so busy making their fortunes that they have no time to give a hand by sitting on committees and making the Institute the success it ought to be? If for nothing else than as a memorial to our old friend and colleague, Archibald Reid, it is worth doing.

Dr. John Muir, to whose enthusiastic help as secretary to the Institute we owe it that the Council has been able to proceed, will, I know, be only too pleased to give any further information to those interested, or to discuss the financial position with any benevolent millionaire.

HOPES FOR THE FUTURE.

It is pleasant to ponder over our beginnings and to have the feeling that we are slowly but surely advancing. "All that is human must retrograde if it does not advance," as Gibbon wrote in "The Decline and Fall," and I am confident that we are not doing the former. We are, it is true, behind our American friends in the general adoption of team-work of the highest quality, I mean team-work as has produced such wonderful results at the Mayo Clinic. It is still a matter of surprise, if not of pain, to know that in this country it is not infrequently considered satisfactory to have merely a technician (even though he be well trained in his art) at the head of a scientific laboratory. It seems to me an equally wrong and retrograde movement that is taking place in many of our Poor-law infirmaries, even in those which pride themselves upon being "up to date" in other respects. Good X ray apparatus is provided at the cost of the ratepayer, but it would seem to be equally important that such apparatus should be used to the best possible advantage. This can only be the case if a trained and qualified medical man is at the head of the department. I think the time has come when from this place or from another our views should be laid before the Ministry of Health and the various boards of guardians. Our American and continental friends are amused that such a condition of things can be. Signs, however, that better counsel is prevailing is seen in the London Clinic, in which, at any rate from the only standpoint from which we are able to judge, there is nothing left to be desired. I mention the above only to emphasise that, in my opinion at any rate, we have not yet attained to the fullness of our growth. Let us make no mistake. Until the time arrives when by our training and our general knowledge we become indispensable to the cause of diagnosis, we cannot feel that the battle has been won. The time for watertight compartments or for universal specialism in medicine or surgery is a thing of the past. I always like to think of the consulting physician or surgeon in the position of a judge, and ourselves and other people engaged in arriving at a diagnosis as counsel. The judge collects all the necessary evidence, bears upon it the weight of his own knowledge and experience, and, finally, pronounces judgment. In such a perfection of medical life the radiologist has a very great deal of essential evidence to offer, and in this way, and in no other, will he come into his own.

DONATIONS AND BEQUESTS.—Mrs. Greenup, of Knutsford, left £1000 to the Knutsford War Memorial Hospital "as a mark of appreciation of the kindness and attention which she received when she was an inmate of the hospital."—The Royal Infirmary, Liverpool, through the medium of the Joint Council of the Order of St. John and the British Red Cross Society, has received a cheque for £1500 from the "Dennis Bayley Fund." A bed will be endowed primarily for the use of ex-Service men as a memorial of the sacrifices made by workers of the Order of St. John and the British Red Cross Society during the war and in commemoration of the work of the Fund for the Transport of Sick and Wounded, 1915-18.—Mr. E. F. Callisher, of Birkenhead, has sent a cheque for £2000 to the chairman of the Liverpool Babies' Hospital (Miss Margaret Beavan).—The late Mr. Meyer Elias Sassoon, of Bombay and London, left by will £5000 to King Edward's Hospital Fund for London.—The executors of the late Mr. J. G. Litton, chartered accountant, Manchester, have given a legacy of £1000 to the Christie Hospital (Cancer Pavilion and Home), Manchester.—The Earl of Ancaster has given £1000 towards £12,000 required for the enlargement of the Stamford and Rutland Infirmary.—Mr. Walter Wood, Worcester, left £2000 to the Royal Albert Orphanage, Worcester.

THE BABINSKI OR EXTENSOR FORM OF PLANTAR RESPONSE IN TOXIC STATES

APART FROM ORGANIC DISEASE OF THE PYRAMIDAL TRACT SYSTEM.

By T. R. ELLIOTT, M.D. CAMB., F.R.C.P. LOND.,

PROFESSOR OF MEDICINE, UNIVERSITY OF LONDON;
PHYSICIAN AND DIRECTOR OF MEDICAL UNIT,
UNIVERSITY COLLEGE HOSPITAL;

AND

F. M. R. WALSHE, M.D., D.Sc. LOND.,

F.R.C.P. LOND.,

PHYSICIAN IN CHARGE OF NEUROLOGICAL DEPARTMENT,
UNIVERSITY COLLEGE HOSPITAL.

THE extensor plantar reflex, if present over any period of time in other than infants, is generally accepted as certain proof of an organic lesion implicating the pyramidal tract. There are, however, some exceptions to this main rule of which one at least is familiar to physicians. Patients with frequently recurring epileptiform fits, either from ordinary epilepsy or from uræmia, may show a strong extensor response during and for a day or two after the period of fits; and yet they recover without the development of any organic lesion. It is less well known, though mentioned in respect of one case of acute yellow atrophy of the liver by Sir Humphry Rolleston,¹ and illustrated subsequently by several cases of severe infective jaundice reported by Sir William Willcox, that cases of severe hepatic insufficiency may show an extensor response for the day or two preceding death.

Insomuch as the plantar response is often relied upon in the examination of comatose patients as a means for distinguishing whether the coma is due to organic lesions, such as a cerebral hæmorrhage, or to some other and toxic cause, it is of considerable clinical importance to know precisely in what toxic states the extensor response may be found. Our experience has shown that there are many such states; but the accumulation of evidence from one hospital is slow. This preliminary paper is therefore written in the hope that other physicians may be inclined to examine the question in the various toxic states that chance to come under their observation, and that so a body of information may be collected from which it will be possible to deduce the general principles that govern the form of the Babinski reflex.

The chief text-books on neurology do not refer to the phenomenon in toxic states; the reason, perhaps, being that the cases of coma in which an extensor response may occur are those which come under the care of the general physician rather than of the neurologist, and the former, seeing his diagnosis fairly clear on other grounds, does not trouble to investigate the plantar reflex which would have been tested as a matter of routine by the neurologist. Thus Oppenheimer gives only one exception to the rule that the extensor response indicates an organic lesion—namely, that in idiopathic epilepsy the extensor reflex may occur during and for a short time after a fit, whereas it is never found in hysterical fits. Babinski himself, in the 1913 edition of "Travaux Scientifiques," does not discuss the possible occurrence in other than organic lesions of the extensor reflex which he first described in 1893.

Some observations in a physiological paper by Kleitman² are of particular interest in this respect, for he showed that an extensor response was present in healthy young men during the very deep sleep that followed deliberate deprivation of sleep for a period of 40 up to 110 hours. The response became flexor as the sole was repeatedly stimulated, and at

the same time the depth of the sleep was diminished. These results confirm the reports of some previous observers, and make it certain that an extensor response can appear in tired, but otherwise healthy adults during deep sleep, and be reversed on waking. It must therefore be borne in mind, when considering possible toxic causes of an extensor response, that the latter may sometimes be produced during deep sleep. But this caution does not greatly affect the practical clinical observations of this paper—namely, that independently of the depth of the coma an extensor response may occur in some toxic states and not in others.

In the instances given from our experience, only clear and unequivocal extensor responses are accepted; and they were obtained in the customary way by stroking or scratching the outer part of the sole of the foot, other possible fields of stimulation, such as the front of the leg, not being used.

Diseases of the Liver.

The toxic state of severe hepatic insufficiency, sometimes spoken of as "cholæmia," is associated with an extensor response; and in our opinion this sign should be used as a definite test for the onset of cholæmia in cases of liver disease. "Cholæmia," despite the name, has nothing to do with jaundice, and it may or may not be associated with the latter. The condition may arise in any diseased state that has seriously impaired the general functions of the liver, apart from that concerned with the bile pigments. It does not appear to be related to a suppression of urea formation or of sugar output from glycogen. The damage to the liver may be acute, as in severe infective jaundice or acute atrophy; or it may be chronic, as in cirrhosis or extensive carcinomatous deposits, when it is particularly liable to appear after any further sudden disturbance of the patient as by hæmorrhage or surgical operation. It is recognised by the mental changes of mild delirium or drowsiness, associated with a double extensor response; and it soon deepens into complete coma which ends in death.

Sir William Willcox¹² has referred to the mistaken etymology of the term "cholæmia," pointing out that bile may be present in great excess in the blood and yet not cause these toxic symptoms. He does not describe any case of cholæmia without jaundice; but he insists that the depth of the jaundice is not related to the intensity of the toxic features, and suggests that the term "icterus gravis" should be used for the toxic form. This suggestion, however, does not avoid the difficulty because the state can arise without any icterus at all. It seems better, in our present ignorance of the biochemical disturbances involved, to continue to use the word cholæmia for the clinical state, just as uræmia is still employed for the analogous toxic picture in acute or chronic renal disease though excess of urea in the blood is not the poison directly in action.

The following three cases illustrate the development of toxic features with an extensor response as the result of fresh disturbances in patients with chronic hepatic insufficiency, while the fourth shows the condition arising spontaneously and with slower progress.

CASE 1.—Man, aged 60, admitted to hospital with great ascites. History of syphilis and of chronic alcoholism. Wassermann negative. Plantars flexor. No jaundice. During the next 18 months the abdomen was repeatedly tapped, a total of over 30 gallons of fluid being removed. The ascites then lessened and a free collateral portal circulation became established. A year later he had a severe hæmatemesis from oesophageal varices, and was admitted to hospital semi-comatose, but irritable so that he reacted strongly to cutaneous stimulation. Double extensor response. Blood contained 0.11 per cent. sugar and 0.04 per cent. urea, the liver, therefore, not being entirely out of action. Coma deepened and knee-jerks vanished, while plantar response remained extensor for three days up to death. At necropsy the liver was very small, showing extensive cirrhosis and some portal thrombosis. Cerebral vessels

were normal. The sudden cholæmia had probably been caused by the large hæmorrhage.

CASE 2.—Woman, aged 46, who a year previously had had an attack of "catarrhal jaundice" for four months. She recovered for work, but a trace of jaundice persisted. Admitted to hospital with faint jaundice and advanced ascites from portal obstruction. Not wasted and no fever. Plantars flexor. Wassermann not tested. The abdomen was tapped and the fluid continued to leak through the opening left by the trocar. Next day the patient became drowsy, and when examined the day following she was in mild coma with increased knee-jerks and a double extensor response. Temperature 97° F. Blood-urea was then 0.017 per cent., a low figure suggesting liver failure. The patient died next day. Necropsy: Liver very atrophic; brain normal; semi-purulent peritoneal fluid in the pelvis, perhaps a result of the paracentesis abdominis and subsequent leakage.

CASE 3.—Barwoman, aged 35, addicted to spirit drinking. Four months' history of ascites, cedema, and very slight jaundice. Admitted to hospital with features of portal obstruction and with slight pyrexia, about 99° to 100° F. Jaundice very slight. Wassermann negative. Plantars flexor. No improvement in ascites though abdomen was twice tapped. Eventually the spleen, weight 9 oz., was removed in the hope of lessening the blood-flow through the portal system. Nine days after the operation the patient became excited and noisy and was mentally confused. Heroin gr. 1/10 given twice. Next day lethargic, with double extensor response. Died the following day. Liver extremely fibrosed and rather small. No macroscopic lesions in brain. A deep abscess at the site of splenectomy, which had perhaps caused the development of final liver insufficiency.

CASE 4.—Woman, aged 55, neither alcoholic nor syphilitic. Six years previous to death she had an attack of jaundice with pain, diagnosed in hospital as probably due to gall-stones. The jaundice never quite vanished, but there was no loss of flesh. Three weeks before death ascites became obvious, and a fortnight later the patient's mentality became slow and stupid. Plantars both flexor. Jaundice moderate. Two days before death coma supervened with deep respirations, and an extensor response, very definite on the right but equivocal on the left. Blood-urea 0.03 per cent., and blood-sugar 0.128 per cent. Liver cirrhotic and atrophic, weight 30 oz. Brain normal.

In contrast to these cases we have noted others, such as a protracted obstructive jaundice for nine months from cancer of the common duct without other liver disease, or a huge primary carcinoma of the liver growing for several months without jaundice, in which the patients sank quietly and slowly to death without acute mental changes and without an extensor response even in the last hours of life, that is, without cholæmia. In various forms of acute hepatitis and also in rapid destruction of the liver by known toxic substances cholæmia can occur. Such instances usually show an associated jaundice. Willcox (loc. cit., p. 65) described three fatal cases of this type during an outbreak in Mesopotamia of epidemic catarrhal jaundice; all these patients became irritable or maniacal, then comatose, and showed extensor responses in the last 24 or 48 hours of life.

We are not aware of any observations upon the plantar reflex in similar cases of spirochætal jaundice, but the difficulty arises in all these infectious maladies of excluding a possible invasion of the central nervous system by the actual infecting agent, which might thus produce mental changes and an extensor response directly and without reference to liver failure. The same confusion occurs in the interpretation of an extensor response in salvarsan poisoning with jaundice and liver destruction.

In the various reports published on trinitrotoluene poisoning with liver degeneration and jaundice mention is made of death preceded by convulsions or coma; the plantar reflexes are not discussed except by Willcox (loc. cit., p. 30), who refers to the occurrence of an extensor response, though he does not quote any actual cases. Eclampsia is a toxic state in which there is often serious destruction of the liver, and there may be slight jaundice. Fits are frequent; the patient may become delirious, comatose, and then

die. The obstetrical text-books do not refer to the state of the plantar reflex, though it is obvious that its character might be of importance in distinguishing eclampsia from other complicating diseases. Our own impression was that eclampsia did not lead to an extensor response, for in the first instance in which the latter was seen by us there was evidence of lethargic encephalitis complicating the illness of the confinement. Recently, however, by the kindness of Dr. H. R. Spencer we have seen one case of simple eclampsia with double extensor response. The patient was admitted with recurrent severe fits, the first of which had been followed by unconsciousness. She was not jaundiced. Next day when labour was in progress and the fits had ceased, the patient being mentally a little confused but not in the least comatose, the plantar reflexes were tested and found both to be extensor. Eight hours later they were both flexor. The patient made a straightforward recovery. It is therefore certain that a double extensor response can occur in the eclamptic state. In this instance we assume that it was a phenomenon associated with the status epilepticus, just as it may be seen in uræmia if fits are occurring. We have no evidence as to whether it may occur in the eclamptic state of coma without fits in which there is jaundice and liver destruction, thus corresponding more closely to cholæmia. In ordinary eclampsia an extensor response is rare.

Delayed chloroform poisoning is a toxic state, in which there is mild delirium, then coma, and usually death. A double extensor response is generally present. The liver shows fatty degeneration, and it is customary in pathology to ascribe death to a toxic action of the chloroform on the liver. If the analysis is true, this state is then very similar to that of cholæmia. Ether, also, may perhaps cause the same clinical series of events, as in a case which we quote by the courtesy of Dr. Batty Shaw.

The patient, 41 years old, had recently had hæmatemesis from a gastric ulcer and was moderately blanched; pulse, 104. Gastro-enterostomy was performed under ether, with a small dose of scopolamine and morphia beforehand. Next day she became delirious and on the following day had a double extensor response, dying soon afterwards. She was not jaundiced. The liver was large and the seat of acute fatty infiltration and degeneration.

Throughout the series of diseases so far discussed there has run the common factor of liver damage with a consequent toxic influence on the brain leading to coma and an extensor response. This relationship naturally brings into thought that rare malady, hepato-lenticular degeneration or Wilson's disease, in which the liver is fibrosed and there are manifest lesions in the brain. But the comparison throws no light on the question, for a leading feature of that disease is the absence of extensor plantar responses during the ordinary progress of the illness. The patients are not jaundiced; it is uncertain whether their death may ever be preceded by a final cholæmic state, for the published cases do not state the character of the plantar reflex in the last days of life. In one case observed by one of us, and recorded elsewhere,⁴ the plantar responses were still flexor within a few hours of death.

Other Intrinsic Toxic States.

The condition of cholæmia from liver damage has been discussed at length, and the suggestion made that it can be identified by the extensor response. Diabetic coma is as deep as that of cholæmia, but it is rarely preceded by the restlessness and light delirium that are associated with cholæmia and it is not accompanied by epileptiform fits. We have never found an extensor response in any case of diabetic coma, even after two days of coma and within an hour of death; and we have not discovered the record of anything but a flexor response in patients under the care of other physicians.

Hypoglycæmic coma produced by overdosage with insulin may be ushered in by fits. Emmons³

has recently described a case of coma, apparently without fits, in which both plantar responses were extensor. If this observation were proved to be generally true, the state of the plantar reflexes would be of great value in distinguishing between ordinary diabetic coma and that from hypoglycæmia. In the state of mental confusion and restlessness seen in relatively mild hypoglycæmia we have always found the plantar response to be flexor. Deeper coma we have not had any opportunity to study. In the only case of cyclic diarrhoea and vomiting that has come under our observation, a boy of 8 with repeated attacks associated with ketosis, restlessness, and great collapse, the plantars were flexor and the blood-sugar was not lowered.

An alkalosis of the blood was suggested by Heyd, Killian, and MacLean⁵ as the possible cause of drowsiness, coma, and death which developed in some of their patients after operations on the bile-passages. The plantar responses were not described, so that their clinical picture cannot be identified as that of cholæmia. There is no evidence at present as to whether an alkalæmia can produce an extensor response. The plantar reflexes were not described in the examples recently analysed by Ellis.² In a case recently seen by us, of adult tetany with vomiting for months and great collapse, where alkalæmia may have been associated with the tetany, but no actual analysis of the blood was made, the responses were flexor up to an hour before death. The vomiting in this case was not caused by pyloric obstruction, but may have been due to disease of the suprarenal glands.

The possibility of an extensor response occurring in acute uræmia is well known to physicians and it is unnecessary to quote illustrative cases. We wish to emphasise that we have seen it only in cases with epileptiform fits; that despite associated unconsciousness it has no sinister prognosis; and that the reflex may become flexor within a few hours after the fits have ceased. In cases, either of acute or chronic uræmia, that lapse into coma and die quietly without fits we have never seen an extensor response even in the hour or two before death. The extensor response of uræmia is therefore, so far as our observations go, not essentially related to the coma nor to the toxic state; it appears to be a phenomenon arising secondarily to the epileptiform fits, and presumably its pathology is the same as that of the extensor response in fits from idiopathic epilepsy.

Poisonous Drugs.

The action of chloroform in delayed poisoning has already been discussed. It has been stated by Bickel that in ordinary anaesthetisation an extensor response may be observed at the degree of anaesthesia which just precedes obliteration of all reflexes. This has not been generally confirmed. Some hypnotic drugs, when taken in excessive doses, can produce a coma, not necessarily fatal, during which a double extensor response may be very readily demonstrated. This is obviously a matter of importance in the differential diagnosis between coma from poisons administered and that arising from internal disease. One of us¹¹ many years ago described such an instance from sulphonal poisoning. The patient, a man of 21, had taken 15 grains of sulphonal nightly for a fortnight. He was brought into hospital drowsy and then became restless, with a double extensor response which led an experienced neurologist, who also saw the patient, to diagnose the condition as that of tuberculous meningitis. The response became flexor in the next 24 hours and the patient in a few days made a complete recovery.

With regard to veronal, we have no observations of our own. W. Cole¹ records a case with profound coma in which the plantars were flexor. The patient died in three days. Sir William Willcox has kindly informed us that he has seen extensor responses in veronal poisoning, though the cases have not been published. There is no clear evidence to indicate

whether the fatty degeneration of the liver described with veronal poisoning has any significance in this connexion. Opium poisoning has apparently not yet been observed to lead to an extensor response. Scopolamine is a drug of considerable interest in this respect. Our attention was drawn by Prof. A. J. Clark to a paper by Rosenfeld in 1921,¹⁰ which apparently followed an earlier one by Lenk.⁸ Rosenfeld concluded that subcutaneous injections of scopolamine, 0.5 to 1.0 mg., could be used to differentiate paralysis agitans and corpus striatum motor defects, in which the Babinski response remained flexor, from other nervous states in which the drug produced an extensor response. Rosenfeld made some erroneous statements, such as that an extensor response is never seen in terminal coma from bodily disease; but his statement that the drug may be used for a differential diagnosis is true, though not entirely in the sense indicated by him. Subcutaneous doses of 1/100 or 1/150 gr., which cause only slight drowsiness, do not change a flexor into an extensor response in a healthy subject, but they may do so in a patient with a minimal degree of pyramidal tract affection. The drug has, therefore, a very real value for clinical diagnosis in unmasking a doubtful or a hidden extensor response.

CASE 5.—Man, aged 51, with small cerebral tumour. A one-year history of transient attacks of motor aphasia with Jacksonian movements of right lower face and of tongue. After such an attack examination revealed slight clumsiness of movement in the right arm and hand and slight paresis of the right lower face. Both plantar responses flexor. No papilloedema. On two separate occasions a hypodermic injection of 1/150 gr. scopolamine was given. In each instance an unequivocal right extensor response was obtained within an hour, reverting to flexor a few hours later. Necropsy, after an unsuccessful exploration, revealed a small glioma at the foot of the left ascending frontal convolution.

Lethargic encephalitis may occasionally be accompanied by an extensor response, and in rare instances the latter may be found in post-encephalitic Parkinsonism. It is probable, therefore, that the pyramidal system is not absolutely free from involvement in this disease. We have observed several cases of the Parkinsonian syndrome where a full flexor plantar response was readily converted into an extensor response by gr. 1/100 of scopolamine given hypodermically; but our experience does not enable us to say that this change in the plantar response can be used to differentiate the post-encephalitic from the ordinary senile variety of paralysis agitans. Lemos,⁷ apparently without knowledge of the German writers, noted that scopolamine, when used in the treatment of the tremor and rigidity of the Parkinsonian syndrome in patients who have had lethargic encephalitis, can lead to the appearance of an extensor response; and he also suggested that the drug might be used to reveal a clinically latent involvement of the pyramidal system.

Coal-gas Poisoning.—In view of the ambiguous circumstances in which patients comatose from carbon-monoxide poisoning are often brought up for medical diagnosis and treatment, it is surprising that published observations on the plantar reflex are so rare. Wilson and Winkleman¹³ found the response flexor on first examination of two cases which ultimately died, but it does not appear that the reflex was tested again after the first observation. We found clear double extensor responses in each of the two cases that we have latterly had the opportunity to test in hospital.

CASE 6.—Man, age 49, who was found unconscious in his room at an hotel, the gas being turned full on and the disposition of the room suggesting deliberate preparation for suicide. Admitted to hospital at 9.45 A.M. unconscious. Carbon monoxide found in the blood. Temperature 101° F., pulse 120, respirations 48. Never regained consciousness. Temperature and respirations continued to rise and patient was in drenching sweats. Next morning temperature 103°, pulse 160, respirations 60. Deeply comatose; limbs rather rigid, but devoid of all involuntary movements. Knee-jerks normal; double extensor response. Died the

same afternoon. Brain slightly oedematous, no petechial hæmorrhages. Lungs deeply congested and showing inflammatory oedema.

CASE 7.—Man, age 18, found unconscious in his lodgings at 2 P.M. with gas-jet accidentally left open; was quite well the previous night. Admitted to hospital 4 P.M. Unconscious; slight cyanosis; profuse perspiration; temperature 100° F., pulse 124, respirations 44. Pupils reacting well, knee-jerks increased, double extensor response. Colour improved by oxygen, but no recovery of consciousness. Died next day, temperature rising to 103°, with pulse 140 and respirations 60. All organs showing intense venous congestion, brain otherwise normal. Lungs showed inflammatory oedema, together with small areas of broncho-pneumonia under the microscope and some purulent fluid in the bronchioles.

Both these cases were seen late and the carbon monoxide had largely been eliminated from the blood, but the brain had failed to recover from its prolonged anoxæmia and was meeting with further defective oxygenation of the blood from progressive broncho-pneumonia or inflammatory oedema of the lungs. The very severe features of pulmonary inflammation seen in each case, with rising temperature and respiratory rate, suggest the action of some unusual pulmonary irritant apart from the carbon monoxide in the illuminating gas. There is no knowledge of the time at which the plantars became extensor. It is therefore impossible to suggest how severe and of how long duration cerebral anoxæmia must be in order to change the plantar response to the extensor type. We have never yet seen an extensor reflex even in the most cyanotic and comatose cases of simple broncho-pneumonia or pneumonia. Nor have we seen it in cases of slow heart failure, when pulseless, semi-comatose and cyanosed from peripheral stasis and pulmonary obstruction.

It is a matter for regret that no observations were recorded on the plantar reflex in casualties during the war from phosgene gas-poisoning, when cyanosed and comatose. In lack of knowledge on this point in such analogous states or in the unconsciousness that follows ordinary drowning, the relationship of cerebral anoxæmia to the development of an extensor response cannot be analysed further, and we must be content to record the possibility of this form of the plantar response in coal-gas poisoning.

Summary.

1. An extensor plantar response characterises the toxic state of coma without epileptiform fits ("cholemia") that may arise when the metabolic functions of the liver are seriously impaired by acute or chronic diseases of that organ.
2. An extensor response does not occur in diabetic coma, nor in uræmia except when the latter is associated with epileptiform fits. It has been seen in eclampsia with fits.
3. Delayed chloroform poisoning, sulphonal poisoning, and coal-gas poisoning may all lead to the appearance of an extensor response in the absence of any organic lesion of the pyramidal tract.
4. Scopolamine will convert a flexor response into an extensor type in cases where the pyramidal tract system is only slightly affected, and the drug may therefore be used to unmask a latent or equivocal extensor reflex.

References.

1. Cole, W.: Amer. Jour. Med. Assoc., 1923, p. 373.
2. Ellis, A. M. W.: Quart. Jour. Med., 1924, xvii., 405.
3. Emmons, R. V. B.: THE LANCET, 1924, ii., 1260.
4. Greenfield, J. G., Poynton, F. J., and Walshe, F. M. R.: Quart. Jour. Med., 1924, lxviii., 385.
5. Heyd, C. G., Killian, J. A., and MacLean, W. J.: The Liver and its Relation to Chronic Abdominal Infection, London, 1924, p. 21.
6. Kleitman, N.: Amer. Jour. Physiol., 1923, xli., 67.
7. Lemos, M.: Rev. Neurol., 1923, ii., 424.
8. Lenk: Dtsch. med. Woch., 1905, p. 1053.
9. Rolleston, H.: Diseases of the Liver, 1912, p. 587.
10. Rosenfeld, M.: Münch. med. Woch., 1921, xxxi., 971.
11. Walshe, F. M. R.: Univ. Coll. Hosp. Mag., 1911, p. 207.
12. Willcox, W.: Lettsomian Lectures on Jaundice, Trans. Med. Soc. Lond., 1919, xlii., 1.
13. Wilson, G., and Winkleman, N. W.: Jour. Amer. Med. Assoc., 1924, lxxxii., 1407.

VENEREAL DISEASES IN MEN AND WOMEN.

A STUDY OF THE AGE-INCIDENCE.

By DOUGLAS WHITE, M.D. CAMB.

THROUGH the kind offices of Colonel L. W. Harrison, of the Ministry of Health, I have been able to go through the records of the V.D. treatment centre at one of the great London hospitals, in the hope of obtaining some reliable knowledge as to the age-incidence of syphilis and gonorrhoea among men and women at the present day. The result of this somewhat tedious piece of work is, I think, worth recording, since it seems to throw some light on a difficult problem.

Method of Investigation.

First, as to my method. I only dealt with those persons who attended the clinic since the card-index system was adopted. On these cards are recorded the answers to a series of questions on personal history; the cards contain no names, but numbers; the year of age is given with the probable or approximate date of infection; inquiry is made as to previous infections and their dates.

It therefore appeared to me that I might draw up two tables, the first showing the age at which the *present* infection was acquired, distinguishing between syphilis, gonorrhoea or chancroid, and double infection, also between married and single men; the second showing the age at which the *earliest recorded* infection was acquired, with the same distinctions. This proceeding I found practicable in about two-thirds of the male cases. Of the remaining third, a large proportion were diagnosed as having no venereal disease after bacteriological and serological examination. Of these, however, some had a dated history of former venereal ailment; such cases are recorded in the table giving ages of *first* infections but not in the table of *present* infections. A further proportion gave reliable histories as to *present* infections, but either denied previous infections, or, without denial, gave no history. Denials are here treated at their face value—however unreliable—and such *present* infection is also entered as a *first* infection. Where no denial but no former history is given they are recorded as *present* infections, but not as *first* infections. From this it will be clear that while the two records (men) of *first* and *present* infections consist largely of two records of the same persons, yet many persons are recorded in only one of the two. Hence, in my list of “*first* infections” there are 5782 cases recorded, but in my list of “*present* infections” only 5396.

The age of infection, recorded here, is not necessarily the age of the patient when treated. A man, for example, aged 54, suffering from *tubercles*, says he contracted syphilis 30 years ago. He goes down as *present* infection, syphilis, age 24. In such cases the memory of years is often surprisingly definite; but where round numbers are given it is hoped that inaccuracies will cancel out. Cases of *parasyphilis*, however, form only a small percentage. But in other cases also a difficulty arises as to the exact year to which the *present* infection should be credited—e.g., a case of secondary syphilis, acquired, say, seven months ago; man's age 25. I have assumed in all cases that such a man, when he comes for treatment, is midway between his declared age and the next higher—in this case 25½. If, therefore, his infection is over six months old, he goes down as 24, if less than six months, as 25. By this method the amount of error will be small, and a fair balance will be reached.

About 9000 cards of men were examined; no selection was made except to neglect those where there was either no V.D. or no history fixing the date of infection, or cases of congenital syphilis, which for this purpose are irrelevant. For the purpose of tabulation, widows and widowers have been treated

as single, which, indeed, they are as far as sex relationships are concerned. To have made a separate category would have increased the complexity. Children younger than those here recorded are not usually dealt with in this department of the hospital, hence they do not appear in the figures.

In the case of female patients greater difficulty was encountered, inasmuch as inquiry from women patients is in any case a more delicate business; moreover, a large proportion, specially of the married women, are genuinely ignorant of the date of their infection; hence, only 1720 women patients are recorded out of about 4000, simply owing to the lack of reasonably reliable information. Among the women, also, it was found impossible to make out any table of *first* or previous infections; hence, the records of women (two graphs) give the age of “*present*” infection only, which is comparable to that giving the age of “*present* infection” for the men.

Results.

Passing on now to results. The actual figures of my tables are reproduced in the form of “graphs.” Two graphs are given of each table—the one divided into areas of syphilis, gonorrhoea, and mixed infections, the other into areas of married and single at each age. Although the outline of the graphic tables has at certain points a somewhat jagged appearance, it is surprisingly regular in its general form, especially when the small age-intervals are considered (one year) which render some error inevitable; the raggedness, of course, becomes greater as the numbers get smaller. Each curve, however, tells its own story quite simply and decisively. Each curve also is markedly skew, rising sharply from the start (in the case of males) at 14 to a summit between 21 and 22 for “*first* infections,” and at 24 for “*present* infections”; after this it drops nearly, but not quite, as sharply as it rose, to about 33, after which it tails off all the way to 60. The curve of the women, starting at 11, reaches a summit between 21 and 22 (“*present* infections”—two years earlier than the men) tailing off in a similar manner to the men. The female graph is given on a larger scale so as to be roughly comparable with the male curves.

Attention may be drawn to certain points. The age-incidence of syphilis seems to show no significant difference from that of gonorrhoea on any of the curves, but the total proportion of syphilis to gonorrhoea is greater in *present* than in *first* infections, being in the former about 1:2, in the latter slightly over 1:3. In the case of women it is still greater, being about 1:1.2. Probably a larger number of women fail to present themselves for gonorrhoea, being ignorant of their condition, than for syphilis, where the secondary symptoms, if not the primary, demand attention. Mixed infections, also, are seen to be relatively commoner in the women than in the men, and in *first* infections of men than in the later.

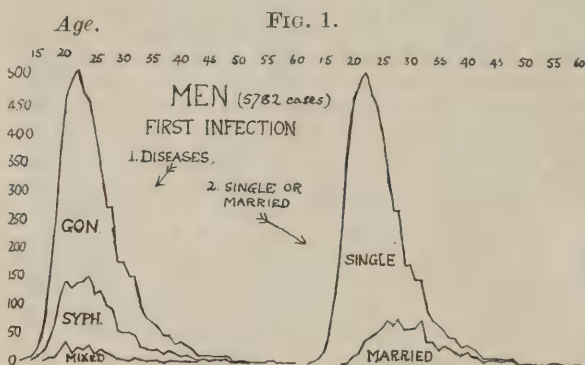
Incidence in Single and Married.

Turning now to the incidence of V.D. in single and married men, we find that in our table of “*present* infections” three-fourths of the whole occur in single men, one-fourth in married men. For these men the maximum (*present* infection) is reached at age 24. At this age the infections of married men account for one-seventh of the whole, while in the population of London, the married men of that age are one-third of the whole. For married men the maximum infection occurs at age 28, being at that age half of the single incidence; the numbers of single and married men in the community having become equal at age 26-27. At age 35 the disease incidence as between married and single has become equal, at which age the married men in London outnumber the unmarried by 4:1. After this age the married incidence preponderates, though disease is rapidly decreasing in absolute quantity.

Among the women the case is very different. With them the married incidence of disease is 25 per cent.

greater than the unmarried. This affords a striking contrast to the male incidence, even when we allow for the fact that this hospital is not much utilised by women of the prostitute class. The excess of married women infected begins at the age of 22, which year also shows the highest total figure. This marital preponderance is the more striking, since at the age of 22 only one-fourth of the women of London are married. And after the age of 22 the married preponderance increases steadily. It has been pointed out to me that this excess of married women may be partly artificial, owing to the fact that married women can be and often are brought to treatment by methods of persuasion which are not available for the unmarried. On inquiry I find that since the opening of the department in 1921 such persuasion has been increasingly cultivated. In the most recent figures (1923-24) the married excess is more like 50 per cent. than 25 per cent. In the earlier days the pressure was less effective; yet from the first there has always been an excess of married women.

On the whole I am inclined to think that a large proportion of the 25 per cent. excess may be artificial. But if the whole of the excess were artificial, the general argument would not be affected. Single men are affected three times as much as married; married



and single women equally. If, however, the married excess, as a whole, were entirely discounted, then the excess of married women over single, for particular ages, would begin at age 24 instead of age 22 (as given in text above). Incidentally, it may be said that while the formal distinction between married and unmarried is sharp, the ethical distinction is blurred, a considerable number of the women stating that they were infected by their fiancés, and many of them still desiring to marry the same man.

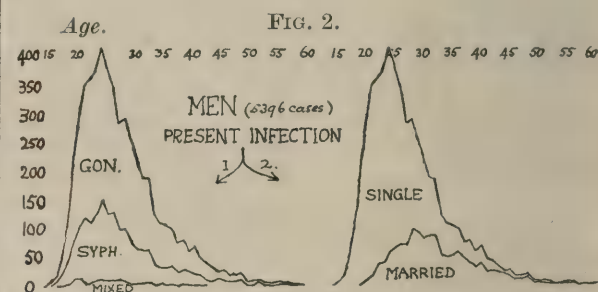
As regards the graphs, it remains to say that they are so scaled as to be roughly comparable with each other. If the other curves were scaled in exact proportion to that of "men, present infection," then the curve of "men, first infection" would show at age 22 an apex not of 513 but of 478—60 higher than the apex of "present infection." Similarly, if the number of women's infections were multiplied so as to equal the men's, their graph would show a maximum at age 22 of 505—87 higher than the apex of the corresponding men's curve.

It should also be noted that the apex of "first infections" of men stands in the graph at age 22, while in that of "present infections" (i.e., taking them as they come to hospital) the apex stands at 24. This means that when we compare "first infections" with "present infections," the curve (as might be expected) gets pushed back and heaped up at the earlier age. In my judgment, if the men had confessed more truly to earlier infections, the "first infection" curve-apex would have been pushed back further still, and with a higher apex, at the age of 21 or even 20. The women's graph, being of "present infection," is only comparable with the "present infection" curve of men. The women's apex occurs

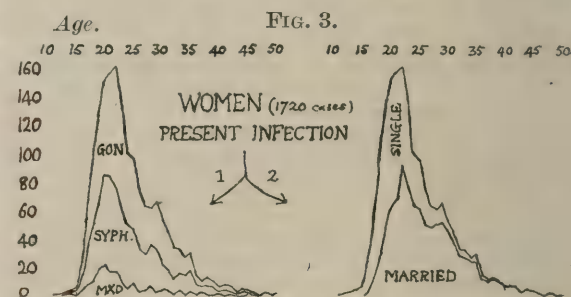
at age 22, the men's at 24. If a women's curve of "first infections" had been available, it would no doubt have been correspondingly pushed back and heightened, with an apex at about age 19.

Social Significance of these Statistics.

What, then, is the social significance of these statistics? Two points in particular appeal to me. First, it is evident that habits of sexual promiscuity



are formed in a very early period of adult life, and that the mental outlook, which gives rise to these habits, originates during adolescence, or even earlier. We may do a large amount for the abatement of venereal diseases by treatment and, to some extent perhaps, by artificial prevention, but the root of the matter lies in the outlook which is engrafted at the home and in the school. I am persuaded that much can be done to remedy this fundamental evil; and it is equally clear that nothing serious is now being done, save by the individual efforts of a relatively few parents and teachers, many of whom are ill-equipped for their task. The matter demands the joint attention of the Board of Education and the Ministry of Health. Secondly, the figures may serve to throw a partial and indirect light on the question as to what effect, if any, among our workaday classes, marriage has upon the incidence of V.D. The significance of the distribution of V.D. between single and married persons depends on the proportion of single and married persons, at each age, in the community from which they come. For this latter ratio the 1921 census figures are published for the administrative County of London. This is, indeed, rather a wide area for our purpose, but, as far as proportions of



married and single are concerned, it does not materially differ from the proportions which prevail in the five boroughs adjacent to the hospital in question.

Taking, then, the proportions of married to single men in London at different ages and comparing them with the proportions found in this V.D. record for married and single men at similar ages, the following tentative conclusions are reached. In men of all ages there is a smaller proportion of V.D. among the married than among the unmarried. But the extent of this favourable effect of marriage is not constant; its effect is at its best at ages from 30-35, when married men are less subject to

V.D. than single men in the ratio of 1 to 4. From this age up to 45 the favourable effect seems to diminish towards a ratio of 1 to 3; but here our numbers of men affected are too small to make the increased ratio other than conjectural. As we go backwards, however, from age 30, and more particularly from age 25, we find that the liability to V.D. of married men of the younger ages rises constantly, so that married men of a younger age than 30 appear to indulge in extramarital relations more frequently in proportion as they marry at an earlier age. [It is suggested to me that this apparently high liability of younger married men to V.D. may be due to a recrudescence of disease contracted before marriage, the recurrence being less likely after a longer lapse of time. I do not think this an adequate explanation of the statistics. If it were, it would only be another ground for the postponement of many early marriages.] Thus, according to my figures, if we take the liability of single men at each age to be represented by 100, that of married men from ages 19-30 is successively represented by 76, 53, 41, 42, 36, 33, 30, 27, 26, 31, 27, 24. Our figures, of course, at the earliest ages of marriage are small, but I think that the results as a whole are significant. If they are, they indicate that early marriages, before, say, the age of 25 for men, are relatively unsatisfactory as regards marital faithfulness, and probably also as regards happiness.

Except in the last-mentioned respect, the position of the women, again, is very different. While married men of all ages are less liable to V.D. than unmarried, married women at all ages are more liable to V.D. than unmarried women of the same ages. So far as they go, our figures indicate that, in proportion to the populace, married women of 27 years and over are about three times as liable to V.D. as unmarried women of the same ages; married women of 25 and 26 twice as liable; below 25 the married liability increases till at age 20 it is five times as great as for single women, and this excessive liability increases rapidly as the age decreases, till at age 17 the excess is enormous. If the 25 per cent. preponderance of married over single women, in this V.D. analysis, be discounted as artificial (as suggested above), still the excess liability to disease for married women of each age-group would by no means disappear, though it would be reduced by about 20 per cent. Married women at all ages would still be more liable to V.D. than unmarried women of the same ages, and very greatly so below 25. This state of affairs has its obvious explanation in the fact that wives are with great frequency infected by their husbands after marriage; the great excess in the first quinquennium of marriage (15-19) is no doubt largely due to infection at or before marriage by their husbands or by other men.

Effect of Early Marriage.

The picture, thus analysed, is a very different one from that of the men; it is only similar, in that early marriages in women, say, before the age of 22, seem to make very definitely for venereal disease. Whether these facts—if, indeed, they be generally true, as well as in the present survey—have been previously pointed out, I do not know, but they are worthy of meditation.

At present it is the custom to extol early marriages as preventive of venereal disease; it is probable that this opinion may have to be revised. The movement towards later marriages has been constantly growing over many years, though it received a slight and temporary check during and after the war. Economic prudence, often condemned as selfish, is also related to an increasing sense of responsibility; even if it were not so, educational progress, with the heightened sensibility which it engenders, tends to discount the success of early marriages; mental development goes on longer, and early affinities become less stable. Thus the tendency towards later marriages, though not free from evils, is both natural and beneficial; a general return to earlier marriage, if it were possible, would lead to less happiness and more disease. The opposite opinion, however, has to-day become not only

popular, but almost conventional. It has grown up during the last 20 years, in neglect of the weighty words of Havelock Ellis: "If all men married quite young, not only would the remedy be worse than the disease, but it would not cure the disease."

In conclusion, if I have generalised too widely on a slender basis, I do not forget that my figures represent only a local and limited experience of a hospital population. Yet it is hardly likely that other urban hospital populations would show very widely different results, and the mortality records of syphilis do not show that V.D. is less common in the upper, non-hospital, classes than among the hospital population. I can only hope that this tentative inquiry may lead to a more general survey, and towards the adoption of far-sighted educational measures.

INTUSSUSCEPTION.

A SERIES OF TWENTY CONSECUTIVE CASES.

By GEORGE M. GRAY, M.B., CH.B. ABERD.,
LATE RESIDENT MEDICAL SUPERINTENDENT, HOSPITAL FOR SICK
CHILDREN, GREAT ORMOND-STREET.

THERE is no disease of childhood which demands from the general practitioner earlier recognition than intussusception, and so the successful treatment of this condition will always be, to a great degree, a matter of fortune, in that the earlier a case is operated on after the onset of symptoms the greater is the chance of recovery. There are, however, a few points in the treatment which have considerable bearing on the question of success and will be dealt with here.

A tabulated list of the cases is given below.

Individual Cases.

The points of interest in individual cases are as follows:—

CASE 3.—This case had two days' history of attacks of pain, followed by vomiting and by blood-stained stools. The intussusception was not very difficult to reduce, except in the last 2 inches. It was of definite ileo-cæcal type, with dimpling of cæcum at the point of origin. No marked oedema of ileo-cæcal valve.

CASE 4.—Here the child passed blood after an attack of pain, before vomiting. The first vomit occurred on reaching hospital.

CASE 5.—Duration 24 hours. No definite history of vomiting, and only one blood-stained stool. The intussusception was ileo-cæcal in type and difficult to reduce, with a definite mesentery to ascending colon.

CASE 6.—Although of two days' duration the intussusception was very easily reduced and of ileo-ileo-cæcal type, with marked oedema of the ileal part.

CASE 9.—Had a definite previous history of gastro-enteritis.

CASE 10.—This intussusception had a very short origin from the ileum, and in the ileo-cæcal angle a small gland or cyst was found, which may have acted as a foreign body starting the intussusception, but this is unlikely, as the origin was distinctly proximal to it.

CASE 11.—This was an interesting case, as a definite Meckel's diverticulum, about 3 inches in length, was seen, about 2 feet from the ileo-cæcal junction, and in no way connected with the intussusception. Previous history of some gastro-enteritis.

CASE 12.—This case had a definite three days' history and was very collapsed. Vomiting had commenced immediately after a feed, and the child passed only two stools after the onset of symptoms, one mixed with blood, the second of pure blood. The intussusception was palpable as an elongated tumour in the umbilical region. At operation the tumour extended to the splenic flexure and was fairly easily reduced. It had begun a few inches proximal to the ileo-cæcal valve, and this ileal portion was very congested and more difficult to reduce. There was the usual oedematous dimple at the point of origin.

CASE 13.—Is of interest, as here we had a definite double intussusception, a primary ileal (enteric) about 1 foot in length extending to the ileo-cæcal valve, and a secondary one, a pure ileo-cæcal intussusception, extending to descend-

ing colon. The apex was not palpable per rectum, but a mass could be made out higher up. Fairly easily reduced, and the ascending colon found to be very mobile.

CASE 14.—In this case we had no history of vomiting, but had five blood-stained stools in six hours.

CASE 17.—This child came in very collapsed and was infused before operation, as it was considered to be her only chance. The abdomen was moderately distended. The intussusception was of the ileo-cæcal type, extending to below the splenic flexure, and was very easily reduced considering the duration of symptoms. The bowel was not gangrenous and only acutely congested. The ascending colon was *extremely mobile*, thus lessening the tendency to strangulation. The child was almost pulseless during the entire operation, and was kept alive after operation for two days with saline and glucose transfusions, but never really rallied.

CASE 18.—Here the child had a seven days' history, and the abdomen was so distended that no tumour could be palpated. This child was also in a very collapsed state when admitted. At operation an ileo-cæcal intussusception was found extending to the descending colon and was easily reduced, there being considerable oedema of the caput cæci. This was easily the most distended bowel we had seen, and as the child was not in good condition, immediate closure of the abdomen was attempted without inserting a trocar into the distended bowel; considerable pressure was necessary in getting the small bowel back into the abdomen, and the ileum perforated at its mesenteric attachment, a few inches above the cæcum. Some contents escaped, and the child was very weak when removed from the table and died soon afterwards. Whether it would have lived if the tear had not occurred is very problematic, but in future we shall use a trocar. This child had also a very mobile cæcum and ascending colon, and death would have occurred from toxic absorption from the bowel before ever strangulation or gangrene set in.

CASE 19.—This was our most interesting case in that it was a chronic intussusception with a two weeks' history as follows: "Sudden attacks of acute pain in lower abdomen and child vomited during the attacks. Child also had so-called diarrhoea for two weeks; motions dark, slimy, and offensive; no bright blood in motions. Twelve hours before admission passed bright red blood, about $\frac{1}{2}$ pint, and has passed more since." Tumour palpable in left hypochondrium. At operation an intussusception was found reaching to splenic flexure which was easily reduced. Child made an uninterrupted recovery. The cæcum and ascending colon were very mobile.

CASE 20.—The interest in this case is that it was a small tight ileal intussusception beginning in the ileum 10 inches above and extending only to the valve. Some difficulty in reduction; child also passed blood before it vomited.

General Remarks.

In the above series of cases the sex-incidence was 15 cases male, 5 female, which is about the usual proportion,¹ although no explanation of this can be given. All cases except three were under 1 year; three 4 months or under; nine between 4 and 8 months; five between 8 and 12 months, and three over 1 year, the eldest being 3 years. Most of the cases occurred in previously healthy children, which is the usual observation; in only two was a previous history of gastro-enteritis elicited. Of the ascertained cases nine were fed on the breast alone, five had been brought up on the bottle, and four had begun on the breast. These figures strengthen the belief that it is the strong, breast-fed, and presumably healthy baby who is most prone to intussusception.

The *symptoms* of intussusception are pain, vomiting, passage of blood, and presence of an abdominal tumour, and appear in the above order. Pain is always severe, the child crying out and drawing its legs up. Vomiting varies much in intussusception. It is usually persistent, but there may be only one vomit after the first screaming attack, and then no more; in no case was stercoraceous vomiting seen. Neither the frequency nor the violence of the vomiting gives any idea as to the site or tightness of the intussusception, as I have seen a high enteric intussusception with very little vomiting and a pure colic one with frequent vomiting. Sometimes vomiting is entirely absent, but this also does not help, as absence of vomiting was met with in two of the cases, one of which was a short, fairly tight ileo-cæcal intussuscep-

tion, and the other an ileo-cæcal, easily reduced one.

As "passing of blood" is a late symptom, cases should be diagnosed before its onset, but intussusception being relatively uncommon in practice, cases are usually diagnosed as colic until the passage of blood suggests intussusception. Blood per rectum was seen in all cases except one. Some authors say that it is neither a constant nor invariable occurrence.² In Case 19 no blood appeared until 12 hours before admission, but there was a history of diarrhoea for two weeks with dark, slimy, offensive motions; that is characteristic of chronic intussusception.³

Tumour.—This was palpable abdominally in all cases, but in some it was only distinctly made out when the child was under the anæsthetic. The size and position of the tumour varied greatly, but we found the "Signe de Dance" of confirmatory value, as in several cases there was a distinct emptiness of the right iliac region and also no gurgling over the cæcum was made out. This absence of gurgling is of doubtful value, but the converse is helpful in that if gurgling is elicited in the right iliac fossa, the chances of there being an intussusception present are slight. It must be remembered, especially if the child is under an anæsthetic and one is in an "intussusception" frame of mind, that the lower border of the right kidney is palpable in some children. In only five cases was the tumour palpable per rectum. In one case, in which there was doubt as to the abdominal tumour, a mobile tumour was easily made out bimanually, although the apex of the tumour did not reach to the rectal finger.

Varieties.

The varieties of intussusception present in the above 20 cases were ileo-ileo-cæcal, 10⁴; (so-called ileo-colic), ileo-cæcal, 7; ileal (enteric), 2; ileal ileo-cæcal, 1. Most writers give the ileo-cæcal as the most common form seen, but this was not found in this series. The true ileo-colic type did not occur—that is, the type in which, beginning in the terminal portion of the ileum, more and more of the ileum is prolapsed through a stationary ileo-cæcal valve, and thus the apex is constantly changing, which is peculiar to this type of intussusception only. Our so-called ileo-colic type began in the ileum a short distance above the ileo-cæcal valve, travelled down to and through the valve until the limit of the small intestine was reached, and then the cæcum and valve were pulled in and the tumour grew at the expense of the colon. The ileo-cæcal type came next in frequency. Here the apex was formed by the ileo-cæcal valve, but in two cases after reduction there was a distinct dimple in the postero-external portion of the caput cæcum, as if this were the starting point of the intussusception. The two cases of ileal intussusception are interesting in that they both began about 18 inches above the ileo-cæcal valve, and the apex travelled down to but not through the ileo-cæcal valve. In the case (20) with a two days' history, the cæcum and ascending colon were much more bound down to the posterior wall than usual, and the ascending mesocolon being very short, it would seem that this had some bearing on the intussusception not developing into an ordinary ileo-ileo-cæcal type. In the other case, with an eight hours' history, the cæcum and ascending colon were mobile, and perhaps if it had not been so early diagnosed would have developed into the ileo-ileo-cæcal type.

In all the 20 cases, except one, there was distinct mobility of the cæcum and ascending colon, and this undoubtedly is an important factor in the development of intussusception. Before an intussusception can become ileo-ileo-cæcal or purely ileo-cæcal there must be an ascending mesocolon.

D'Arcy Power has shown that the mesenteries of infants are relatively much longer than those of older children, and comparing the mesocolons of the intussusception cases with those of children of the same age seen at post-mortem, I think there is even greater mobility in the former cases.

Anatomically the ileo-cæcal valve would seem an ideal starting point for intussusception, especially if there is any tendency to prolapse of the valve, as then we would have a tumour, simulating a foreign body in the ascending colon, and thus exciting peristalsis.

The majority of these cases began in the ileum considerably above the ileo-cæcal valve, and also in three of the pure ileo-cæcal type it was found that there was a distinct dimple in the head of the cæcum, postero-externally, which seemed to have been the origin of the intussusception. The theory of irregular action of the muscular wall of the intestine, produced by some slight congestion or œdema of the wall, thus simulating a foreign body which the bowel attempts

the sheath and the entering layer, and gently dilating up, helped considerably. In one child reduction was attempted by means of hydraulic pressure. The abdomen was opened, and a large rectal tube passed, and water gently run in. By this means reduction was completed to within 2 inches, but as the pressure required seemed in danger of rupturing the bowel, the last part was reduced by direct manual pressure. The only advantage in this method is perhaps less shock, in that the bowel is not handled so much, but the delay in reduction does not warrant its use.

After-treatment.

All cases were given subcutaneous infusion of glucose, 2 per cent. in normal saline, immediately

TABULATED LIST OF CASES OF INTUSSUSCEPTION.

No.	Sex.	Age.	Bottle (B.) or breast (Bt.) fed.	Duration.	Passage of blood.	Palpable per—		Type.	Anæsthetic.	Mobile ascending meso-colon.	Event.	Remarks.
						Abdomen.	Rectum.					
1	F.	3/12	B. & Bt.	12 hr.	Y.	Y.	N.	I.-C.	Ether.	Y.	R.	—
2	M.	9/12	Bt.	6 hr.	Y.	Y.	Y.	I.-I.-C.	G. & O. & E.	Y.	R.	Tumour to pelvic colon.
3	M.	7/12	B.	2 days.	Y.	Y.	N.	I.-C.	G. & O. & E.	Y.	R.	Tumour to descending colon.
4	M.	4/12	Bt.	8 hr.	Y.	Y.	N.	I.	G. & O. & E.	Y.	R.	Blood in stool first, then vomit.
5	M.	1 yr.	B. & Bt.	24 hr.	Y.	Y.	N.	I.-C.	Ether.	Y.	R.	No vomit. Short and tight.
6	M.	9/12	—	2 days.	Y.	Y.	N.	I.-I.-C.	G. & O.	Y.	R.	—
7	M.	6/12	Bt.	24 hr.	Y.	Y.	Y.	"	G. & O. & E.	Y. +	R.	Tumour to pelvic colon.
8	M.	6/12	B. & Bt.	15 hr.	Y.	Y.	N.	"	G. & O.	Y.	R.	—
9	F.	4/12	Bt.	24 hr.	Y.	Y.	Y.	"	G. & O. & E.	Y.	R.	4 days previous gastro-enteritis.
10	M.	1 ¹⁰ / ₁₂	B.	8 hr.	N.	Y.	N.	"	G. & O. & E.	Y. +	R.	Cyst or gland in ileo-cæcal angle.
11	M.	3 yr.	—	14 hr.	Y.	Y.	Y.	I.-C.	G. & O. & E.	Y.	R.	Meckel's diverticulum.
12	M.	7/12	Bt.	3 days.	Y.	Y.	N.	I.-I.-C.	G. & O.	Slight.	R.	Difficult and much congestion.
13	M.	5/12	B.	2 days.	Y.	Y.	N.	Mixed.	G. & O. & E.	Y. +	R.	Double.
14	M.	5/12	Bt.	18 hr.	Y.	Y.	Y.	I.-I.-C.	G. & O. & E.	—	R.	No vomiting.
15	M.	9/12	B.	4 days.	Y.	Y.	N.	"	G. & O. & E.	Y.	R.	—
16	F.	8/12	Bt.	12 hr.	Y.	Y.	N.	"	G. & O.	Y.	R.	—
17	F.	10/12	B. & Bt.	4 days.	Y.	Y.	—	I.-C.	G. & O. & E.	Y.	D.	No gangrene.
18	M.	6/12	Bt.	7 days.	Y.	Y.	N.	"	G. & O. & E.	Y.	D.	Distension + +. No gangrene.
19	F.	2 yr.	B.	2 wk.	Y.	Y.	N.	"	G. & O. & E.	Y.	R.	—
20	M.	6/12	Bt.	2 days.	Y.	Y.	N.	I.	G. & O. & E.	Poor.	R.	Practically no ascending meso-colon: short and congested.

Y, Yes. N, No. R, Recovered. D, Died. I, Ileal. I.C., Ileo-cæcal. I.-I.-C., Ileo-ileo-cæcal.

to pass, is the only theory that can explain this ileal formation of intussusception, but we must also have a certain mobility of the ascending colon before we can have formation along the usual lines.

Treatment.

The treatment of intussusception, provided the child is not moribund, is immediate laparotomy and reduction. The incision preferred is a right paracentral one, because in young children it takes no longer than splitting the rectus, and has the advantage of there being practically no bleeding and much less risk of hernia. Intussusception cases are also notorious for bursting their wounds, 5-10 days after operation, and the surgeon is faced with the pleasant duty of sewing up again after having sponged a cot-full of intestines free from threads and fluff.

The anæsthetic used in all but three cases was gas and oxygen with usually a certain amount of ether, and this anæsthetic has been found of great advantage in lessening shock. The children were fairly toxic, and thus easily anæsthetised; in fact, in four of the more toxic cases no ether was required at all. Usually, however, a little ether had to be given, and it was found that once the children were got to a certain depth of anæsthesia in this way they could be kept there with gas and oxygen alone. Gas and oxygen alone was never persisted with if there was much straining and protrusion of the bowel; also ether was usually given just before sewing up to relax the peritoneum and facilitate stitching.

The tumour, if very long, was partially reduced inside the abdomen, and then delivered, and the apical portion reduced. This portion was usually very congested, but by the use of a hot saline pad and gentle continued pressure reduction was easily obtained. If difficulty was still experienced, the introduction of a small pair of artery forceps between

after operation. This helped to lessen the effects of shock. Other points are: (1) that morphia was always given if the child seemed at all restless, and (2) that the child was not starved, being fed four to six hours after operation, if awake. In the more severe cases glucose water, 7 per cent., was given for 12 hours, before they were put on milk. The bowels were opened by small doses of castor oil, if they had not moved by the third day.

Conclusion.

Intussusception will always have a large mortality, as so much depends on early recognition, but once in hospital the points that seem to matter in its successful treatment are:—

1. Improve the general condition of the child, if bad, by infusion of glucose in normal saline.
2. Try to prevent further toxæmia and shock by: (a) gentle and speedy reduction; (b) gas and oxygen anæsthetic for operation; (c) subcutaneous infusion of glucose, 2 per cent. in normal saline, immediately after operation.

My thanks are due to the honorary surgical staff of the Hospital for Sick Children for their kind permission to publish these cases.

References.

1. Dunbar: Scot. Med. and Surg. Journal, 1906.
2. Greig: Ibid., 1906.
3. Holt: Diseases of Infancy and Childhood, p. 416.
4. Gask and Wilson: Text-book of Surgery, p. 971.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Friday and Saturday, Jan. 16th and 17th, in the City Chamber, Town Hall, Newcastle-upon-Tyne, when discussion will take place on Maternity and Child Welfare Practice; Cleansing and House Refuse Removal; Elimination of the Tuberculous Cow; and the Sanitation of the Cinema. The chair will be taken at 4 P.M. on Friday by Prof. H. R. Kenwood (Registrar). A reception will be held and various local institutions will be visited.

RECOMPRESSION OF A TUBERCULOUS LUNG BY ARTIFICIAL PNEUMOTHORAX

AFTER AN INTERVAL OF MORE THAN SIX YEARS.

By R. C. HUTCHINSON, M.D., D.P.H. MANCH.,
MEDICAL SUPERINTENDENT, ROYAL NATIONAL HOSPITAL FOR
CONSUMPTION, VENTNOR.

IN the treatment of pulmonary tuberculosis by artificial pneumothorax the time during which the lung should be kept compressed varies with each individual patient. One of the most difficult questions for decision is to estimate when the lung may be safely allowed to expand. Such decision is, as a rule, irretrievable, because in the majority of cases adhesions soon form between the lung and the chest wall, so that no recompression can be effected. A number of cases have been reported in which a fresh pneumothorax was induced after varying periods during which the lung had been allowed to expand. Vere Pearson¹ quotes one case in which the interval was two years, another of 15 months, and a third also of two years, but in this an appreciable amount of fluid was present in the chest. R. Burnard² quotes Dumarest, who succeeded in inducing a second pneumothorax after six months' interval, but a third attempt a year later failed. Burrell³ also gives an instance of recompression after six months' interval.

Clinical Record.

The case described below is of interest owing to the long interval between the last refill for artificial pneumothorax and a fresh induction. This patient had been resident in hospital on three previous occasions before her admission on April 11th, 1922. The notes are as follows:—

A. B., female, single, aged 25. The patient was admitted on Nov. 28th, 1906, with a history of enlarged cervical glands on the right side of the neck. Cough for six months. Hæmoptysis six weeks before admission. Loss of weight. Weight on admission 9 st. 12 lb.

Physical Signs.—Old operation scar right side of neck. Considerable thickening of the subcutaneous tissues and tenderness on pressure. Physical signs in the chest indefinite, suggestive of early infiltration of the right upper lobe.

The patient had a high temperature, and was confined to bed throughout her stay. The sputum varied from 2 to 6 drachms daily, and was repeatedly negative for tubercle bacilli. Weight on discharge (March 20th, 1907) 10 st. 3 lb. 4 oz.

The patient was readmitted on April 13th, 1908. She then gave a history of appendicectomy in July, 1907, and hæmoptysis amounting to 20 oz. in December, 1907. The physical signs were apparently unchanged. The patient had repeated attacks of hæmoptysis, and was confined to bed for the whole of her stay. The temperature chart showed daily hæmoptysis for the last two months, varying from staining of sputum to 3 oz. She was discharged on August 31st, 1908.

The patient was readmitted on Sept. 14th, 1915. She stated that she was well until the winter of 1914 when cough returned, and she had several attacks of pleurisy on the right side. She had been treated with tuberculin, sustaining marked reactions both local and general, and she stated that she had had pneumonia a month before admission. Weight on admission 9 st. 13 lb. Troublesome cough; no sputum. There was a pleuritic rub at the right base and post-tussive crepitations at the right apex in front. The patient was febrile, 100° F. nightly, and on Nov. 4th (seven weeks after admission) artificial pneumothorax (right) was induced. This was successful and refills were continued until March 14th, 1916, the patient being discharged on the 28th. The temperature remained at the same level throughout her stay, and she was confined to bed. The sputum varied from 2 drachms to 1 oz. daily, and once tubercle bacilli were said to be present, the remaining examinations being negative. Her weight on discharge was 10 st. 8 lb., a gain of 9 lb. The final examination revealed distant breath sounds at the right apex, respiratory murmur being absent throughout the remainder of the right chest. On one occasion she had stained sputum. Apparently compression was satisfactory. There is no record of X ray examination. She was discharged on

March 28th, 1916. The last refill of 1000 c.cm. was given on March 14th, 1916.

She was readmitted on April 11th, 1922. Her history was then as follows. After leaving hospital in 1916 she married and remained well until June, 1921, when she had ovariectomy performed. In February, 1922, she stated she had an attack of influenza and had since been confined to bed with a high temperature. Her weight on admission was 10 st. 2 lb. The physical signs consisted of marked impairment of note over the upper half of the right lung in front and the whole of the right lung behind, with deficient respiratory murmur throughout. No moist sounds present. The left lung presented no abnormal physical signs. On May 2nd, 1922, she had an attack of hæmoptysis, 1½ oz., followed by the usual staining of the sputum. Hæmoptysis recurred on May 15th, 19th, and 30th. On the 17th an attempt was made to induce an artificial pneumothorax on the right side. Three punctures were made, but no oscillation was obtained. Evening temperatures were in the neighbourhood of 100°. Further attacks of hæmoptysis occurred at the middle and towards the end of June. The physical signs at that time were as follows. Very poor air-entry in the lower three-quarters of the right lung, and the weak respiratory murmur clouded by numerous fine râles. The sputum was repeatedly negative.

On June 28th, 1922, a successful attempt was made to induce an artificial pneumothorax. Free oscillations were obtained and 150 c.cm. of air admitted. The pneumothorax was continued until discharge, which took place on Feb. 1st, 1923.

The patient, who was a large-chested woman, could accommodate refills of 1000 c.cm. to 1400 c.cm., the latter amount being given once only. The temperature continued to be irregular and did not appear to be controlled by the recompression which had been effected. The X ray showed complete collapse of the lung, and no physical signs could be found on the other side. The occurrence of slight attacks of hæmoptysis and periods of pyrexia after the compression was established gave rise to the suggestion that these were factitious. The most careful watch, however, failed to substantiate any grounds for a suspicion which still lingers.

After repeated negative examinations the sputum was found to be positive on Oct. 25th, 1922, and again a few days before discharge. Before the positive sputum was discovered it was thought possible that the recompression had been obtained in a non-tuberculous condition. The compression was continued until July, 1923, the patient attending for refills from Feb. 1st of that year, when she was discharged from hospital. She stated that she felt very much better since the treatment had been started. Her weight remained at 10 st. 2 lb., and she was "fat and well liking" in spite of continued pyrexia. On discharge the X ray examination showed that the lung was entirely free from adhesions and was completely collapsed on the mediastinum (see figure). On inquiry made in July, 1924, the patient stated that she had been working since January, 1924, as a dispensary nurse and had kept fairly well.

Summary.

The particular points of interest in this case may be summarised as follows:—

1. The interval between the last refill and the second induction was six years and three months.
2. The entire absence of adhesions in spite of a history of pleurisy and the presence of a pleuritic rub in September, 1915, is a minor point of interest, confirming one's clinical experience that sufficient pleural space for a successful pneumothorax is sometimes found even where there has been a history of



previous pleurisy. In other words, the opinion is confirmed that the possibility of inducing artificial pneumothorax is best estimated by attempting to carry it out, despite the deterrent influence of the medical history.

The refills in this case were continued at the patient's home until December, 1923, when she voluntarily terminated her treatment.

References.

1. Vere Pearson: THE LANCET, 1919, ii., 148.
2. Abstract in Tubercle, March, 1922, Paris Médical, 1921, xi., 321.
3. Burrell and McNalty: Medical Research Council's Report on Artificial Pneumothorax, 1922, p. 40.

TROPICAL SPRUE AND PERNICIOUS ANÆMIA.

ÆTIOLOGY AND TREATMENT.

By C. ELDERS,

THE HAGUE; LATE DIRECTOR, GENERAL HOSPITAL U.L.P.C., SUMATRA.

Resemblances of Sprue and Pernicious Anæmia.

IN 1897 Thin, in his book on Psilosis, said:—

"I have known cases mistaken for pernicious anæmia by medical men who had never seen the disease and who were not aware of its existence; and I have had the diagnosis of pernicious anæmia insisted on in one of my own cases by a physician in London."

Thin found a high colour-index in three cases of tropical sprue. Carnegie Brown, in his treatise on "Sprue and its Treatment" of 1908, said:—

"Toxæmic sprue, especially when seen in England, is liable to be mistaken for progressive pernicious anæmia. Confusion between two such well-marked clinical conditions might be thought improbable, but, as a matter of fact, the mistake is one that is by no means unlikely to occur."

Bassett-Smith, Low, Manson-Bahr, Schilling-Thorgau, and others examined cases of sprue, whose blood picture was that of pernicious anæmia. In 1918 Nolen,¹ who is quite familiar with both diseases, went so far as to declare that it was sometimes impossible to distinguish sprue from pernicious anæmia. In some cases he found the complete blood picture of pernicious anæmia; in others only the high colour-index of sprue. He pointed out that Carnegie Brown's criteria for the differential diagnosis of the two diseases did not hold good. Gradually nearly all the peculiarities of the blood picture of pernicious anæmia were found in tropical sprue.

Relations of Sprue and Pernicious Anæmia as Deficiency Diseases.

As I² had since 1916 defended the view that sprue is a deficiency disease, the study of the interrelation of both diseases had attracted me greatly, principally in connexion with the ætiology and treatment of pernicious anæmia. In 1922³ I published a study on the blood of 11 cases of tropical sprue. In nine cases there was found at times a colour-index higher than 1, and where it was lower than 1 this could be explained by hæmorrhages from hæmorrhoids. I came to the conclusion that the blood picture could not well be distinguished from that of pernicious anæmia, and that the tongue changes, as Morawitz⁴ had recently described them, could not properly be distinguished from those in pernicious anæmia. In sprue, as in pernicious anæmia, there is often no hydrochloric acid in the gastric juice. There are gastro-intestinal disturbances in both diseases, though they are more prevalent in tropical sprue. I criticised the view that pernicious anæmia is caused by infection or intoxication of exogenic or endogenic origin, and that there is a hæmolytic poison, and I trust I was able to show that certain well-recognised features in pernicious anæmia cannot be satisfactorily explained by an intoxication hypothesis, while the same facts and all the others are easily explicable on a deficiency hypothesis. There is only a slight difference between the two diseases, and if one is a deficiency disease

the other should be so too. I have had opportunities of studying more cases of sprue since then, and the more I have studied the diseases the stronger has grown my belief that the blood and other symptoms are similar. Even symptoms such as pigmentation like that found in Addison's disease, petechiæ, and mental disturbances, which are not found in every case of pernicious anæmia, may be found occasionally in tropical sprue. Though there has not yet been found in sprue the degeneration of the posterior or lateral columns of the white substance of the spinal cord which occurs in pernicious anæmia, I have seen a case of sprue with ataxia* and anæsthesia of both legs. The knee-jerks could be hardly demonstrated. Thin found the reflexes in sprue sluggish. I can confirm this. He saw two cases with peripheral neuritis of the lower extremities. Maurer saw a case complicated with beri-beri.⁵ If we remember that Dürck found degeneration of the posterior columns of the spinal cord in beri-beri, which points to the view that degeneration of the posterior columns of the white substance of the spinal cord in deficiency-diseases is interchangeable with degeneration of the peripheral nerves, there are some grounds for expecting degeneration of extra- or intra-spinal nerve fibres in some cases of tropical sprue as in pernicious anæmia. Recently there was found, in the laboratory of Prof. Tendeloo at Leiden, red bone marrow of the long bones in a case of sprue, as is common in cases of pernicious anæmia, and in another case in the same laboratory there was found post-mortem gelatinous bone marrow, as is common in aplastic anæmia. As in my view there is no essential difference between pernicious and aplastic anæmia, these findings support the belief that there is a close relation between pernicious anæmia and tropical sprue.

Diet as a Causal Factor in Tropical Sprue.

From the anamnesis of tropical sprue one is often able to show that patients have lived on an unbalanced diet before contracting the disease, and it is a well-known fact that the food of Europeans in the Dutch Indies contains too much cured rice and canned meat, often little fresh meat, and is probably poor in fat-soluble A and water-soluble B. Dr. Bailey K. Ashford⁶ pointed out that the food of the population of Porto Rico with those classes where tropical sprue is common, is poor in animal proteins and fat-soluble A.

During nearly ten years I have not lost a single case of tropical sprue under my care, and even the severest cases were cured or greatly improved by a proper diet, consisting of underdone meat up to 1 kg. or more, with 1½ to 2 litres of raw milk with aquacalcis 5 times a day 15 c.cm., 15 or 30 c.cm. of cod-liver oil, and a few oranges or 400 g. of strawberries a day. The case of pernicious anæmia also greatly improved on this diet. All this seems to point to the conclusion that sprue and pernicious anæmia are closely related, and that sprue is a curable deficiency disease. If sprue is a deficiency disease it is probable that pernicious anæmia is a deficiency disease also. According to my opinion there are only the following real differences between the two diseases. Though there are gastro-intestinal disorders in both, these may be absent in pernicious anæmia and are more serious in tropical sprue. In tropical sprue there is more fermentation in the intestinal canal, and commonly there are produced acid and gas. The reaction of the motions to litmus is acid. In association with this there is a higher degree of emaciation in tropical sprue. Fat is not properly digested in sprue. To explain these differences in my way of thinking, one may say that the deficiency in the food which is the cause of the diseases, is for the greater part common to both and in a small part different. To cure sprue experience has shown that animal proteins, with vitamins and perhaps salts, are very useful. I hope these will be useful in the treatment of pernicious

* Two neurologists saw this case, Dr. van Braam Hoekgeest thought there was ataxia, Dr. de Vries thought there was a pseudo-ataxia.

anæmia too. From the experiments on rats of Mottram, Cramer, and Drew,⁷ we know that in rats lack of fat-soluble A and water-soluble B in the food makes fat transport through the intestinal wall impossible, and leads to atrophy of the intestinal wall. As I have said already, we know from experience that the fat absorption is highly disturbed in sprue, and atrophy of the intestinal wall is described by several investigators. From this it seems possible that lack in fat-soluble A and perhaps water-soluble B plays a more important rôle in sprue than in pernicious anæmia.

indifferent success, and sent her under my care on Jan. 1st, 1924. Condition on this date: Pale old lady. Abdomen ballooned, percussion tympanitic. Radial arteries tortuous, rigid, with bead-like patches of induration, systolic pressure 140 mm. Hg. The liver dullness is reduced. The spleen is not enlarged. The tongue is painful, smooth, and red at the edges. The motions are greyish, watery, or semi-solid, with gas bubbles and acid. There is much rumbling in the abdomen, cedema at both ankles. She got a dose of ol. ricini to empty the bowels, and was put on a diet of raw milk with aqua calcis, oranges, and a little meat. After two days the abdomen was flat and soft, and the motions were greyish-yellow. The tongue was painless. On Jan. 12th she went to hospital. The body-weight was

CASE 1.—Blood Counts.

Date.	Hæmoglobin (Sahl).	Erythrocytes in millions per c.mm.	Colour-index.	Leucocytes per c.mm.	Polymorpho-nuclear leucocytes.	Lymphocytes.	Large mononuclear leucocytes.	Eosinophilic leucocytes.	Mast cells.	Normoblasts.	Aniso-cytosis.	Micro-cytosis.	Macro-cytosis.	Poikilo-cytosis.	Basophilia.	Poly-chromasia.
Jan. 12th	20%	0.98	1.3	3931							+	+	+	+	+	
Feb. 13th	23%	1.08	1.4	3881							+	+	+	+	+	
Mar. 13th	42%	1.71	1.4	4000	193	200	13	5	4	—	+	+	+	+	—	—
April 25th	65%?	3.4	1.2?	9187							+	+	+	+	—	—
May 26th	75%	4.0	1.17	?							—	—	—	—	—	—
June 23rd	76%	4.45	1.06	7200	55%	43%	2%	2%	—	—	—	—	—	—	—	—

CASE 2.—Blood Counts.

Date.	Hæmoglobin (Sahl).	Erythrocytes in millions per c.mm.	Colour-index.	Leucocytes per c.mm.	Polymorpho-nuclear leucocytes.	Lymphocytes.	Large mononuclear leucocytes.	Eosinophilic leucocytes.	Mast cells.	Normoblasts.	Aniso-cytosis.	Poikilo-cytosis.	Basophilia.	Poly-chromasia.	Blood serum.	Bilirubin in serum (van den Bergh's method).
May 30th, 1922..	51	1.27	2.4	2450							+	+				
Aug. 12th, 1922..	47	1.56	1.87	5200							+	+				
Sept. 26th, 1922..	37	1.73	1.3	4500							+	+				
Nov. 11th, 1923..	68	2.77	1.54	4900	56%	35%	4%	5%	—	—	+	+	—	—	Pale yellow, clear.	1/200000
Oct. 10th, 1923..	80%	4.5	1.1								+	+	—	—		
June 15th, 1924..	77%	4.0	1.2	4717	70%	25.5%	4.5%	0	—	1	+	+	—	—		1/200000

CASE 3.—Blood Counts.

Date.	Hæmoglobin (Sahl).	Erythrocytes in millions per c.mm.	Colour-index.	Leucocytes per c.mm.	Polymorpho-nuclear leucocytes in 100.	Lymphocytes in 100 leucocytes.	Eosinophilic leucocytes.	Large mononuclear leucocytes.	Normoblasts.	Aniso-cytosis.	Poikilo-cytosis.	Basophilia.	Poly-chromasia.	Blood serum.
June 26th ..	35	1.46	1.53	4883						+	+			Pale yellow, clear, Wasserman n's and Sachs Georgi's test negative.
Aug. 27th ..	63	3.32	1.1	5390	53%	25%	17%	5%	—	+	—	—	—	
Sept. 26th ..	75	4.8	0.98	5443						—	—	—	—	
Oct. 27th ..	80	4.3	1.15	5000						—	—	—	—	
Dec. 27th ..	70	3.9	1.12							—	—	—	—	
Feb. 29th ..	80	4.9	1.0	8840						—	—	—	—	

Clinical Cases.

To illustrate the effect of my diets I shall give a few particulars of two cases of tropical sprue and one of pernicious anæmia.

CASE 1.—Mrs. N, 67 years, was born in Java, suffered from amebiasis, married at 19, had for 30 years at least weak bowels, suffered from cystitis. Her doctors treated her with rice, sago, and other farinaceous foods. Milk, meat, and fruit were not allowed. She had four children, which she was not able to nurse herself. When at Palembang (Sumatra) she was very fond of canned delicacies, which she preferred to fresh meat, fowl, or fish—even turtle from the country. In addition she ate polished rice. In the Dutch Indies it is difficult to get fresh milk. Three years ago she came to Holland. On board ship she improved greatly from her painless diarrhoea. Three months ago she had a serious relapse. Her last doctor treated her with

45.4 kg., and her height 143 cm. Here she got 1½ litres raw milk with aqua calcis, 100 g. cheese, 3 to 5 tangerines, 15 c.cm. of cod-liver oil, and 50 g. of underdone meat a day. Later on the meat was temporarily replaced by yolks of egg—up to six a day. In February I tried beans, cabbage, carrots, which I had to stop again. On Jan. 23rd she had the first solid stool. From Feb. 19th the albuminuria diminished rapidly, and there was only a trace on March 3rd. The general condition had greatly improved. The stools were satisfactory. From April 4th she got, besides milk, underdone meat, yolk of egg, and cod-liver oil, and instead of oranges strawberries. Body-weight increased from 45.4 kg. on Jan. 12th to 50 kg. on June 23rd.

On April 25th the patient was suffering from a furuncle, which may explain the high number of leucocytes on this date.

This was a serious case of tropical sprue with complications. The anamnesis shows clearly that she had lived on an inadequate diet. The blood table shows the effect of diet and rest.

CASE 2.—Man, aged 44, had never liked eggs, milk, meat, fish, fowl, and vegetables. He never had a good appetite. In 1922 he was treated for pernicious anæmia in the hospital in The Hague, leaving it at the end of September. I am indebted to Dr. de Jongh for the three blood counts of this period. His body-weight fell in hospital from 63.5 kg. to 61.8 kg. When in hospital he was on ordinary diet and was treated with arsenic. He had never been in India or other tropical countries, and had no diarrhoea. I examined him for the first time on Nov. 16th, 1922, for which I have to thank Dr. Wigger Boelens and Dr. Rombouts. He complained of a sore tongue, felt always sleepy, had anæsthesia in both legs. His gait was uncertain. He complained of pain in his legs and had swollen feet. His height was 182 cm., and his weight 70 kg. He thought he had improved after having left hospital. Dr. Rombouts prescribed for him arsenic, iron, milk, and eggs. I prescribed him a diet with three ounces of underdone horse-meat, milk, eggs, fruit, and cod-liver oil. He said he could not afford it, and he did not come back. Still he kept to my diet as well as he could. To Dr. Wigger Boelens I am indebted for the blood count of Oct. 10th, 1923. Dr. Wigger Boelens found his general condition then very good. By kind permission of Dr. Rombouts I had the opportunity to examine him again on June 15th, 1924. He was then in good condition and had done service in a Red Cross Brigade in the dunes as well as other men, though he thought he perspired too much. His tongue was not sore at all, though he told me it sometimes felt sore, for instance, after a dinner party. His body-weight was now 80 kg.

Of 140 polymorphonuclear leucocytes 103 had the nucleus too far fragmented (Armeth). The latter symptom was found in sprue by Schilling-Thorgau. Wassermann's and Sachs Georgi's tests were negative. The story shows clearly that the man had lived during his whole life on an inadequate diet.

CASE 3.—Man of 60 years, lived for many years in Java, very severe case of tropical sprue. To save space I only give the body-weights and the blood counts. The diet did not differ from that of the other cases. From the history it was not so clear as in the others that he had lived on a deficient diet, but the food of most Europeans in Java is not what it should be from the point of view of the newer knowledge of nutrition, and he suffered from chronic dysentery, for which his doctors gave him unsuitable diets.

From Sept. 26th he took, against my advice, ordinary boarding-house food. After Dec. 27th he kept again to the meat, milk, fruit, cod-liver oil diet. His weight increased gradually from 57 kg. on June 26th to 83 kg. on Feb. 29th.

The blood table shows that under the influence of the sprue diet there was gradual improvement in the anæmia. Besides his diet he got 20 injections of sodium cacodylate and a little hydrochloric acid with pepsin. He used to be the weakest man of his family, now he is the strongest.

Other cases of sprue are cured in the same sure way. To this list and to that of 1922 I could add a few cases more of tropical sprue. In reference to the high colour-index my findings are confirmed by van der Scheer,* who has published a series of cases. Koolemans Beynen found the high index also in nearly all his cases. He confirmed the sure effect of these diets. I hope that this will serve to direct attention to these views and treatment, and that some may be encouraged to try these diets in cases of pernicious anæmia.

Conclusions.

Sprue is a deficiency disease. A high colour-index of the blood is a common occurrence in sprue. Sprue and pernicious anæmia have so much in common that it is difficult to accept a different ætiology for the two diseases. If they have the same ætiology it is most probable that pernicious anæmia is, like sprue, a deficiency disease, and as such should be curable, or at least amenable to improvement by well-chosen food.

References.

1. Nolen : *Nederl. Tijdsch. v. Geneesk.*, 1918, Dl. ii., 1515.
2. Elders : *Nederl. Tijdsch. v. Geneesk.*, 1917, p. 1253; 1919, pp. 1683-1690; 1920, pp. 2169-2196; *Over de Behand. en de Oorz. van Ind. Spruw*, 1918, versch. bij v. Stockum to 's Grav.; *Geneesk.*, Gids, 14 Maart, 1924, pp. 569-577.
3. Over den Vorm, het Beloop en de Prognose van de Anæmie bij Indische Spruw en over de Aetiologie van Pernicieuse Anæmie, *Nederl. Tijdsch. v. Geneesk.*, 1922, ii., p. 2269.
4. Münch. Med. Woch., 1922, p. 557.
5. Dürk : *Die Beri-beri*.
6. *Amer. Jour. of Trop. Med.*, March, 1922.
7. *Brit. Jour. of Exper. Path.*, August, 1922, iii., No. 4.
8. *Nederl. Tijdsch. v. Geneesk.*, 1924, ii., p. 1487.

Clinical and Laboratory Notes.

DIABETIC COMA WITHOUT KETONURIA.

By GRIFFITH EVANS, F.R.C.S. ENG.

IN view of the report under the above heading in THE LANCET of Dec. 6th, I feel that the under-mentioned case is worthy of record for the following reasons: 1. Long-standing diabetes was so modified by insulin that sugar disappeared from the urine and approximated the normal level in the blood. 2. The patient, nevertheless, died in coma, with evidence of unusual disturbance of the central nervous system.

The patient was a male of 72, the salient features in his history being glycosuria and ketonuria of many years standing, the former as high as 20 per cent., but controllable to some extent by dieting, and, in 1912, a severe attack of præcordial pain, which was treated as angina pectoris. In July, 1924, he complained of pains in the arms, lassitude, and slight general malaise. There were slight swellings of some finger-joints, fibrotic nodes at deltoid insertions; blood-sugar 275 mg. per 100 c.cm.; urinary sugar 5 per cent.; trace of ketonuria. August 8th-Sept. 15th: Insulin given daily, 10-20 units, dose controlled by urinary sugar, which disappeared on the latter date, and did not return till Oct. 21st, when pains were increasing, and there was also slight ketonuria. Insulin (10 units) was given for four days, when the sugar finally disappeared. Nov. 7th: Pains very severe, skin of arms hyperæsthetic, transient tenderness over scapulae and cervical spine. Very restless. Blood-sugar 142 mg. per 100 c.cm. No glycosuria; no ketonuria. Ammonia nitrogen (urine) 0.058. Dec. 1st: Stiffness of arms and legs appearing, intermittent delirium, and delusions. Pain as before. Calf muscles seen contracted and in fibrillation. Dec. 5th: Died after two days' coma, with pyrexia 101° F., head retraction, stiff arms and legs, Cheyne-Stokes breathing. The plantar reflexes were flexor throughout; there were no retinal changes, and after Oct. 25th the urine remained free from sugar and acetone.

It is inconceivable that diabetes of such long standing should have been cured by insulin in small doses over a short period. *Pari passu* with the suppression of glycosuria there appeared signs of irritation of the central nervous system—disseminate and not conforming to any well-known clinical type. Unfortunately no specimen of cerebro-spinal fluid was taken, since the possibility of there being ketosis confined to it was not realised until after the patient's death. I feel justified, however, in publishing these admittedly incomplete notes, if only to emphasise the necessity of examining the cerebro-spinal fluid for sugar and acetone, even when the blood and urine remain free.

Carnarvon.

A CASE OF MEMBRANOUS STOMATITIS IN AN INFANT SIX MONTHS OLD.

By J. W. TOMB, O.B.E., M.D., D.P.H. DUB.,
MINES BOARD OF HEALTH, ANSANSOL, BENGAL, INDIA.

THE rarity of diphtheria in infants so young as was the subject of the following note warrants my placing this case on record:—

The patient was an English bottle-fed female infant of 4 months, who developed "blood dysentery," for which she was under treatment for about two months. On the disappearance of the dysentery a few spots of "thrush" began to appear on the child's tongue. These, on medical advice, were treated with glycerine of borax and peroxide of hydrogen, but in spite of treatment continued to spread over the mucous membrane of the tongue, cheeks, and lips. When first seen by me large areas of the mucous membrane were covered with a thick, whitish, closely adherent membrane which, on removal, left a raw and bleeding surface underneath, with rapid reappearance of the membrane. The fauces were, however, quite uninvolved, as was also the posterior portion of the buccal cavity, the membrane displaying a marked tendency to grow forwards over the

mucous membrane of the lips rather than backwards over the fauces. The buccal cavity was abnormally dry and salivation defective. The child, who had an ill-nourished and marasmic appearance, was extremely weak and cried feebly.

Such being the child's condition, it was decided, owing to the clinical characteristics of the membrane, to treat it as diphtheritic without further delay, notwithstanding the fact that the fauces were quite uninvolved and diphtheria in infants of that age almost unknown. Accordingly, 4000 units of anti-diphtheritic serum were injected subcutaneously.

The result wholly justified the action taken, as the membrane, which up to that time had persistently continued to spread in spite of all local treatment, completely disappeared within 36 hours.

Medical Societies.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

At a meeting of this Society, held on Jan. 1st, Dr. E. F. MAYNARD, the President, in the chair, Mr. D. A. CROW read a paper on the

Possibilities of Peroral Bronchoscopy and Oesophagoscopy.

He outlined the work done by Dr. Chevalier Jackson and his associates in the bronchoscopic clinic in Philadelphia. Lung abscess drainage, the diagnosis and treatment of neoplastic, cicatricial, and spasmodic stenosis of air and food passages, and illustrative cases of foreign body problems were briefly described. As an illustration of the detailed study necessary for undertaking foreign body removal, Dr. Jackson's methods of removing an open safety-pin were considered in some detail. Distinction was emphasised between, on the one hand, foreign bodies requiring urgent treatment such as those potentially or actually obstructive to the air passages, also vegetable substances—e.g., nuts, which caused intense reaction and, on the other hand, those requiring less urgent treatment, such as the non-obstructive metallic bronchial foreign body, the presence of which was constantly being overlooked (in the absence of a radiogram) in cases diagnosed as phthisis or bronchiectasis. These cases would at once recover after bronchoscopic removal of the foreign body. Mr. Crow asked that those throughout the country who were seriously willing to undertake bronchoscopy should have plenty of opportunity to acquire the necessary perfection of the very complex technique of endoscopy.

Discussion.

The PRESIDENT referred to the rapidity of recovery of abscess after removal of a foreign body. In bronchoscopy, he said, we had a very valuable aid to diagnosis in cases where no organic disease of the lung could be found by ordinary clinical methods and in cases of lung abscess.—Mr. A. J. HUTCHISON discussed the earlier methods of bronchoscopy and oesophagoscopy as practised in Vienna. He considered oesophagoscopy should be employed much more frequently than at present in cases of dysphagia.—Mr. L. A. PARRY asked if Mr. Crow advocated that swallowed foreign bodies which had passed into the stomach should be removed by the mouth. Of 20 cases in his experience in only one case, that of a latchkey remaining in the stomach seven days, was it necessary to operate abdominally, in all the others the obstruction passed naturally per rectum.—Mr. H. N. FLETCHER asked what were the possibilities of operation by bronchoscopy on abscesses of the lung which were usually situated in the lower lobe.—Dr. NEVILLE COX spoke with reference to non-opaque foreign bodies in the bronchi.—Mr. CROW, in reply, referred to the rarity of foreign bodies being coughed up from the bronchi (2 per cent. only). He considered that gastroscopy

was not required for foreign bodies in the stomach, and that abscess of the lung could be dealt with very successfully by bronchoscopy.

Mr. J. R. GRIFFITH read a paper, illustrated by lantern slides, on the

Eradication of Diseased Tonsils and Adenoids.

He described Mr. Waugh's method of removing tonsils by means of blunt dissection, and claimed that the method was clean and accurate and almost bloodless, that it avoided injury to the pillars of the fauces with their contained muscles, and that it avoided also the danger of aspiration of blood into the larynx and trachea. It was important, he said, to make the primary incision in the right place so as to ensure exposing the capsule at once. The blood-vessels were exposed entering the capsule before they were divided, and bleeding was completely stopped by gauze pressure over the divided ends of the vessels. The technique of the last part of the operation was important so as to ensure removing the whole of the lingual pole and at the same time avoid injuring the base of the tongue. The adenoids were then removed with a La Force adenotome, an instrument built on the guillotine principle. The window was curved to fit the superior and posterior walls of the nasopharynx, the cutting part was furnished by a flexible steel blade running in grooves in the window frame. This instrument cut through the adenoid attachment cleanly without tearing the mucous membrane. As a rule bleeding was very slight, and stopped after the nasopharynx had been mopped out two or three times. Mr. Griffith claimed that the results obtained by these methods were superior both anatomically and functionally to those he had obtained previously by enucleating with Sluder's reversed guillotine, although before adopting Mr. Waugh's method he was perfectly satisfied with the guillotine.

Discussion.

Mr. HUTCHISON said he preferred the reverse guillotine for children under 12 years of age. The disadvantages of the Waugh operation were the deep anæsthetic required and the length of operation. Also, if the incision was not made in the exact line, more damage was done to the pillars than by reverse guillotine.—Mr. CROW said he always employed Waugh's method in children and adults, but did not stitch pillars of fauces.—Mr. H. SEYMOUR said he used to adopt Willis's method, but was now quite converted to Waugh's method since seeing Mr. Griffith operate.—Mr. F. E. FEILDEN stressed the importance and difficulty of getting into the right layer and the importance of getting outside the capsule. He did not think it was so suitable for children as for adults.

Mr. GRIFFITH, in reply, said he considered there was less danger in deep anæsthesia by ether than light anæsthesia with possible laryngeal spasm. Bleeding might be very serious when the reversed guillotine was used.

Exhibition of a Case and Specimens.

Dr. A. W. WILLIAMS showed a very interesting case of extensive *Pityriasis Rosea*, involving the whole trunk and limbs down to the elbows and knees. The rash had cleared, but the areas were left deeply pigmented due to arsenic which had been exhibited in small doses before the case came under Dr. Williams's notice. The Wassermann reaction was negative.

Dr. H. M. GALT showed microscopical slides of normal tonsil, tuberculosis of tonsil, and squamous epithelioma of tonsil.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben lectures will be delivered in the lecture theatre of the Institute, 37, Russell-square, London, W.C., by Prof. Edgar L. Collis on Phthisis and Industrialism (National and Occupational) with Reference to Other Infectious Diseases. The first lecture will be held on Monday, Jan. 26th; the second on Tuesday, the 27th; and the third on Wednesday, the 28th, at 4.30 p.m. respectively. These lectures were unavoidably postponed from November, 1924. No tickets of admission are required.

Reviews and Notices of Books.

MENTAL DISEASES.

The Borderland. Some Problems of Insanity. By THEO. BULKELEY HYSLOP, M.D., C.M., F.R.S. Edin., late Senior Physician, Bethlem Royal Hospital. London: Philip Allan and Co. 1924. Pp. 310. 32s. 6d.

THIS volume contains four distinct elements, which, perhaps to its detriment, are not subdivided. Chapters 1 to 4, 11, 16, 18, 19, and 21 describe varieties of insanity from a purely academic standpoint; Chapters 5 to 10, and 17 deal with factors attendant on European civilisation which, in the author's opinion, are threatening the mental stability of the race; Chapters 12, 13, and 14 compose an interesting essay on decadence in art; Chapters 15, 20, and 22 form a miscellaneous group, of which the former is a highly erudite philosophical discourse, and the latter deal respectively with divorce, and what may be termed the mental sociology of the future.

A good deal of public attention has been directed to Dr. Hyslop's views under the second heading. To summarise them, he believes that the mental well-being of the British race is deteriorating under the influence of alcohol, noisy surroundings, over-education in relation to mental capacity, and the strenuous competition for livelihood among an overcrowded population, many of whose immediate forbears were accustomed only to an agricultural existence. This contention raises numerous issues of practical and general interest, and several individual points whereon the author will meet a large body of disagreement. To take a minor example, the argument that exposure to continued noise may determine meningeal thickening over the auditory area rests on very insecure foundations. Apart from alcohol, whose part in this matter demands (and has more than once received) a volume to itself, the remainder of these factors conform to the hackneyed description "mental stress," and it must be generally agreed that their influence, at all events, is by no means abating. A conclusion, however, of the first importance, at which Dr. Hyslop appears to have arrived, is that mental "unfitness" (whether neurotic or psycho-neurotic) is increasing, and to an extent which threatens us with frank racial degeneracy. Here is a subject worthy of the fullest debate. There is as yet no statistical evidence as to the incidence of mental deficiency and degeneracy, nor, since the latter term includes such conditions as drug addiction and neurasthenia, can we reasonably expect ever to be supplied with it. The country is certainly better fed, clothed, housed, and exercised than in, say, 1875: is it, or is it not, true that these physical advantages are being neutralised by influences whose action is on the mind?

The author's very numerous interests and accomplishments must, unfortunately, be blamed for the fact that this book embodies too great a variety of subject-matter for the average reader's mental digestion. He will be unable to resist the conclusion that its author has seized a single opportunity for airing all the convictions and prejudices of a life-time. He will admit, on the other hand, that a social problem of vital importance has been presented with surpassing force and authority.

A Present-day Conception of Mental Disorders. (Harvard Health Talks, 12.) By CHARLES MACFIE CAMPBELL, M.D., Professor of Psychiatry in Harvard University. Harvard University Press. London: Humphrey Milford. 1924. Pp. 54. 4s. 6d.

THIS small volume depicts insanity as a human ailment to be regarded in the same light as any other form of disease. As a simple account of what we know of the aetiology of mental disease it could hardly be bettered for lucidity and sweet reasonableness, and its effect in removing prejudice and ignorance in this connexion should be in direct proportion to its circulation.

TROPICAL DISEASES.

Exotische Krankheiten. A Short Practical Handbook. By Prof. Dr. Med. MARTIN MAYER, Departmental Director of the Institute of Marine and Tropical Medicine and Privatdozent in the University of Hamburg. Berlin: Julius Springer. 1924. Pp. 304. 24 gold marks.

THE object of this publication (as stated in the preface) is to provide in small compass a practical handbook, shorn of lengthy theoretical considerations. Designed primarily for the ships' surgeon and for physicians practising abroad, it condenses much of the information contained in the third edition of "Mense" recently reviewed in THE LANCET.

The title "exotic diseases" is happily chosen, for many of these peculiar infections (such as Rocky Mountain fever and tsutsugamushi) are not necessarily tropical in origin. Special attention has been given to the illustrations which, so far as possible, have been made from photographs. Emphasis is laid upon treatment, while but scanty reference is made to the literature. The protozoal diseases included in the work, malaria, trypanosomiasis, and amoebiasis, are amongst the most characteristic in tropical medicine, and spirochaetal diseases are well represented, while those due to bacteria include plague, cholera, Malta fever, and leprosy. Infectious diseases of uncertain nature comprise dengue, verruga peruviana, and alastrim. The inclusion of such a problematical condition as "bronchial spirochaetosis" seems inadvisable, and there appears to be little ground for differentiating the "pseudotyphus of Sumatra" from tsutsugamushi. The helminthic and arthropod infections occupy a considerable, even a disproportionate, space, while fungus and skin diseases, some of great rarity, are also noticed. The book closes with an account of snake, fish, and reptilian poisons, and the various forms of heat-stroke. We note that the subtertian malaria parasite is referred to as *Plasmodium immaculatum*, a terminology generally regarded as obsolete, while criticism may be directed towards certain figures, such as the representations of *Entamoeba histolytica*, which would be well replaced by more modern drawings. The coloured plate of helminth eggs in the faeces, drawn to scale, supplies a real want. The therapeutic sections might well be more complete, especially in the dramatic and acute infections, and it is a pity that, by limiting himself to the title of the work, the author has had to omit such an important disease as bacillary dysentery.

These are but minor blemishes, for, on the whole, this small volume well fulfils its aim.

REJUVENATION.

By NORMAN HAIRE, M.B., Ch.M. London: George Allen and Unwin, Ltd. 1924. Pp. 223. 7s. 6d.

THE subject of rejuvenation has aroused widespread interest during the last four years, and has stirred the popular imagination. Dr. Haire has produced a work which will be acceptable to the educated layman who wishes to obtain information on this subject. He has avoided technical terms and has written in a language which should be easily comprehensible to non-medical readers. The experimental work of Steinach and Serge Voronoff is briefly described, and an explanation is given of the theory on which rejuvenation operations are based. In the latter half of the book the results obtained from testicular grafts by various surgeons, Lichtenstern, Voronoff, Peter Schmidt, Lespinasse, and Kenneth Walker, are tabulated and the case-sheets of their patients published in detail. In the last chapter these results are reviewed and certain conclusions reached. No exaggerated claims are put forward for either grafting or vasotomy, and the author maintains a critical attitude. So many misleading statements have appeared in the public press that a book expressing a well-balanced judgment is of value.

SYPHILIS.

Le bismuth dans le traitement de la syphilis.
By C. LEVADITI. Paris: Masson et Cie. Pp. 316.
Fr. 25.

FOLLOWING on some experiments on bismuth in the spirillosis of fowls, which were carried out by Sauton and Robert—researches which were tragically interrupted—Sazerac and Levaditi, of the Institut Pasteur, succeeded in showing that bismuth was of value, not merely in the treatment of syphilis of rabbits, but in syphilis of human beings.

It is now three years since bismuth gained a footing in the therapy of syphilis, and during this period the literature on the subject has grown to such dimensions that Levaditi has considered the time opportune for this monograph on the subject. In this volume the whole history of the experimental work carried out is fully set forth. The choice of the compounds used, their toxicity and elimination from the body are freely discussed in the light of the experimental work on rabbits and fowls. The major part of the work is, of course, devoted to the employment of the drug in the treatment of syphilis in the human being in all its stages. The effect of bismuth compounds on the serum reactions is fully dealt with and conclusions are set down with moderation. The work is a practical and complete handbook on the subject, and is, moreover, authoritative.

THE PHILOSOPHY OF WITCHCRAFT.

By IAN FERGUSON. London, Calcutta, and Sydney: George G. Harrap and Co., Ltd. 1924. Pp. 219. 5s.

THE author of this little book presents the witch not merely as an actual personage but as a sample of the predominant instinct towards what he terms "the philosophy of comfort"—that is to say, that the witch appeals, whether in medicine, ritual, or literature, to what is popular rather than what is scientific or arduous. The opening chapter, which traces the historic progress of the witch from a stockade captive to wise woman, to prophetess, and finally to a servant of the Prince of Darkness, indicates the range over which the author's knowledge and fancy play. While he disclaims specially any pretensions to having furnished an academic contribution to a vast subject, he has certainly outlined that subject in a way which will make those interested approach it intelligently. A wide-ranging bibliography is appended for the use of such. We have read this suggestive and unpretentious little work with considerable pleasure, and we recommend the perusal of the chapter on the depreciation of spiritual values to those who are pained by certain modern developments of spiritualism.

VOLUMETRIC ANALYSIS.

A Systematic Handbook of Volumetric Analysis.
Eleventh edition. By FRANCIS SUTTON, F.I.C., F.C.S. Revised and enlarged by W. LINCOLNE SUTTON, F.I.C., Public Analyst for the Counties of Norfolk and Suffolk, Norwich, Ipswich, &c.; and ALFRED E. JOHNSON, B.Sc. Lond., F.I.C., A.R.C.Sc.I., Additional Public Analyst for the County of Stafford and the Borough of Wolverhampton. London: J. and A. Churchill. 1924. Pp. 629. 35s.

THIS classic of chemistry was first published in 1863 and the author, Mr. Francis Sutton, who was well over 80 years of age, had the gratification of signing the preface of the tenth edition in 1911. He was not spared to see the present edition. Few authors are fortunate enough to see their book flourishing during 50 years. In this period the many suggestions made to the author have been received in good part and acted upon, with the result that to-day the volume is very good indeed.

The general arrangement of the book remains unaltered. It is divided into nine parts. The first

deals with the general principles of measuring, weighing, &c. Part II. concerns acidimetry and alkalimetry. The authors have neglected to emphasise the importance of the ionic dissociation theories, particularly with regard to the theories of the action of indicators. There is no account of conductivity methods, and although it might be held that these do not come within the scope of the book, a description is necessary to a thorough understanding of these problems. Parts III. to IX. deal respectively with analytical methods depending upon oxidation and reduction, precipitation, the application of these methods to inorganic and organic substances, and the analysis of urine, water sewage, and gases. The latter section is undoubtedly one of the finest descriptions of methods of gas analysis. The volume concludes with a series of useful tables.

We wish the volume every success, and congratulate its producers upon a well-earned jubilee.

Elementary Qualitative and Volumetric Analysis.
For Medical First-year University Science Students, &c. By WILLIAM CALDWELL, M.A., Sc.D., Professor of Chemistry, Royal College of Surgeons in Ireland. With an Introduction by C. S. GIBSON, O.B.E., M.A., M.Sc., F.I.C. London: J. and A. Churchill. 1924. Pp. 418. 10s. 6d.

THIS volume aims at giving the medical student as complete a course in chemical analysis as is necessary for the preliminary examination of either the Conjoint Board or a university. The author has attempted to raise the subject to a higher plane than a mere string of tables. Throughout the book the subject is presented in such a manner that the student performs his analyses rather in the guise of studying reactions than in the light of a competition, which is usually the medical student's idea of this branch of his activities. The book embraces inorganic analysis, together with simple organic reactions. Thus tests for fats, proteins and carbohydrates, and the reactions of some typical alkaloids are included. The volumetric analysis covers all the ground required for the student, and deals also with some estimations necessary for the chemical examination for the D.P.H. There is a remarkably clear account of the theory of the action of indicators, and of hydrogen-ion concentration. The author, in his laudable zeal for simplicity, has, perhaps, made rather a mistake in suppressing the easier mathematical aspect of this subject. Thus, his description of the meaning of the symbol pH is unintelligible. The book, on the whole, however, is admirably written, and certainly marks an advance in the teaching of elementary students.

ANÆSTHESIA FOR NURSES.

By Colonel WILLIAM WEBSTER, D.S.O., M.D.
London: Henry Kimpton. 1924. With illustrations. Pp. 153. 10s. 6d.

IN spite of its ambiguous title and its multiplicity of split infinitives this is a good little book. It tells the nurse most of the things which she should know in connexion with anæsthetics and a good many details which are doubtless welcome to nurses working in the country from which Colonel Webster writes, where the nurse frequently acts as anæsthetist on her own responsibility. A small chapter is devoted to ethylene, the latest recruit to the band of general anæsthetics, and the statement is made that recovery with this drug is as rapid as with nitrous oxide. This is not accurate of long administrations. In the description of chloroform administration by mask and drop-bottle no mention is made of the important factor of the distance of the mask from the face. Presumably the two are in contact from the first, and the nurse is not impressed with the fact that danger from overdose can be avoided by the simple measure of not letting the mask touch the face. In describing the preparation of the patient beforehand

Colonel Webster adopts a more rigorous starvation procedure than is now usually favoured. All his directions bearing on the patient's comfort and on what we may call the nurse's social relation to her patient are excellent. His punctiliousness here is illustrated by the direction that "sacred emblems worn about the neck may be retained unless the operation involves this part of the body."

LE PROBLÈME DU CANCER.

By WILLIAM SEAMAN BAINBRIDGE, A.M., ScD., M.D., C.M. Louvain: A. Uystpruyst. Paris: O. Doin. 1924. Pp. 479.

THE French translation of Prof. Bainbridge's treatise on cancer, which first appeared in English in 1915, has reached a second edition and is now published in Paris as well as in Louvain. This book has the distinction of being the first one to be turned out from the printing press of Trois Rois at Louvain after reconstruction, for the press was destroyed at the beginning of the war by the Germans. The King of the Belgians accepted the first copy from the Trois Rois, the printing house of the University of Louvain. The second French edition has been revised and added to, and we hope that the French public will note one of the final chapters, which deals with the education of the laity. Prof. Bainbridge perceives clearly that in organised attempts to deal with the cancer problem the coöperation of the public must be obtained.

THE STUDY OF CORALS.

An Introduction to the Study of Corals. By SIDNEY J. HICKSON, Professor of Zoology in the University of Manchester. Manchester University Press. London: Longmans, Green and Co. 1924. Pp. 257. 25s.

IN this book Prof. Hickson has provided a useful up-to-date survey of the various organisms loosely grouped together in popular speech as "corals." Although dealing somewhat technically with descriptive classification in nine out of the 12 chapters, the book is pleasantly written and does not demand of the reader more a priori knowledge than is afforded by the brief zoological course of the medical curriculum. It concludes with a discussion of the theories of formation of coral reefs and islands, and an interesting note on the mythology and folk-lore of coral, entitled the Early Trade in Black and Red Coral. The illustrations, both photographs and diagrams, are many and beautiful, and the presentation is pleasing.

JOURNALS.

BRITISH JOURNAL OF EXPERIMENTAL PATHOLOGY. Vol. V., No. 6. December, 1924.—Percival Hartley: The Effect of Radiation on the Production of Specific Antibodies. The author concludes, from the results of experiments described, that exposure to radiation is without effect on the content of diphtheria antitoxin and typhoid agglutinin of the serum of immunised animals. Repeated small bleedings at short intervals may be followed by an increase in typhoid agglutinins in immunised rabbits.—Arthur Dighton Stammers: (Edema in South African Cattle.—Argyll Campbell and Leonard Hill: The Effects of Light upon Leucocytes and Blood-vessels in the Mesentery of the Living Animal. A simple method for investigation of the biological action of light is described, the determining factor being the production of capillary stasis in the mesentery of the frog. Further evidence is submitted that light has an important effect upon leucocytes. The endothelial cell of the vessel-wall appears to be involved.—S. L. Baker, F. Dickens, and E. C. Dodds: The Distribution of Insulin in Human and other Animal Tissues, with a Description of a Micro-method for the Estimation of Insulin in Tissues. The insulin content of some of the organs

of the ox, pig, sheep, horse, and cat has been worked out. The insulin content per kilogramme of the kidneys and spleen has been found to be roughly the same as that of the pancreas in the human subject. The insulin content of the organs of a person dying in diabetic coma was found to be quite appreciable. No delayed action was found with any of the preparations, whether from the pancreas or elsewhere. Active material, indistinguishable from insulin, was prepared from potatoes and onions.—J. C. G. Ledingham: The Reaction of the Skin to Vaccinia Virus. The vaccinal lesion has been studied histologically in its various manifestations. The lesion is essentially of the order of an acute infective granuloma in which the reticulo-endothelial system is primarily and dominantly involved. There is no evidence that vaccinia virus possesses an elective affinity for epiblastic tissue. Evidence is afforded that precisely similar tissue responses occur when the virus is introduced into tissues remote from epiblast. In contra-distinction to vaccinia, anti-epidermal serum when introduced intradermally produced an early and definite toxic action on epiblastic elements of skin.—F. W. Twort, T. H. Ayling, and C. C. Okell and H. J. Parish also contribute articles, and a brief sympathetic memoir of the late Sir William Bayliss is included. There are eight plates, four in colour, all admirably reproduced, but arranged in a decorative style more appropriate to a less scientific periodical.

BRITISH JOURNAL OF CHILDREN'S DISEASES, Vol. XXI., October-December, 1924.—Dr. Thomas Brushfield contributes his Cambridge M.D. thesis on mongolism based on 177 cases admitted to the Fountain Mental Hospital from 1914 to 1924, and accompanied by 18 excellent photographs illustrating the characteristic features of the condition. He points out that mongols, like other varieties of aments, can be divided into idiots, imbeciles, and feeble-minded, the degree of amentia being in proportion to the number of mongolian characters. The differential diagnosis between the mongol and the cretin is set forth in tabular form. As regards the prognosis, Dr. Brushfield lays stress on the following points: (1) the large number of deaths connected with inflammation of the mucous membranes; (2) the high incidence of congenital malformation of the heart; (3) the lack of response to any therapeutic measures; (4) the general clumsiness of the body and limbs which prevent a mongol taking part in the healthy movements normal to a child. The average age at death was 7 years among 24 males and 6 years among 20 females. A study of 42 older mongols in other hospitals had convinced Dr. Brushfield of the following facts: (1) they had all grown more or less; (2) they were all much fatter; (3) they had all deteriorated mentally.—In a paper entitled an Investigation of 50 Cases of Mongolian Imbecility from the Out-patient Department, Hospital for Sick Children, Great Ormond-street, Dr. Dora M. Berry comes to the conclusion that there is very little evidence to support the pre-war theory that mongolism is due to the mother reaching the end of the child-bearing period, as over a half of the cases were first and second children. On the other hand, much evidence was obtained that the father was sexually defunct, as in two-thirds of the cases he had served in the army or navy, and in nearly half he had suffered from shell-shock, while the mothers were young and healthy.—In a paper on the Home Care and Treatment of Physically Defective Infants and Young Children, Dr. John Thomson discusses the home treatment of the blind, the deaf, and those who are crippled or invalids from other causes, emphasising the importance of preventing them being self-centred, discontented, and dependent through lack of a proper training in infancy.—In their paper on Post-Operative Acidosis in Children, Dr. Philip C. Jeans and Dr. Kenneth H. Tallerman record their observations on 14 cases. The blood and urine were examined before and after operation, and those substances which might be causative factors

were estimated. The writers found the lowering of the alkali reserve to be due in but small measure to acetone bodies or to lactic acid accumulation, nor was phosphate retention the cause of acidosis. They conclude that some as yet unidentified factor is largely responsible for the lowered alkali reserve. Qualitative tests for acetone bodies in the urine gave but a poor indication of the degree of acidosis present, if compared to the variation in alkali reserve.—In a paper on Infective Hepatitis with Cirrhosis, Dr. Robert Hutchison and Dr. Donald Paterson describe a case of subacute liver atrophy with consequent cirrhosis and commencing regeneration of liver cells.—Dr. Edgar F. Cyriax contributes a paper on the Antero-Posterior Tilt of the Pelvis: Its Variations and Their Clinical Significance in Children, in which he emphasises the importance of recognising and correcting abnormal pelvic tilts in children, as the presence of this tilt means alteration of position and angle both relatively and absolutely of some or all of the abdominal organs.—The abstracts from current literature are devoted to dermatology and syphilis.

Reports and Analytical Records.

SCUROFORME.

(LABORATOIRE DES PRODUITS "USINES DU RHÔNE," 21, RUE JEAN GOUJON, PARIS; DICK, COATES AND CO., 41, GREAT TOWER-STREET, LONDON, E.C. 3.)

Scuroforme has been recently introduced as a useful local anæsthetic. Chemically, it is said to be para-aminobenzoate of normal butyl. It is a yellowish powder, almost insoluble in water, though soluble in alcohol and to a slightly less extent in olive oil and in vaseline. The fact that it is almost insoluble in water limits its action to the part where it is applied and prevents its absorption into the bloodstream, so that the manufacturers claim that it is practically free from toxicity. Certainly in those cases in which we have received reports concerning its use there have been no signs of toxic symptoms. Applied to a mucous membrane it soon manifests its anæsthetic effect, as can be shown by its application to the tongue or conjunctiva; and the anæsthesia is not preceded or followed by any sign of irritation.

On the unbroken skin it has no action, but where the skin has been deprived of its epithelium the drug produces a very definite effect, so that it may be usefully applied to painful ulcers, wounds, and burns. In the present state of our knowledge of the drug it might be advisable to be cautious in its use in a very extensive burn. In the dressing of these lesions of the skin the moisture of the affected part is first removed, and then a pad of cotton-wool impregnated with an oily solution of Scuroforme is placed on it for two or three minutes, and in most cases it will then be found that the part has been anæsthetised. The deeper the source of the pain the longer the drug will take to act. It can be mixed with other powders and dusted on to the affected part, or insufflated into a cavity, such as the nose. A lactinated powder may be used in nasal affections. Ointments are also of value either on the skin or applied to one of the openings of the body. Pastilles are manufactured for the treatment of painful pharyngitis and stomatitis; they are made with chocolate and so are pleasant to take. For gastritis, ulcer, and other painful conditions of the stomach Scuroforme tablets may be used; they are compounded with calcium carbonate. A solution in oil can be used in ulcerative stomatitis.

It can be employed as a local anæsthetic to the gums in dentistry, and, with all these indications, must be considered a useful drug.

PREMIDO.

(GEORGE HAMLETT AND SONS, LTD., WINSFORD, CHESHIRE.)

Premido or iodised salt has been prepared in response to a demand from districts in which goitre is prevalent.

It is not distinguishable from ordinary table salt either in appearance or flavour, while its iodine content has been found useful in certain cases of thyroid insufficiency and obesity. Other and larger claims are made for Premido salt, such as an action in cases of arterio-sclerosis, but the benefits in this direction following the ingestion of microscopic doses of iodine have not, as far as we know, received endorsement. The presence of iodine, however, might clearly be of use when the salt is used for a gargle or nasal douche.

SALVITÆ.

(AMERICAN APOTHECARIES' COMPANY, ASTORIA, U.S.A.; MR. LIONEL COOPER, 14, HENRIETTA-STREET, COVENT GARDEN, LONDON, W.C. 2.)

This preparation runs along familiar lines in its claims to alleviate disorders arising from nutrition, as will be indicated by its formula. Each tablespoonful of the powder contains 5 gr. lacto-citrate lithium, sodium, and strontium; 1½ gr. citrated caffeine; the remainder of the tablespoonful is made up of magnesium sulphate, sodium sulphate, sodium forma-benzoate, lacto-phosphate of calcium, and sodium with quinine, in an effervescent form. The dose, which is from one to four tablespoons, has been regulated by clinical experience, in accordance with the particular perversion of nutrition or sluggishness of excretion which is in question. It is stated to be especially useful in cases of chronic constipation where the passage of hard faecal masses is attended with straining. But all medical men will see by the formula that many pathological conditions might be benefited by one or other of the ingredients, the results of the treatment being watched for response.

CEREAL MEAL.

(THE CEREAL MEAL CORPORATION, ST. LOUIS, MO., U.S.A.; S. GUTTERMAN AND CO., LTD., 35 AND 36, ALDERMANBURY, LONDON, E.C. 2.)

We have examined a sample of a 14-oz. tin of this breakfast food which has been prepared with a view to promote intestinal activity along natural lines. Cereal meal is a combination of the cereal with flax-seed, agar-agar, and bran, and the design of the preparation is sufficiently indicated by its composition, the linseed oil acting as a temporary lubricant. The argument of the manufacturers that, as each of the ingredients has its use in the treatment of constipation, the combination must necessarily be satisfactory in results, would hardly stand rigid cross-examination, for such a general and probable rule does not apply universally, but it would appear that in the United States Cereal Meal has been found to act up to the claims made for it, and it is fair to anticipate the good results. The medical profession can make personal trial of Cereal Meal, for a sample tin will be sent free of charge to interested practitioners who apply for it.

KI-UMA.

(BATH: 6, MILSOM-STREET.)

This ointment, which is recommended for painful and swollen joints, neuritis, and sciatica, is the product of the berry of an African tree, of which pharmacology appears to know nothing, but the juice of the berry is combined with salicylates whose value in such circumstances is widely testified to. A statement that the ointment is free from the usual odour of winter-green suggests the presence in the preparation of methyl salicylate which has been reported upon in responsible quarters as an efficient application for local rheumatic pains. The specimen sent to us for a report is accompanied by an unfortunate article suggesting that here we have a botanical secret wrested from a tree known only to Ju-Ju men, but this little story is balanced by good opinions quoted from well-known medical men who have appended their names (not for publication) to their opinions of Ki-uma.

THE LANCET.

LONDON: SATURDAY, JANUARY 10, 1925.

"ADDITIONAL BENEFITS."

SOME readers will have learned with surprise from an article on Ophthalmic Benefit for Members of Approved Societies, which appeared in our last issue, that an "optical benefit" exists under the National Health Insurance Act. Not only does it exist, but it appears to be one of the most popular of the "additional benefits" for which the surpluses of the approved societies at the last valuation were made available. We are informed that in 1924 a sum of nearly £40,000 was available for its provision, and that in one very large society the claims have been as high as 500 a week. In spite of the rule that insured persons should only be able to get their spectacles on the production of a prescription from a qualified practitioner or from a hospital, it has been found impracticable to insist on this condition, and many of the approved societies send their members frankly direct to an optician. There is even a "refraction hospital" in London staffed by opticians. Stimulated presumably by the need for self-defence, the ophthalmologists have taken steps to form a panel of experts to meet the great demand which has been revealed. There was, no doubt, a very real danger of the benefit being provided by inexperienced persons, or at any rate by persons who, however expert, had limitations of training carrying obvious risks; so that in the interest of the insured population it is gratifying to know that professional committees have been formed to put the scheme on a proper basis, and to ensure that the services rendered should be of a high standard. Herein lies a lesson of deep import for the rest of the medical profession. Co-operation of specialists of all kinds is essential for the provision of many forms of additional benefits. The provision of consultant and expert services is clearly the next step in the development of the national insurance scheme.

Legislation will be required in order to provide specialist services out of insurance funds, and no fresh legislation is likely to be forthcoming until the report of the Royal Commission, now sitting, has been presented to and discussed in Parliament. It is understood that this Commission will consider schemes for future developments when they have completed their review of the insurance scheme as it now stands. From evidence already given it seems clear that there is a great demand for additional services on the part of approved societies and their members. Indeed, in some respects the laymen are showing greater eagerness than the medical profession, although there is a growing demand on the part of insurance practitioners for help in the diagnosis and treatment of their patients. Laboratory facilities are in some measure provided by hospitals and public health authorities, but access to an expert opinion from pathologist, bacteriologist, or laryngologist, to say nothing of the general consultant, has yet to be established. It is clearly necessary for the various specialists and practitioners interested in expert services to formulate schemes for their provision, as a right, to insured persons. Some professional body must be prepared to present the views of the consultants and specialists to the Commission, and we feel sure that the Ministry

of Health would welcome a statement of the extent of the need for such services and the probable cost of the new provision. General principles are set out in the joint memorandum drawn up by a committee of the British Medical Association, of which a summary appears on p. 95. This is a document showing evidence of fair-mindedness and reasoned judgment for which the medical profession as a whole has reason to be deeply grateful to Dr. R. A. BOLAM and those over whose deliberations he presided. In it is worthily maintained the tradition, a little obscured in the early days of the Insurance Acts, that medicine has primarily in view the health and happiness of the community which it serves.

The specialist sections must now be stirring in the expectation of developments. Time is short, and it is imperative that all professional bodies who are interested in the question of these additional provisions should be ready with practical suggestions. When the demand comes from the public—as come it will when the Commission reports—the medical profession cannot afford to be dilatory in showing its willingness and ability to supply that demand.

THE PROTECTION OF HONEST DRUGGING.

FOR practical purposes British law is powerless to prevent any person from procuring any drug or making any mixture, whether potent or without any therapeutical activity whatever, so long as it does not contain a scheduled poison; advertising such a mixture in any decent terms as a cure for any disease or ailment, recommending it by bogus testimonials and the quoted opinions and facsimile signatures of fictitious physicians, and selling it under any name he chooses, on the payment of a small stamp duty, are also open to the proprietor of such a mixture, and he can ask for it any price which he can persuade a credulous public to pay. The situation so described had long been the subject of outspoken criticism in these columns and in those of medical contemporaries, before our legislators found it so intolerable, that ten years ago a Select Committee was appointed to report to the House of Commons on the matter. This Committee made a series of recommendations, which if given effect to would put an end once and for all to grave scandals. Their report appeared in August, 1914, at a moment when the whole thought and energy of the country were being devoted to even sterner matters; and the position is substantially unchanged up to the present moment. It is true that in 1920 Dr. ADDISON, while in office as the first Minister of Health, introduced a Proprietary Medicines Bill, the provisions of which confirmed in general the recommendations of the Select Committee; but this Bill, after the second reading in the House of Lords, was unable to secure further consideration in Parliament. A year ago Mr. NEVILLE CHAMBERLAIN, then Minister of Health for the first time, was unable to undertake to introduce legislation on the subject during that Parliamentary session. Mr. CHAMBERLAIN is again Minister of Health, with a period, we may believe, of settled office before him, and we reiterate the conviction, expressed in 1914, that when at some future date the legislature can return to the performance of its normal functions, one of the most useful tasks lying to its hand should be to embody in an Act of Parliament the recommendations of the 1914 Select Committee.

What these recommendations are can hardly generally be known, for the Report has long been out of print and can only be read in reference libraries. But it is available in our own columns. It was printed word for word in our issues of Sept. 5th and

12th, 1914, and we make it more accessible to-day in a Special Supplement which appears in the present issue. There appears to be little or no difference of opinion in regard to the means required to suppress abuses which are admitted on all hands to exist, and whose results are open to the clearest proof. The Report of the Select Committee was unanimous, and all political parties in 1920 were prepared to give it favourable hearing. Respectable manufacturers and those responsible for the better sorts of proprietary and patent remedies, as set out in the classification of the Report, would welcome the protection from unfair competition which such a Bill, if it became law, would ensure; and the Association of British Proprietaries has recently given the public assurance through its secretary, not only that the Bill was not dropped owing to any request from the manufacturers themselves, but that the measure would suit the manufacturers as well as the public. In face of such arguments, the question need hardly be asked: Does patent medicine advertising need cleaning up? And that question was, in fact, answered in the affirmative by prominent advertisers themselves at a recent meeting of the London Publicity Club, a notice of which appeared in our columns last November.¹ The patent medicine business, Sir WILLIAM VENO said, in this debate, laid itself open to criticism because men with fraudulent intentions were attracted to it, and he was personally sorry that the Bill introduced four years ago had not become law. The manufacturers, he added, had studied it clause by clause, and found nothing objectionable in it. With such a mass of evidence in favour of reform we trust that the medical profession will join the public in insisting upon the early attention of Parliament to the whole matter. Big interests are involved, a fact which has already been used as a plea for delay. We can quite understand that in spite of its high objects a measure against quackery will meet with opponents. The sooner, however, a start is made the sooner will the cause of national health prevail. Delay is useful when the ground of a campaign has to be prepared, but on the subject of quackery no longer time for reflection is needed.

The passage of a Proprietary Medicines Bill would not at once bring the millennium in the matter of drugs and drug-taking, but it would enable effective reform to be initiated from within the pharmaceutical profession itself. There have recently been encouraging signs of a desire for such a reform. Restriction in the sale and distribution of remedies has been cheerfully accepted both by the druggists and the public in cases where medicine has been able to state with absolute positiveness that such and such a drug will cure, and that to withhold the drug or substitute any other is to endanger the patient's recovery. No preparations of salvarsan or its similars can be placed upon the market without the sanction of the Ministry of Health under very stringent conditions of inspection, and, as time goes on, no doubt our knowledge of other remedies will become so exact that they will ask and deserve a similar degree of protection. Many examples on the borderland will readily occur to the mind. Since 1920 the discovery of insulin has made it essential to place diabetes on the schedule of touch-me-nots, and it is unlikely that an amendment for its exclusion, which was set down four years ago, would be persevered with. But the time has not yet come when it is for the well-being of medicine to exclude initiative or definitely to

prohibit competition in the production of remedies for multitudes of common ailments. We have as yet no *arbor vitæ* conveniently bearing vital principles ready to hand for all purposes. But from every side assurance has been given that the proposed measure to deal with proprietary medicines would help to clean up a valuable industry and curtail licence without infringing a just liberty. We appeal to the Minister of Health to take an early opportunity of ensuring the passage of such a measure through Parliament.

THE PATHOLOGY OF PYORRHOEA.

SOME time ago an announcement appeared in the lay press to the effect that Dr. HAROLD BOX, of Toronto, had discovered some new facts in the ætiology and pathology of pyorrhœa which were likely to revolutionise our conceptions of this disease. His work is now available in the latest bulletin¹ of the Canadian Dental Research Foundation. While it may not merit the highly coloured eulogies in the lay press, it is of considerable importance and sheds valuable light on the pathology of periodontitis and pyorrhœa. In this country the view which has received most support is that pyorrhœa commences as an inflammation of the gum margin (gingivitis) which gradually extends down the roots of the teeth and attacks the periodontal membrane. This latter becomes stripped from the cement, leading to the formation of a pocket lined with infected granulation tissue. Concurrently with these changes there is absorption of alveolar bone and usually at some stage a discharge of pus. The bony support of the teeth becomes gradually destroyed and the teeth become progressively loosened and may eventually fall out. According to this view, the lesion is always an open one, a progressive ulceration from the surface of the gum extending into the periodontal membrane. Opinions differ as to the ætiology, but there has been much support for the views of J. F. COLYER and J. G. TURNER that the essential factor is the stagnation of food which leads to bacterial invasion of the tissues. At the same time there has been a considerable amount of speculation as to the possibility of some general cause which initiates or, at least, predisposes to these local changes. Dr. BOX has investigated exhaustively the patho-histology of the gum and periodontal membrane and his account differs materially from current conceptions. He gives an elaborate classification of the various types of gingivitis, recognising no fewer than 13 forms, a refinement which is, perhaps, excessive and confuses rather than helps. He notes that in subacute gingivitis a typical feature is the proliferation of the epithelium which normally lines the trough between the free edge of the gum and the neck of the tooth. This epithelium tends to invade the periodontal membrane and plays an important part in causing a separation of the membrane from the root.

Perhaps the most striking feature of Dr. BOX's work is his description of a form of periodontitis which he terms "rarefying pericementitis fibrosa," and which he regards as a pathological entity which has hitherto escaped notice. This is a chronic and progressive lesion of the periodontal membrane which leads to rarefaction of the alveolar bone. It manifests itself by the formation of a new tissue in the periodontal membrane which changes the normal arrangement of this tissue and gradually replaces the normal bone. It commences by a proliferation of the endothelial cells lining the blood-vessels which may occlude their lumen. Endothelial cells appear around the vessels accompanied by occasional lymphocytes, plasma cells, and fibroblasts. Dr. BOX regards the process as a low grade of inflammation, but does not think that the new tissue should be looked upon as typical granulation tissue, for there is no characteristic

¹ THE LANCET, 1924, ii., 1146.

¹ Studies in Periodontal Pathology. H. K. BOX. Bulletin 7, Canadian Dental Research Foundation. May, 1924.

development of new capillaries. This tissue appears as irregular nodular masses in the periodontal membrane which destroy the regular arrangement of fibres and lead to a loosening of the tooth. A concomitant rarefaction of bone is set up by extension of the new tissue which stimulates the activity of the osteoclasts. HOWSHIP'S lacunæ are formed and the fibrous tissue creeps into the recesses and often extends in finger-like formation along the blood-vessels, thus causing an internal rarefaction of bone. A further phase of the process is the replacement of bone by an osteoid tissue, especially on the surface and in the Haversian canals. Dr. Box notes as significant that the superficial changes in the gum may be very slight and may bear no proportionate relation to the changes occurring in the periodontal membrane. He considers that rarefying pericementitis fibrosa occurs typically in teeth which over-function through an abnormal occlusal strain due to some deviation from their normal position in the arch. He notes, too, a striking resemblance between this process and osteitis fibrosa, and suggests that rarefying pericementitis fibrosa must be studied in parallel relation with similar changes in other bones.

Dr. Box uses the term periodontitis in a somewhat different sense from most authorities. Instead of considering it as primarily an inflammation of the periodontal membrane, he uses it to comprise an inflammation of the gingivæ, periodontal membrane, and alveolar bone. These three structures are the tissue components of the supporting structures of the teeth. He employs the term "periodontium" to include all three. He excludes alveolar abscess and granulomata from the category of periodontitis because in these conditions the gingivæ are not involved. There is an elaborate classification of the various forms of periodontitis recognised by Dr. Box. The condition which is somewhat loosely called "pyorrhoea" is, according to Dr. Box, a complex one, and he recognises several types. There is a simple form in which the lesion commences as an ulceration of the gum margin which extends inwards and gradually destroys the periodontal membrane and bone and is often characterised by the presence of pus. This process is centripetal and corresponds to the account of the pathology of pyorrhoea as given typically by J. G. TURNER and J. F. COLYER. The second class of periodontitis which Dr. Box calls "chronic complex periodontitis," is quite different. It is produced by the coalescence of two distinct lesions, rarefying pericementitis fibrosa and infective periodontitis. The latter condition consists of three phases: chronic gingivitis, chronic pericementitis, and infective osteitis (rarefying and productive). These appear in this order. According to Dr. Box, the majority of the cases of what is usually called pyorrhoea belong to the category of chronic complex periodontitis.

An interesting feature of the chronic gingivitis as described by Dr. Box is the part played by the epithelium in the formation of a pocket. The epithelium which normally lines the gingival trough grows into the periodontal membrane and separates the fibres which are attached to the cement. He finds this to be a fairly constant feature, and notes that even when the pocket has extended to a considerable depth so that the cement is freely denuded, the surface of the soft tissue is usually lined by epithelium, and that surprisingly little ulcerated tissue is present. He considers that this indicates a defensive power of the cells which tends to reduce the lesion to a non-ulcerative type of inflammation. He admits that in some cases the fibres of the periodontal membrane may be destroyed by ulceration, but regards this as uncommon. Dr. Box considers that this has an important bearing on treatment and that theories regarding treatment should be based on the assumption that in practically all pockets the detached tissue sooner or later becomes covered with epithelium. The changes in the bone (infective osteitis), as described by Dr. Box, do not present any features different from those described by many other writers. While the classification of Dr. Box

helps to emphasise the different aspects of the lesions in pyorrhoea, it appears to be needlessly complex and over-elaborated.

Reduced to essentials, Dr. Box's conception of the pathology of pyorrhoea seems to be as follows. A few cases commence as a simple ulceration at the gum margin which extends into the periodontal membrane and strips it from the cement. By an extension of the ulcerative process the pocket thus formed gradually becomes deeper, and at the same time the alveolar bone undergoes a progressive absorption. In the majority of cases, however, the process is quite different. The disease is initiated by a regressive change in the periodontal membrane which is not preceded by ulceration of the gum margin. This change is characterised by the formation of fibrous tissue which replaces the orderly arrangement of the fibres in the membrane. The new tissue invades the bone and replaces it to a varying extent, thus leading to a loosening of the affected teeth. This condition (rarefying pericementitis fibrosa) must be regarded as the essential agency in bringing about the formation of a pocket with denudation of the cement, destruction of alveolar bone, and formation of pus—the condition which, clinically, we regard as pyorrhoea. While infection plays a part in the later stages in which ulceration occurs, Dr. Box does not consider that bacterial invasion is the primary factor. In his view the first cause is an over-functioning of the teeth due to a deviation from their normal arrangement which so strains the periodontal membrane as to initiate the development of rarefying pericementitis fibrosa.

It has usually been held that, when once the cement was denuded, reattachment of the periodontal membrane could not occur. From time to time statements have been made that reunion has occurred in treated cases, but the evidence was clinical and not very convincing. Dr. Box believes that it does occur and produces histological evidence to show it. If this be so, it is a very important point and confirmation from other workers would be welcome. In face of Dr. Box's microphotographs it is difficult to deny the possibility that this may occur, though under what conditions and to what extent is at present doubtful. Dr. Box notes that the new attachment differs from normal. The fibres run parallel with the surface of the cement instead of transverse, and it is evident that such a reattachment does not represent a complete anatomical and functional restitutio ad integrum, but only a limited though still valuable recovery.

Such is a brief outline of Dr. Box's views. In many respects they are novel and arresting, and are certain to arouse much interest among dentists. They certainly shed considerable light on the pathology of this important disease and, if confirmed by others, should give encouragement to the conservative treatment of pyorrhoea. A feature of Dr. Box's brochure, which it would be ungrateful to pass over without mention, is the large number of very beautiful microphotographs both of normal and abnormal conditions of the periodontal tissues with which the monograph is lavishly illustrated. It is certainly the completest study of the "periodontium" which has yet been made, and has laid all workers in dental anatomy and pathology under a debt to Dr. Box and to the Canadian Research Foundation which has made this valuable publication possible.

THE Hunterian Oration will be delivered by Sir D'Arcy Power in the theatre of the Royal College of Surgeons, Lincoln's Inn-fields, at 4 P.M. on Saturday, Feb. 14th, the anniversary of the birth of John Hunter. It will be illustrated by lantern slides made from a series of contemporary drawings showing John Hunter the Man and Martyr to Science. It is noteworthy that in its long history the Oration has never before been given by father and son. Sir D'Arcy Power's father, Mr. Henry Power, a valued member of the staff of THE LANCET for over 30 years, was Hunterian Orator in 1889.

Annotations.

"Ne quid nimis."

THE NEW YEAR HONOURS.

THE list of New Year Honours was not free for official publication until the issue of THE LANCET last week was entirely in the printer's hands, when a brief note was all that could be published. We take this opportunity of congratulating Mr. John Campbell, Dr. Thomas Morison Legge, Mr. H. J. Waring, Prof. Frederick Gowland Hopkins, Mr. Henry J. F. Simson, Dr. Frederic Truby King and Major-General Robert C. Macwatt, upon the honour of knighthood. Dr. Truby King is the Director of the Child Welfare Division of the Department of Health, New Zealand, and General Macwatt is the Director-General of the Indian Medical Service. We are also delighted to congratulate Miss Louisa Aldrich-Blake, Dean of the London School of Medicine for Women, on her appointment as Dame Commander of the Order of the British Empire.

Other honours include the following: Companionships of the Bath are conferred upon Major-General Sebert Francis St. Davids Green, C.B.E., K.H.P., late R.A.M.C., Director of Medical Services of the Western Command in India, and upon Major-General Harold John Kinahan Bamfield, D.S.O., K.H.P., I.M.S., Deputy-Director of Medical Services of the Eastern Command of India; and a Companionship of St. Michael and St. George upon Dr. Wilberforce John James Arnold, colonial surgeon at St. Helena. Companionships of the Order of the Indian Empire have been conferred upon Colonel Clement Henry Bensley, I.M.S., Inspector-General of Civil Hospitals and Prisons, Assam; Lieut.-Colonel Edward Cecil Gordon Maddock, I.M.S., late civil surgeon, Poona; and Lieut.-Colonel Joseph Charles Stolke Vaughan, I.M.S. (ret.), superintendent of the Radium Institute at Ranchi, Bihar and Orissa. The Kaiser-i-Hind Medal of the First Class has been awarded to Dr. H. T. Holland, medical officer, Church Missionary Society, Baluchistan; Dr. Sorab Cowasji Hormusji, first assistant health officer at Bombay; and Dr. (Mrs.) Grant Stait, medical missionary to the American Baptist Mission at Udayagiri, Nellore District, Madras.

Both the new appointments to the Order of Merit have scientific interest: Sir Ernest Rutherford, the Cavendish Professor of Experimental Physics and Director of the Laboratory at Cambridge, has made researches, notably in radio-activity, whose bearing upon the medicine of the future may be guessed at rather than calculated. Sir James George Frazer, in "The Golden Bough," has opened up paths of thought for medicine alike on the anthropological and philosophical side, which have already led to valuable conclusions and reservations.

THE ARTICULAR COMPLICATIONS OF MUMPS.

IN a recent Paris thesis Dr. Prosper Maisondieu remarks that the occurrence of articular complications in mumps was first described by Rilliet in 1850. It is probable that owing to its mild character mumps rheumatism often escapes notice. As a rule it does not develop until convalescence, and does not prevent the patient pursuing his usual occupation. The rarity of the complication is shown by the fact that during an epidemic of mumps in Paris in 1923-24, out of 984 cases admitted to the Claude Bernard Hospital only four developed rheumatism. Dr. Maisondieu has also collected from children's hospitals or isolation departments statistics of 350 other cases of mumps, only two of which had this complication, so that out of a total of 1334 cases of mumps there were only six examples of rheumatism, or 0.44 per cent. The date of its appearance varies according to different observers, but with few exceptions rheumatism is a

late manifestation of mumps, sometimes not occurring until 15, 16, or even 29 days after disappearance of the parotid swelling. In such cases, however, the association of the articular complication with mumps is indicated by the persistence of other complications such as orchitis or a subfebrile temperature. Mumps rheumatism seldom attacks several joints at once, but, as a rule, is monarticular at first, and later involves one joint after another. Not only are the joints proper invaded, but also the synovial sheaths and muscles in the neighbourhood. The principal symptom is pain, which varies alike in intensity and duration, and is most marked on movement of the affected joint. Redness and swelling are inconstant, though sometimes the effusion may present the appearance of hydrarthrosis. As a rule the temperature is not raised, or only to a slight degree. A few cases, however, have been recorded in which it rose to 102.2° or 104° F. The affection may last five or six weeks, owing to the invasion of several joints in succession or from interposition of a period of complete remission. Often, however, it is only of transient duration. Two distinct types of mumps rheumatism have been described. The first is an arthralgic form in which several joints are affected at the same time without any obvious reaction of the synovial membrane, while the second is a monarthritic form in which, in addition to severe pain, there are considerable redness, swelling, heat, and signs of articular effusion which may even advance to suppuration. As a rule, however, complete resolution takes place and no sequelæ result. The thesis contains the histories of 12 cases, six of which are original.

INFECTION SPREAD BY VAGRANTS.

WE have received a letter from Mr. J. Theodore Dodd, J.P., Barrister-at-Law, a well-known ex-guardian, pointing out the considerable danger during the present time of the spread of infectious disease by vagrants. The Ministry of Health have constantly drawn the attention of boards of guardians to this danger. But Mr. Dodd thinks that the survey¹ recently issued by the Ministry of the accommodation in the country for the casual poor shows that a number of these boards do not exercise the necessary precautions.

In confirmation of his opinion Mr. Dodd cites some of the figures given in the survey. The number of casual wards included was 490. Of these, 64, or about 15 per cent., had no satisfactory baths or no bath at all. In only about half of the wards was a freshly washed towel provided for each casual. Mr. Dodd also draws attention to the statement in the survey that many boards of guardians are still disposed to regard nightshirts as a luxury. Yet the regulations as far back as 1882 require that the casual's clothes shall be taken from him and, if requisite, dried or disinfected, and that the guardians shall supply him with a night garment and return his own clothes in the morning. Mr. Dodd refers to a ward, not mentioned in the survey, in which there is no provision for cleaning the clothing of the casuals, but the clothes, wet or dry, dirty or clean, are put up in bundles in a cupboard. This particular ward was dirty and the nightclothes very dirty. As regards cleanliness, the survey states that 15, or about 3 per cent., of the wards were poor. In 93 cases the survey describes the general condition of the ward as bad. Mr. Dodd's proposal for a remedy is that the county council should ask each district council to instruct their medical officer of health or sanitary inspector to visit the wards in his district and report thereon. He thinks it is unlikely that the guardians would refuse to admit such officer or to reform any serious defect after the matter was made public. If, however, the guardians raised objections, it would be easy for the council, says Mr. Dodd, either (1) to appeal to the Ministry of Health to send a medical inspector, or

¹ Cmd. 2267. H.M. Stationery Office. 3d.

(2) to ask a resident J.P. to visit the ward in accordance with the Workhouses Act, 1790.

Whatever may be thought of Mr. Dodd's proposals, it seems obvious that these casual wards should not any longer be allowed to remain outside the jurisdiction of a competent public health authority. The survey, the results of which have just been published, was begun in September, 1923, and undertaken for the express purpose of the revision and codification of the regulations relating to the relief of the casual poor. The Ministry of Health may therefore reasonably be expected to act promptly on the information with which it has been provided. The survey shows that the casual wards in England and Wales have accommodation for some 14,000 casuats, and that the largest number provided for on any one night was 10,099. The margin of accommodation is, however, to a great extent illusory, as the numbers in any one district fluctuate so much. The Poor-law authorities appear to have acquired the duty of looking after vagrants by accident, as the regulation of houseless persons has generally been regarded as a police duty. There has been a great increase in casuats since 1919, but the figures have not yet reached those for the period 1907-1912.

THE HEALTH OF PALESTINE.

THE annual report of the Department of Health of the Government of Palestine for 1923 is summarised on another page. It is a report which can be read with real pleasure, for although the urgent need for economy entailed ruthless reduction of the estimates and rearrangement of the work, yet the results are better than those of any previous year. No doubt the careful training of the staff in former years has fitted them for larger responsibilities, and the lesson of epidemics has made the people fearful of letting public health work drop. Hence they took over some of the expense which the authorities were unable to find, while the religious communities, particularly the Jewish, carried out, on a charitable basis, work that would otherwise have lapsed. The chief medical triumph of the year is the decrease of malaria. In over 35,000 blood films examined there were found in 4000 benign tertian, in 900 malignant tertian, and in 100 quartan. The numbers reported¹ in 1922 were, for 30,000 films, 3374 benign, 2319 malignant, 61 quartan; this year the second half had only 2000 cases against 3000 in the first, an evidence, as everyone experienced in malaria will realise, of a greater reduction to come in 1924. Anopheles is now rarely found in towns, and in no large town was there a new case of malaria in 1923, except in Haifa, which is surrounded with marshes. In one large rural area of 200 square miles malarial attacks decreased by half. The menace of malaria was met by drainage, by mosquito-proofing wells and cisterns, and, in the open country, by leaving irrigated areas to dry from time to time, either by damming the streams and only letting them flow every five or ten days or by diverting water in turn from each of the irrigation channels of a group. The (Rockefeller) Malaria Survey Section provides plans for getting rid of malaria; the (Jewish) Malaria Research Unit controls the actual measures taken. Well-watered land can by wise measures be made healthy in a couple of years. Financial stringency led also during the year to extensive closing of hospitals, but here also in some cases municipalities stepped in and carried them on. While the Travelling Ophthalmic Hospital has ceased to run, school teachers are still being shown how to treat trachoma, and systematic courses were given in the Ophthalmic Hospital at Jerusalem to doctors and their helpers. Schools generally are being used to spread a knowledge of hygiene, and especially to induce people to seek early treatment when bitten by rabid animals. Palestine now makes its own anti-rabies vaccine, and 609 cases were treated in dispensaries through the country, with three failures. Other interesting points,

of which the report is full, may be noted briefly. There are no antivaccinators in Palestine, where the memory of devastating small-pox is still recent. Pilgrims, before they leave the country, are injected with T.A.B. and cholera vaccines, and Government seeks to save them from exploitation. The lepers—80 in number—are cared for by the Moravians, and most of the lunatics by the Jews. Villages are now scavenged and cleaned, some of them get piped water, and stone-built markets are replacing the deplorable hovels that were the only food shops. The improvement of the health of the country in the last five years is a happy aftermath of the war.

CUSTARD OF COMMERCE.

A RECENT issue of the *Medical Officer* contains a full account of the prosecution which took place last month at Durham arising out of a tin of "custard powder" bearing on its label the inscription "Foster Clarke's Cream Custard, of course, does not contain cream, but it does contain the secret, which is the despair of imitators, for producing the most delicious cream custard of exquisite flavour." Foster Clarke's cream custard was proved by analysis to consist of maize farina tinted and flavoured without any egg or milk whatever. The summons was against the retailer, not the manufacturers, under the Food and Drugs Act, 1875, and it was contended on behalf of the prosecution that the purchaser was entitled to expect to receive a custard of superior quality, that the basic ingredients of custard as shown by dictionaries and cookery books should be eggs and milk, and that these could have been added by the manufacturers, if desired, in powdered form. In their absence the article was not of the nature, substance, and quality demanded by the purchaser of cream custard. The evidence included that of the county analyst, who pointed to the inferior nutritive qualities of a so-called custard from which milk and eggs were excluded; of Dr. T. E. Hill, medical officer of health for the county of Durham, who was of opinion that cream custard should contain eggs and milk in some form, and that if they were absent there should be a statement to that effect on the label; and of Dr. H. Kerr, medical officer of health for Newcastle, who pointed to long custom and the practice of the medical profession as authority for eggs and milk being necessary ingredients of custard. As a medical superintendent of hospitals he should not dream of allowing a patient who was ordered custard to be given so-called custard made from the powders in question. He admitted in cross-examination that they were used in "tremendous quantities" and said that it was "unfortunate for the working classes that they should have offered as a custard what was not in fact a custard." Asked if with eggs and milk the cost would be greater, he said, "Yes, but why call it custard?" The managing director of the manufacturers was called for the defence, and said the word "powder" was omitted from the label for the sake of brevity, but was now added with a statement of the absence of eggs, and that the word cream expressed the consistency of the prepared article, as in such expressions as "toilet cream." Messrs. Foster Clarke had sold 200,000,000 packages in 15 years with only one complaint by the same prosecutor in 1920. Other witnesses had sold the powder without complaint. Addressing the bench for the defence, Mr. J. H. Compston, K.C., said that the absence of milk and egg was generally recognised by the public and that the dictionary meaning of the word "custard" had changed completely during recent years. The magistrates dismissed the summons, but refused to allow the defendants' costs.

It is matter for regret that in the absence of any definition by the legislature, an old-established word associated with an article of diet in common use should be employed in selling an article of far less nutritive value than that to which quite recent generations of our ancestors were accustomed when they ate custard. Those cooks who make their own custards use milk and eggs to this day, but no doubt are a diminishing body. They may also be slightly

¹ Dr. Jehoasch Gordon, Arch. Schiffs- u. Trop.-Hygiene, 1923, xxviii., 391.

more economical than Mrs. Glasse, who, in her famous "Art of Cookery," published at the end of the eighteenth century, gives as the proportions for a "plain custard" a quart of new milk sweetened to taste to eight eggs with half their whites omitted. She would add a little nutmeg and rose-water for flavouring. For a richer "almond custard," she prescribes a pint of cream, a quarter of a pound of almonds "beaten fine," two spoonfuls of rose-water, the yolks of four eggs, and sugar to taste. What Mrs. Glasse would have said to the description of coloured maize flour as "cream custard" can hardly be imagined.

SUNLIGHT.

THE Sunlight League was founded in May of last year, and it has recently published the first number of "Sunlight: a Journal of Light and Truth."¹ In an editorial foreword it is stated that the purpose of this new publication is "to work for the restoration of the light of the sun to all who live in cities, and to affirm the principles and applications of light for health, and in the prevention and cure of disease." In the pages which follow there are congratulatory messages from eminent men and women, and articles by experts dealing with the various problems which affect the Sunlight League. Sir Oliver Lodge writes on Sunlight for Health; Dr. Leonard Hill emphasises the importance of the skin through which the sun, wind, and rain can do so much to influence the activities of the body; Mrs. M. A. Cloudesley Brereton deals with the question of the modern woman's dress and health, and she advocates in a restrained yet emphatic manner the value of "clothes light in weight, warm enough to conserve the body's natural heat but porous enough to let in light and air, loose enough to allow of free active movement." The Smokeless City is the title of an interesting article by E. D. Simon and Marion Fitzgerald, and the question of housing and sunlight is dealt with by A. Trystan Edwards under the title of the Sun-Trap House. The smoke nuisance is attacked from several points of view, and it is interesting to learn from an article on this subject by Colonel Thwaites that in 1307 a man was executed in England for burning "sea-cole" to the detriment of his neighbour's health! What has actually been achieved in the way of "sun cures" in this country is described under the title of Days in the Sun: the Story of Ken Wood, and Miss Margaret McMillan shows both what tremendous damage absence of sunlight does to the children of our big cities, and also what encouraging possibilities lie ahead of us in an extension of the open-air nursery school system. A page has been reserved for book-reviews, but there is strangely no reference either to the publishers or to the prices of the books mentioned. Further matter includes an account of the objects of the Sunlight League, and an appeal for "Lamps" by Miss McMillan, and this brings us rather to the heart of the problem which is well presented in an article entitled Artificial Sunlight, by Dr. C. W. Saleeby, reprinted in this journal from the *New Statesman*. "The inevitable has happened," he says. We have had to attack the problem of sunlight and health not by abolishing smoke and letting the sun shine down upon the rich and poor alike, but by the introduction of artificial sunlight—"the makers are racing one another to produce as many lamps as possible." While this seems all to the good, judging by the results of the treatment of rickets, for example, by artificial sunlight, there are certain dangers to be faced in the use of this method, and Dr. Hill wisely states that "the carrying out of artificial light treatment requires to be controlled by the medical profession, for great harm may be done by the injudicious use of powerful sources of ultra-violet rays." This new journal has objects with which all those working for the health of the community must be in sympathy, but there is no indication as to whether it is to be a monthly or a quarterly publication,

and it rather looks as if future numbers will contain a reiteration of the same material. This will not matter as long as it has the desired effect of driving home to the public the great importance of sunlight as our best "preventive medicine"; the fear is that the health authorities will be tempted to buy artificial daylight lamps rather than deal with the real problem of smoke abatement.

THE TRAGEDY OF LEWIS.

LAST year the report of the school medical officer for the Lewis division of Ross-shire made pitiful reading, and this year again Dr. Agatha E. Miller has a dreary tale to tell of hardship and privation, and the struggle for life of a sturdy seafaring race large of stature, strong of muscle, born with a heritage of health to be found nowhere else on these islands, rapidly deteriorating and slowly dying out from poverty and its privations. Dr. Miller reports whole schools of these children with hardly an unsound tooth between them, and she has never seen a case of rickets on the island. But the story of deterioration is told clearly enough in the tables of comparative weights for the children of Lewis and of the mainland of Ross-shire who come of similar stock. There is a loss of weight among the Lewis children at all ages during school life, and there is noticeable, too, a deterioration since 1921, which was the last fairly normal year as far as weather and economic conditions are concerned. These Ross-shire children "have inherited," writes Dr. Miller, "a fine physique second to none, but in Lewis we have to stand by and see their steady deterioration, robbed of the fish they depend on for their staple food, dependent only on the very limited amount of land developed on the island and sinking into ever deeper poverty." Comparisons of heights and weights of English children with those of these Lewis children are valueless. They belong to a different race, almost the tallest in Europe, and are comparable with children of the taller Northern races of Europe. Their height, as may be seen from the table which we reproduce, is second only to that of Swedish children, who are tallest of all.

Comparative Average Height Table—in Centimetres.
Boys of National Free Schools Only.

Age.	England Rural.	Germany Half Yrs.	Denmark.	Norway.	Sweden.	Lewis.
5	102.7	—	—	—	—	109.2
6	107.5	111.6	111.4	—	—	113.7
7	114.3	114.3 116.9 119.4	115.9	117.8	118.9	118.8
8	119.0	121.9 124.1	120.9	121.8	124.9	124.6
9	123.7	126.6 128.6	125.4	126.1	130.2	129.05
10	129.1	130.4 132.6	131.1	130.9	134.6	133.7
11	133.7	134.6 136.7	135.7	135.0	139.2	138.7
12	138.9	138.8 141.0	139.2	139.2	143.8	143.1
13	142.4	143.5 145.6	143.6	143.3	149.3	148.2
14	146.8	148.8 152.4	—	148.2	155.6	152.2

What is going to happen to these people, or rather what is to be done about the problem they set us? They are entirely dependent on the natural produce of the land and of the sea. Their clothing is made of homespun wool or tweed. The majority of the cotton garments worn are made out of old flour-bags, and Dr. Miller says flour-bags make strong garments, costing only 3d. each. They are literally being starved out of existence, and although at the end of 1923 there were signs of somewhat better prospects, "the school year had opened with increasing rain, cold, and wind, wet fuel, a damaged harvest, much of it blown away. The minimum of straw and hay for the cattle meant the minimum of milk, and it is difficult to exaggerate the importance of milk when fish, the staple diet, had become so scarce. There was only a small quantity

¹ Sunlight. Vol. I., No. 1. December, 1924. The Sunlight League, 37, Russell-square, W.C. 1s.

of diseased potatoes available from the harvest." "I never saw in school," Dr. Miller adds, "so many children who were not fit to be there, either tempted out by the provision of a midday meal or forced out for want of a sick certificate. . . . It is not recommended that gymnastics be taught indiscriminately to Lewis country children. Many of the children are fit to take part and would greatly benefit; on the other hand, many have too far to walk to school, and are tired. The exertion of the school day takes a good deal out of under-nourished children." Various relief funds came to the help of the islanders last year, giving a midday meal and clothing to necessitous children, and offers of help have been renewed this year, but the trouble, though immediately relieved by such kindly measures, calls for deeper remedy. They are a proud people, too, and require careful handling, but even so, it should not be past the wit of man to devise some practical and acceptable means of helping them to help themselves. We must not forget that Lewis responded as one man to the call to arms at the very beginning of the late war. Many of the men were killed, and in her report Dr. Miller draws attention to the fact that the best-fed and best-clothed children are the children of war widows.

PAROXYSMAL TACHYCARDIA.

Paroxysmal tachycardia is often regarded as a functional disorder of the heart. Dr. John Parkinson described it as the best example of such at the Ottawa meeting last year¹ and was taken to task for doing so by Dr. A. Graham-Stewart and others in our own columns. Can a "functional" disease kill? was the burden of this correspondence. A valuable paper on Paroxysmal Tachycardia, with Special Reference to Prognosis, by Dr. F. A. Willius and Dr. Arlie R. Barnes, of the Mayo Clinic, Rochester, Minnesota, affords the opportunity of returning to the subject. The authors give the results of observations on a series of 102 cases which were seen in the cardiac department of the Mayo Clinic between 1914 and 1923.² The authors define simple paroxysmal tachycardia as a condition in which, from time to time, the normal mechanism is interrupted by a series of rapid irregular beats varying in rate between 100 and 200 each minute, the series starting and ending abruptly. The 102 cases were divided into four groups as follows: (1) 36 cases of nodal tachycardia which were subdivided into five cases in which the P.-R. interval was diminished, 28 cases in which the P.-R. interval was zero, and 3 cases in which there was an R.-P. interval; (2) 7 cases of auricular tachycardia; (3) 6 cases of ventricular tachycardia; and (4) 53 cases of auricular flutter. All the cases were carefully examined, and were all verified by electrocardiographic tracings taken during the attacks. The clinical picture of the condition is well known, the most important characteristic being its sudden onset and abrupt cessation. In the symptomatology, the authors give prominence to vertigo, which was associated with the attacks in 18 cases, 15 of which were male patients and 3 female. Eleven of the patients were over 49 years of age and the incidence of arterio-sclerosis and hypertension was high. Stress is laid on the strong probability of cerebral arterio-sclerosis acting as a determining factor in the occurrence of vertigo associated with paroxysmal tachycardia—a point that has hitherto received little attention—and it is urged that a history of attacks of tachycardia should be carefully excluded in dealing with an elderly patient who complains of vertigo, especially if evidences of arterio-sclerosis are present. Besides vertigo there were other manifestations of cerebral anaemia. Five patients had syncope during attacks, two were delirious, one had epileptiform seizures, three had spells of unconsciousness in their paroxysms, and three said that everything became black before their eyes. One patient complained of numbness and

another became aphasic during a paroxysm. In 40 cases in which the date of onset was noted, the average time during which the attacks had occurred was 12 years. In three cases the attacks had recurred over a period of 40 years or more, the longest period being 43 years.

In considering prognosis, the after-histories of 84 cases of the 102 seen in the clinic were obtained. This large number is noteworthy, as unless the percentage of after-histories is high, they are of little prognostic value. From the data furnished by the circularised questionnaire, the authors conclude that attacks of paroxysmal tachycardia do not appear to have contributed much to cardiac failure or to incapacity. The death-rates were high in cases of paroxysmal tachycardia associated with aortic and coronary disease (57 per cent.) and with endocarditis (46 per cent.). The final conclusion is that the estimation of the prognosis of paroxysmal tachycardia depends very largely on the estimation of the type and degree of the underlying cardiac damage. This conclusion is a reasonable one which might command general acceptance.

GLANDULAR THERAPY.

ECONOMISTS are fond of talking about the laws of supply and demand and, within certain limits, an increased demand produces an increased supply. During the last few years the tremendous increase in glandular therapy has led to a demand for preparations of the various ductless glands, and the huge supply which has resulted shows no signs of the shortage which economically one would be led to expect when dealing with animal products. It has been said that if the parathyroid glands of all the animals in the world were added together they would not equal the quantity in the market, but this is probably an exaggerated statement which in any case would be difficult to prove. If we except insulin, pituitary gland extracts probably represent the most successful and satisfactory of the preparations of the ductless glands.



Now the anterior lobe of the human pituitary in an adult weighs on an average about one-third of a gramme. The usual weight given for the whole gland is 0.5 g., and the anterior lobe forms about two-thirds of this. The usual preparations of the anterior lobe contain five grains, "representing this weight of fresh glandular substance," or almost exactly the weight of the whole anterior lobe in the human subject. The quotation given above is taken from a pamphlet recently issued by Oxo, Ltd., on the pituitary gland, and a picture in this pamphlet of a bottle containing 100 tablets, each consisting of 5 gr. of the pituitary of the ox, makes it of interest to know the size and weight of the bovine pituitary gland. It is perhaps to dispel the distrustful suggestions contained in the above remarks that the pamphlet includes a picture of the pituitary gland of man compared with that of the common hump-backed whale. The endocrine sceptic would probably prefer to see the gland of an ox used for comparison purposes, and perhaps in future editions of these interesting booklets in the "Oxoid" series, dealing with the various glandular products of this reputable firm, pictures of the ductless glands of the bovine species will be introduced. The guarantee of "quality, potency, uniformity, and reliability" of these prepara-

¹ THE LANCET, 1924, ii., 481.

² Boston Medical and Surgical Journal, 1924, exci., 666.

tions is unreservedly accepted by most medical men; it remains to be seen how the suspicions of the sceptic may best be quieted.

BICENTENARY OF GUY'S HOSPITAL.

THE 200th anniversary of the opening of Guy's Hospital, on Jan. 6th, 1725, ten days after the founder's death, was commemorated on Tuesday by a service in Southwark Cathedral. The Prince of Wales, President of the hospital, was present, and Dr. Burge, Bishop of Oxford, one of the governors, preached. It was a simple, short, and admirably arranged service, consisting of hymns, a psalm, the collect of St. Luke, a thanksgiving "for our founder and benefactors," prayers for "our doctors and nurses," "our patients," and "past members of the hospital." The lesson, from Ecclesiasticus xxxviii., "Honour a physician with the honour due unto him," was read by the Bishop of Southwark. The crowded congregation included many distinguished medical men and six former matrons of Guy's Hospital.

THE CONTROL OF MEAT.

THE Departmental Committee on Meat Inspection has reason to be gratified by the early recognition which its recommendations are receiving. Regulations referring to meat inspection were issued some months ago and a supplementary series¹ has now been issued conferring additional powers on local authorities in respect of slaughter-houses and slaughtering, meat marking, and control of sale of meat products. A considerable weakness in meat control has always been that the rural districts lacked some of the powers of urban authorities. The present regulations are reinforced by the Rural District Councils (Slaughter-houses) Order² of 1924, under which the Minister of Health directs that the provisions relating to the regulation of slaughter-houses shall be enforced throughout the rural districts. Meat marking has now become an acknowledged and approved procedure, but very rightly the Minister retains control of the process by requiring that authorities shall have an adequate and competent staff to ensure that the inspection prior to marking can be properly carried out. As pointed out by Dr. W. J. Howarth in his Milroy Lectures,³ a system of meat marking places the butcher in a better position, for the carcase having been officially examined, the butcher can only be held responsible subsequently for what is known as "condition." If on cutting up the carcase signs of disease are discovered, then the discovery is regarded as one which the butcher can hardly be expected to have observed. There is no reference to this in the regulations, but in the accompanying letter it is suggested that "if in any case evidence of disease is found (in officially marked meat) the fact that the meat had been previously examined and passed by a competent authority should normally make it unnecessary to contemplate the institution of legal proceedings against the person offering it for sale." Provision is made in the regulations for notification to the local authority of intention to slaughter, but no such notice is necessary where it is the regular practice to slaughter at fixed times, and notification of this arrangement has already been made to the authority. In view of the fact that the slaughter-house is the proper place in which to examine carcasses, provision is made for the retention of internal organs with certain provisos. The blowing of carcasses by the breath is prohibited and restrictions are placed on the use to which a slaughter-house can be put. Further regulations controlling the sale of meat on stalls, in shops and stores, and the transport and handling of meat have also been framed. These are reasonably comprehensive and if intelligently observed will leave few grounds for complaint, though in certain

instances it would not be difficult to make suggestions which might be regarded as an improvement although of necessity more restrictive. In London the method of handling meat has long been severely criticised both by individuals and in the public press, and the Corporation of London since 1915 have pressed the Ministry to frame regulations which would enable them and other metropolitan and provincial authorities to deal with this important matter. The new regulations will have a far-reaching effect in another way. Control of sale of food products being now accepted in principle, other regulations of an associated character may be expected to follow.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CIV.—TREATMENT OF CRETINISM.

CRETINISM, according to the classification in general use, is divided into two varieties—endemic, which is common in the Alps and Himalayas, and sporadic, which is scattered all over the world. A classification based on external factors such as geographical distribution must of necessity be unsatisfactory, but there is justification for the temporary use of this particular division, in that the sporadic variety usually presents the clinical picture which might be expected from simple loss or diminution of thyroid secretion in the individual himself, whereas the endemic form appears to be due to a multiplicity of factors (more or less hypothetical), such as hypo- and dys-thyroidism in the mother, hypo- and dys-thyroidism in the individual, and pathogenicity of one or other of the germ cells. Thus the endemic cretin shows a far greater diversity of symptoms. In some the brain is severely affected with a nearly normal bony skeleton; in others dwarfism is extreme with comparatively little mental defect; and the development of the sexual organs is very variable.

The causal distinction just made helps to remind us that it is only in sporadic cases that we can expect to get a striking result through treatment of the individual. In the endemic form efforts must be directed mainly towards prophylaxis by treatment of the parents and especially of the mother. Probably cases which, although occurring sporadically, resist treatment, are in their essential nature of the endemic variety.

Attempts have been made to distinguish between sporadic cretinism and infantile (or juvenile) myxoedema. The distinction is an artificial one. The age at first onset of the symptoms varies in different cases, but there is no break in the series to enable us to distinguish between those in which the thyroid is functionless at birth and those in which the function is lost at a later period. There is by no means always a history of acute illness preceding the onset of the cretinism in the latter case. The treatment is identical. It has been stated that, the child being protected by the maternal secretions, the cretinoid condition is never patent at birth, symptoms being longer delayed in breast-fed infants. This statement is too strong. M. B. Gordon found that out of 113 cases in which the age of onset was noted symptoms were present at birth in 13, and my own experience agrees with this.

Cretins and Mongols.—In spite of the many excellent descriptions in text-books it is still necessary to stress the radical difference between cretinism and Mongolian imbecility, the more so that certain scientific workers have assumed that the latter is partly at any rate due to lack of thyroid secretion. The prognathous face of the cretin is just the opposite of the over-flattened face of the Mongol, and there is not a scrap of evidence in favour of there being any close relationship between the two diseases. The use of thyroid

¹ Public Health (Meat) Regulations, 1924. Statutory Rules and Orders, 1924. No. 1432. H.M. Stationery Office. 2d.

² Circular 552. H.M. Stationery Office. 1d.

³ THE LANCET, 1917, ii., 147, 225, 335.

extract in the latter condition is a waste of time and raises false hopes in the minds of the parents.

Active Principle of the Thyroid.—It is not yet settled whether the secretion of the thyroid gland contains only one biologically active chemical substance or more than one. A number of substances which have been isolated from the gland have had their actions tested on animals. Of these, the chief are iodothyrene (E. Baumann), iodothyroglobulin (A. Oswald), thyreoglandol (Hoffmann-La Roche), and thyroxine (E. C. Kendall). All these have physiological action, and it is interesting to note that one of the most active (thyreoglandol) contains practically no iodine, although the function of the gland itself shows a general correspondence to its iodine content. We are not yet in a position to say that any one of these substances or any mixture of them acts in exactly the same way as the internal secretion of the thyroid gland, and therefore it is still advisable to rely on the fresh *liquor thyroidei* or on preparations of the dried gland substance for the purposes of administration. Judging by clinical results the products of the best firms are remarkably constant if not kept for more than a month or two. They should be standardised to contain at least 0.05 per cent. iodine.

Susceptibility and Dosage.

One of the most remarkable things to be noticed during the administration of the drug is the varying susceptibility of different patients to its toxic effect. In one child, whom I treated, 1 gr. a day at the age of 2 years produced toxic effects; in another 9 gr. a day produced very little effect, either remedial or toxic, but improvement began immediately when the dose was increased to 12 gr., and this dose was continued for years with excellent results. Gordon, in a collection of 280 cases from the United States and Canada, found that in one case thyroditis was produced by $\frac{1}{2}$ gr. daily, and that in another case 45 gr. were given with impunity. It is a very general experience that it is much easier to overdose a cretinous than a non-cretinous child. This is the opposite of what one would expect on the supposition that the thyroid extract is merely supplying a deficiency, and shows that even in apparently simple cases of endocrine deficiency there is a complicated mechanism involved. The more caution has to be exercised because effects, whether remedial or toxic, are apt to lag behind the increases of dosage, so that there may be a cumulative effect. When once toxic symptoms have appeared it is not enough to reduce the dose slightly; susceptibility seems to be heightened and the dose has to be dropped by a considerable amount. Thus it is important to avoid all toxic effects or progress may be much delayed. On the other hand, it is possible to be too timid, and fail to affect the cretinism sufficiently by using too small doses. A very small beginning ($\frac{1}{4}$ gr. daily), with regular weekly increments and careful inspection, will make for safety, and at the same time ensure adequate dosage. The minimum adequate dose is the rule, but it must be remembered that it is possible to be satisfied with a medium progress when a little more boldness would produce much better results. Certain cases where the margin between the therapeutic and toxic doses is small are very difficult to treat. It is said that arsenic is of value in such cases.

The symptoms of an overdose are restlessness, insomnia, screaming, sweating, diarrhoea, vomiting, tachycardia, wasting, and exhaustion. It is not difficult to detect these symptoms in an early stage, and especially so if a weekly record of the weight be kept. After the first two or three weeks (while the thickened subcutaneous substance is being absorbed), the cretin under treatment should gain in weight regularly, and a loss in weight should at once raise the suspicion of overdosage. When this occurs all thyroid should be stopped for a week or longer, and then reinstated at half the previous amount. In two cases I have known epileptic convulsions begin

during treatment, and cease again when the dose was diminished.

It is quite unnecessary to operate on the umbilical hernia which is so frequently present. It almost invariably disappears rapidly, *pari passu*, with the other symptoms. Aperients, such as calomel, combined with moderate doses of sodium bicarbonate, are sometimes of value in the early stages of treatment.

The operation of *grafting* has been tried from time to time, but no great claims can yet be made for it. It is generally agreed that the human gland should be used, though S. Voronoff has claimed success with that of an anthropoid ape. It is important to distinguish between temporary and permanent success, the former being not uncommon.

Factors Determining Ultimate Results.

The ultimate result after prolonged treatment with thyroid extract is variable, the greatest variation being in the amount of mental defect left. In my own experience there has been variation from complete idiocy to normality. What is the most important factor in determining the result? It has been stated, and it would at first sight appear plausible, that the most important factor is the age at which treatment is begun, combined with the intensity of the cretinism. My observations do not support this view. The following are two instances of contrast:—

A cretin girl was brought up for the first time at the age of 13; her size was that of an average baby of 2 years old; she was carried in her mother's arms. By the time she was 18 she was entered at a special school for the physically defective, where she learnt easy reading, writing, and arithmetic.

Contrast her case with that of a cretin boy on whom treatment was first commenced at the age of 2 years and 10 months. The torpor and all the distinctive features of cretinism rapidly disappeared, but he was transformed into a chattering idiot unable either to walk or talk.

Again, about ten years ago, within a short period of time two cretins each of the age of 5½ months were brought up. They appeared of about the same grade and responded equally to treatment, which has been kept up ever since. The one, a girl, is now taking her place in a class with girls of her own age, and by the Binet tests her intelligence quotient is 98. The other, a boy, after being in the infants' class for about two years, has been discharged as ineducable.

It may be that some of the endemic causal factors are present in the more unsatisfactory cases, but there appears to be also a general correspondence between the final mental result and the age at which the first symptoms were noticed. Thus the idiot mentioned above is the son of an intelligent mother who has had a normal child both before and since his birth. Her story is quite explicit that he lay like a log from the day of his birth, and never uttered a sound until treatment was begun. This correspondence between age of onset and final mentality runs through all my cases, and, if not a mere coincidence, would receive a ready explanation from consideration of the time of myelination of the cortical fibres, the harmful effect of thyroid deprivation being more permanent on the immature nerve tissue.

Where thyroid treatment only unmasks an idiot we are faced with the question as to whether it is worth while. Probably most parents would prefer King Log, and it would be merciful to let the patient relapse into his previous condition.

A. E. NAISH, M.B., B.Ch. Camb.,
F.R.C.P. Lond.,

Lecturer on Medicine, University of Sheffield;
Physician, Sheffield Royal Hospital.

THE LATE DR. E. C. MCCARTHY.—One of the best-known medical men in Stalybridge, Eugene Charles McCarthy, M.B., Ch.B. Vict., died on Dec. 26th. On graduation at Victoria University, Manchester, in 1892 he obtained honours in the Final Examination with distinction in obstetrics and gynaecology. For many years he had been in active practice in Stalybridge, but owing to ill-health he retired some years ago. He was school medical officer during the war and for some time afterwards. He was appointed a justice of the peace in 1895, and took an active part in the municipal affairs of the town.

Special Articles.

CONCERNING THE TWO TYPES OF SMALL-POX

AND THE ADMINISTRATIVE METHODS APPLICABLE
TO THEM.

BY R. W. JAMESON, M.R.C.S. ENG., D.P.H. CAMB.

It is venturesome to attempt to add anything to this subject after the masterly report on alastrim by Prof. Ricardo Jorge. But as there is in this country a grave need for the reorganisation of our small-pox administrative procedure, and as I have been a medical officer of health, have had experience of "amaas" in South Africa, was in 1923 in charge of the Gloucester Small-pox Hospital, and more recently in administrative charge of a small-pox outbreak in Ashington, Northumberland, and between those appointments saw something of the Willesden patients, my facts and tentative conclusions may be of use in eliciting the views of others.

Nomenclature.

I consider that to call classical small-pox, small-pox, and the non-fatal variety mild small-pox, alastrim, amaas, &c., even para-variola, is misleading. I would call them variola major and variola minor, and in the vernacular, serious small-pox and weak small-pox. This allows one administratively to call an outbreak variola or small-pox, leaving the necessary subdivision till such time as a typical case allows one to label the epidemic variola major or variola minor. This is to take up a medical position which the lay public can understand and appreciate.

Definition of Variola Major and Minor.—With regard to variola major, I need not attempt to improve on the text-book descriptions of classical small-pox. Variola minor is a disease which in an isolated case is usually indistinguishable from a mild case of variola major, but is characterised by being non-fatal, save in the presence of some more serious condition either of disease—e.g., cerebral hæmorrhage—or of the extremes of age—e.g., an infant of 6 weeks. It is unfortunate that at the present time the Registrar-General has confused the issue by calling the four deaths with small-pox at Gloucester small-pox, whereas they all come under the heading of persons with small-pox, together with a more serious condition, either of disease or period of life. The Registrar's rule for statistical purposes is that small-pox being mentioned on a certificate the other causes may be disregarded. This was and is substantially correct for variola major, but in the case of variola minor this rule is a source of error; and nowadays in this country investigation of all cases of death in persons with small-pox is necessary. Further, to differentiate variola major and variola minor, a weaker vaccinal barrier will completely protect the individual from variola minor than is necessary for protection from variola major. I am of opinion that four marks in infancy are absolutely protective for at least 12 years, and revaccination for 20 years. The quoted experience of Mr. Gouzien (THE LANCET, Dec. 27th, p. 1367) is an isolated one, and failing other evidence, from my own observations I hold his facts may bear some other interpretation. It is also to be remembered that prior to Prof. Jorge's paper last October, alastrim in the medical literature was an ill-defined entity, and some accounts of it read more like variola major than variola minor, and in others it seemed confused with varicella. It may be well to state here that variola minor and varicella are not mutually protective, as I have seen each followed by the other after only a few weeks' interval.

To come now to the 800 hospital cases at Gloucester and Ashington. I can omit the clinical picture, since

it would be mere repetition; among the cases adequately vaccinated in infancy the youngest was 13 years 9 months, there were three between 18 and 20, the others were all over 20 years, the total being 90.

Infectivity.

At Ashington, to obtain some indication as to the incidence of the disease on those exposed to infection, I took all the cases for two months, and found they came from 30 houses. Excluding the last five houses, as more cases might develop in them, I tabulated the inhabitants of the first 25 houses with the following result, which I quote from my report to the urban district council.

There were 168 persons resident in the 25 houses; of these persons 85 were unvaccinated and 83 had been vaccinated. Of the 85 unvaccinated 6 were successfully vaccinated after exposure to infection. The 168 persons may be grouped as follows: (1) Seventy-nine unvaccinated persons; of these 47 caught the disease and 32 escaped. (2) Six protected by vaccination after exposure to infection; these all escaped the disease. (3) Seventy-four persons of all ages who had been vaccinated in infancy only; of these 17 were under 20 years of age, and all escaped; of the remaining 57, all being over 20 years of age, 13 caught small-pox and 44 escaped. (4) Nine persons vaccinated in the army—that is within 10 years of exposure—all escaped.

From these figures the unvaccinated's chance of catching the disease was 3 in 5, while for the vaccinated in infancy only, and of over 20 years of age, the chance of catching the disease was less than 1 in 4. Those vaccinated within 20 years of the epidemic escaped altogether, as did the 6 vaccinated after exposure to infection.

Although the majority of the contacts who developed the disease caught it from the first case, four of the contacts who escaped infection from the first case subsequently caught it from the second case in the house; while two others developed the disease so long after the first case (39 days) that they presumably were infected outside their own house. Escaping infection once does not insure a person against catching the disease if again exposed to it.

The administrative fact of importance is that of the contacts, less than 1 in 4 of the unvaccinated, and none of those vaccinated in infancy only, would accept vaccination even though they had been exposed to infection. It is not an unnatural position for these individuals to take up, for the epidemic in a great majority of cases has been very mild, while vaccination at its best is not a pleasant experience. But communally it means that the epidemic cannot be brought to an end by protecting by vaccination persons liable to develop the disease, because they refuse to be so protected; and the only method available is that of removing infectious cases whenever detected, and as this cannot be done until a rash has developed, one can by this means only diminish the risk of infection—not abolish it. It is therefore impossible to say for certain when the epidemic will end.

From my other records it was clear that, as a rule, the infection was from neighbour to neighbour, and not from colliery, school, or other occupation. I have not been able to find any house records for other epidemics, but contrast the above with Willesden where the epidemic was confined to one house. The first case, source not known, was an unvaccinated child of 3 years, who had a very mild attack of small-pox. Every member of this household went down with small-pox, three died of hæmorrhagic small-pox; therefore the strain for all was variola major. The other six cases and the original case I saw during convalescence, and all save one were indistinguishable clinically from my Gloucester cases, but the remaining case, without the hæmorrhagic deaths, would, in my opinion, have established the strain as variola major, for it was a child of 12, with adequate marks of infant vaccination, and yet with a well-marked rash, making it quite impossible, in my mind, that the infection could be variola minor.

The Willesden household is an isolated example, but compare its infectivity with variola minor, where many escape: A gives it to B, C escaping, to be later infected by B. Willesden is an example of how easily one might err if the two types are designated mild and severe. It is also an example of how early in an epidemic the diagnostic case of variola major may show itself. Again, variola minor has crept about the Midlands for the last six years, and as my

figures indicate among a population very indifferently protected and largely unchecked, save by the isolation of cases. While there has been little variola major of recent years, and it has been very energetically treated and stamped out, yet surely it does show greater infectivity than variola minor. This is mere surmise without facts; one hopes the hazarded statement may elicit the facts as to the infectivity of variola major from some repository of that knowledge.

Vaccination.

If we were governed by a medical autocracy doubtless we should all be vaccinated and revaccinated sufficiently frequently to make a small-pox epidemic an impossibility in this country. But in fact we are a democracy, and therefore with the prevalence of variola minor there is bound to be a continuous diminution in the number of vaccinations done.

Vaccination where there is no Epidemic.—Administratively this consists only of the so-called compulsory vaccination of infants, which is more exactly described as the free vaccination of the infants of non-objecting parents. Here, where the object is to guard the infant from an improbable event at an uncertain future date, the more marks the better, as the effect lasts longer. But if general vaccination in non-epidemic times must be advocated, then, surely, together with the offer of this gift of vaccination to his child, it is only reasonable that the parent should be told that after seven years the protection is not to be relied on as against serious small-pox.

In non-epidemic infant vaccination the effects of vaccination are twofold: (1) on the individual; (2) on the community of which he is a unit.

As regards the *Individual*.—The desirability of vaccination in non-epidemic times is for him dependent on two factors only—the severity of the vaccination and the magnitude of the risk insured against. Variola minor is so mild and its infectivity relatively so low that to defer the consideration of vaccination against it until an epidemic period is surely reasonable. Therefore the only insurable risk to consider is that of variola major, and this risk depends on the degree of probability of his being exposed to serious type infection during the period in which the vaccination, if done, would confer complete immunity, together with the further period in which the remaining partial vaccinal protection would lessen his chances of death or disfigurement should he be exposed to and contract the disease.

Now I submit that the insurable risk for young children, that is their chance of exposure to severe type small-pox infection, has become in England so infinitesimal that one need no longer advocate that all babies born in England in non-epidemic times should shortly after arrival pay the premium of being vaccinated. Of course, in areas with a bad and recurrent variola major history one should advocate vaccination and revaccination, but those areas require to be investigated as to their sanitary organisation, housing, vaccinal condition, type of population, geographical position, and so on, in order to arrive at the cause of their peculiarity.

As regards the *Community*.—It is difficult to see the advantage to the community of vaccinating 40 per cent. of the babies born when 60 per cent. refuse vaccination, or even, if it were possible, the great advantage of reversing these figures. Further, variola minor has demonstrated in many parts of the country that we are now a relatively unprotected community, and that variola minor has no terrors for those who actually come in contact with it. Should not all our efforts be directed to vaccination when it is essential? And the conscientious objection form might be so altered that in non-epidemic times only those parents who declared that they had a conscientious desire for vaccination should have their babies vaccinated at public expense.

The figures for 1921 and 1923 are rather arresting. I have not seen those for 1922.

	1921.	1923.
Small-pox cases	336	2483
Deaths	5	7
Vaccinations	324,000	—
Vaccination deaths	8	12
From 1911 to 1920 small-pox mortality-rate 1 per million of population per annum.		

Epidemic Vaccination.—The present position is that no one is obliged to be vaccinated. Anyone may be vaccinated free, and many are; also the small-pox administration sends the names of all contacts to the public vaccinator that he may persuade them to accept his vaccination. The public vaccinator vaccinates many people because the epidemic is present, but one never learns what proportion of them were likely to come in contact with the infection. I therefore took a census of uninfected houses next door to houses from which cases had been removed, and found that of 158 persons none of the vaccinated had been revaccinated, that of the 50 unvaccinated three had been vaccinated as contacts; four had been vaccinated because of the presence of the epidemic—three of them because it was a condition of joining the Wembley excursion from a small-pox area, and the remaining one because the child wanted to wear the red ribbon badge. In the 25 infected houses already referred to there were no persons vaccinated only because of the presence of the epidemic. So far as these figures go they indicate that it is persons other than those most liable to infection that seek vaccination in the presence of an epidemic; and with variola minor this is what one would expect: that the class who read or otherwise learn about variola major would seek vaccination, while those who have experience of variola minor, or lacking any experience save that of vaccination, would not get vaccinated. And one can understand that a father of an unvaccinated family living amid unhygienic surroundings should be much perplexed as to what he ought to do should he see his neighbour A's children return obviously benefited by their stay in the country small-pox hospital, while his neighbour B's children are little bundles of misery with bad vaccination arms.

All vaccinations provided free by Government are of the same vaccine and of the same extent—four marks covering an area of half a square inch. In non-epidemic times it is reasonable that Government should get as great an acreage of scar tissue as possible for the money expended, in order that the effect produced may last as long as possible. But for the control of an epidemic in the present absence of legislative aid, to be acceptable, vaccination must be as little distasteful to the recipients as possible, while its protective effect need not last more than a few months. It is less distasteful than the Government method, if one only makes two small marks, less than a quarter square inch in total area, and disinfects them if the reaction be manifest on the fifth day with permanganate compresses until the scabs be black. But free vaccination has to be of the stereotyped Government form, and only in exceptional circumstances should an M.O.H. vaccinate a contact. In time of epidemic it is necessary that the administrator should also be in charge of vaccination, unhampered by the acreage regulations. If epidemics are to be checked it can in the case of variola minor only be in the early stage.

Procedure at the Start of an Epidemic.

I consider that in six weeks from the discovery of the first case of small-pox, given adequate powers, the epidemic should be at an end, or if not at an end should by then be diagnosable as being either variola major or variola minor; that it is necessary while in doubt to treat the epidemic as variola major; that the present absence of necessary powers is a possible source of danger to the community. The medical officer should have power to segregate, if necessary, any persons he considered contacts, and be allowed

to offer them the alternative of vaccination when he considered that safe, and to pay for wages lost by reason of vaccination if the individual elected to be vaccinated; this power to expire at the end of six weeks unless a designated official had not prior to that date declared the epidemic to be variola major. If he did so declare the power would remain operative after that date and until the end of the epidemic. This is not compulsory vaccination, but the offer of vaccination as an alternative to compulsory segregation.

Further, if the epidemic be declared variola major, vaccination should thereby become compulsory for all persons under 14 considered to be contacts by the medical authority, for one remembers how deadly variola major is to unvaccinated children. But, since we are a free country, I would allow this power to be withdrawn on a majority of the local council, consisting of at least half its members, so voting at a meeting called for this purpose, and on their own heads be the result of such action.

If variola minor be the epidemic which persists at the end of the six weeks, then it is necessary that the cases be notified to and seen by the medical authority, and due records kept for fear that variola major might be introduced into the area from outside, but it is not necessary to isolate them, though ill or inadequately housed persons should be admitted into the ordinary fever hospital as is done in the case of measles. No vaccination propaganda need be undertaken. Any contacts wishing vaccination should receive it free for the first six weeks of an epidemic, [and thereafter, if the disease be variola major,] cases would be sent to a small-pox hospital, and where necessary contacts to small-pox segregation quarters.

At present one cannot curtail the liberty of a tramp to wander, though one may think he is in the incubation stage of variola major, and to vaccinate anyone against their will by representing that they must be done is in law an assault.

Administrative Areas and Small-pox Hospitals.

The areas are far too small, the hospitals too many, and necessarily quite inadequate. They were arranged when only horse transportage was available, and before the invention of telephones. Small-pox administrative areas should be large—a combination of counties and county boroughs—administrative headquarters being preferably at a port. Six or eight such authorities should be sufficient for England and Wales. The administration, from the size of their area, would become conversant with small-pox. The minor authorities and their staffs would, as regards small-pox, be subordinate to the super authority. At present up and down the country medical officers of health gain small-pox experience to be for the future useless as their districts remain free. At present the small-pox hospitals, save in the large towns, each serve a population of about 75,000, that is, are practically always empty, and if there be an epidemic of any size are of no use. A large area authority would use motors and put hospitals capable of expansion from a central store at suitable points in their area.

There are a number of other matters both medical and non-medical that would be more efficiently and economically managed by them than is at present done by the smaller local authorities, and it may be that they might also be better fitted for some matters at present done by the central government.

Ministry of Health and Medical Research.

We come lastly to the supervisory administrative body, the Ministry of Health. They have allowed the present state of things to continue, and it is not their fault, for that which you have to administer and which has grown with your growth is not a thing you can yourself adequately criticise. The Ministry is a very efficient administrative body, its function is to administer, and this administration is based on ever-developing science. Any ordinary business has

an independent financial audit; the Treasury, I suppose, performs this function. When the administration is based on science it seems as though there should also be from time to time an independent scientific audit, and it seems to me that the Privy Council, from which in the great Sir John Simon's day all health reform emanated, should be responsible for this, and begin with the subject of small-pox. It merits consideration whether there is not something in this idea.

Summary.

1. *Nomenclature.*—I suggest one which can only be provisional until we know more of the nature of the virus concerned in variola major and variola minor respectively. One recognises this by using these two terms which take note of their clinically allied nature and their main difference, that of virulence, while they are calculated not to confuse the clinician as the terms mild and severe might do.

2. *Vaccination.*—Owing to the widespread objection to submit to vaccination and also to the fact that the immunity conferred by vaccination only lasts for a term of years, the present attempt to control small-pox by the wholesale vaccination of infants has failed. It is suggested that variola outbreaks would be better controlled if governmental vaccination effort were confined to treating outbreaks, and then used intensively, that in the presence of variola major one cannot have too much vaccination and therefore increased powers of compulsion are necessary for those times.

3. *Administration.*—That the areas of small-pox administration should be enlarged as making for efficiency and economy in dealing with the disease. That the efficiency of the machinery in use for dealing with this and other diseases would be enhanced if the Privy Council from time to time assessed the value of the procedure employed.

I have as far as possible eliminated all data and argument only supplementary to my main thesis and yet have written at considerable length in my attempt to deal with a very large subject.

If I have shown the need for further investigation of the subject under the general heads touched on, I have done what I set out to do.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Referees for National Health Insurance Work.

SOME nine years ago a scheme for the medical certification of insured persons was agreed on between the Irish National Health Insurance Commission and the Irish Medical Committee. In its main features this scheme has been in operation since Jan. 1st, 1916. One important part of the scheme, however, remained in abeyance up to the present—the provision of whole-time medical referees. The Irish Medical Committee had always pressed that there should be referees, and had even agreed that a proportion of the monies voted by Parliament to finance medical certification should be held back to pay for the referees. The monies were held back, but Government during the war years refused to sanction the appointment of referees. The Commission, then, in agreement with the approved societies, attempted to supply the lack of referees in another way. Small grants were made to the societies to enable them to pay for "second opinions" in such cases as they desired. The representatives of the medical profession protested that this arrangement was a breach of the bargain made between them and the Government, and that further it was unjust to the insured person, as it put in the position of referee a person chosen by and paid by the approved society. In spite of these protests the system has continued in force down to the present. It is understood, however, that the Government is no longer going to make these grants to the approved

societies, and the National Health Insurance Commission is about to appoint a small number of whole-time referees. An advertisement appeared last week in the daily press inviting applications from registered medical practitioners, with a knowledge of general practice, for three appointments as district medical referee.

The Question of Salary.

The appointment in each case is to be a whole-time temporary one, terminating on Dec. 31st, 1925. Salary will be at the rate of £600 a year, together with travelling and subsistence allowance. The Commission is to be congratulated on the step it is taking, but one fears that the conditions of appointment are not attractive enough to secure men of the proper experience and judgment. Few medical men in practice are likely to think of abandoning their practice for a temporary appointment. Moreover, £600 a year cannot be considered an adequate salary for a whole-time Government officer with considerable responsibility. Inspectors of the Ministry of Local Government are paid much more highly, in that the initial salary of £500 a year carries with it a bonus of between £200 and £300, and their duties are not exacting and do not demand any higher qualities of education and judgment. It will be unfortunate if the National Health Insurance Commission is not able to secure referees whose position in the profession will command respect both from practitioners and from approved societies. The appointments are to be made on the advice of a selection board set up by the Civil Service Commission.

No. 83 (Dublin) General Hospital, B.E.F.

On Jan. 3rd the members of the Dublin unit which served in 83 (Dublin) General Hospital at Boulogne for the year 1917-18 held their annual dinner in the Royal College of Surgeons. Colonel Sir William Taylor, K.B.E., who organised the unit, was in the chair, and 16 other members were present. There were three guests present, all of whom had been closely associated with the work of the hospital—namely, Colonel A. Fullerton, of Belfast, Vice-President of the Royal College of Surgeons in Ireland, and formerly consulting surgeon in the Boulogne area, and General R. H. Sawyer and Colonel Forrest, who were respectively D.D.M.S. and D.A.D.M.S. of the Boulogne area in 1917.

ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee 37 cases were considered and £547 10s. voted to 34 applicants. The following is a summary of the new cases relieved:—

M.R.C.S. Eng., 1896, aged 55, who, since demobilisation has worked at the Ministry of Pensions. Applicant is now unable to work owing to paralysis. He and his wife are now living on the charity of friends. His wife is quite willing to work but she has to look after the applicant. Voted £26 in 12 instalments.

M.D. Cantab., 1912, aged 71, who practised in Devonshire and London. Unable to regain his practice after the war and now, owing to old age and infirmities, can scarcely walk. His wife is able to work but applicant's health necessitates her constant attention. They are now dependent on friends. Voted £26 in 12 instalments and £10.

Widow, aged 58, of M.B. Glasg. who practised in Leeds and died in 1889. Applicant received £8 from maternity nursing but has been unable to work since August owing to trouble with her eyes. She is much worried as she is getting behind with her rent. She sub-lets one room for £12 per annum, and her rent and rates amount to £27 per annum. Voted £10.

Widow, aged 57, of L.S.A. Lond. who practised in Cornwall and died in 1923. Through illness applicant has had to give up her post as companion and is now entirely dependent on her daughter who earns 45s. a week. Voted £10.

Daughters of M.R.C.S. Eng. who practised in Berkshire and died in 1912. Their ages are 56 and 47. The eldest one nursed her father who was paralysed for 22 years and is not at all strong. The younger sister is a daily governess at £60 per annum. They receive help from their brother and brother-in-law. Voted £18 in 12 instalments and £12 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos-street, Cavendish-square, London, W. 1.

NATIONAL HEALTH INSURANCE.

DRAFT MEMORANDUM OF EVIDENCE TO BE SUBMITTED
TO THE ROYAL COMMISSION BY THE BRITISH
MEDICAL ASSOCIATION.

THE organisation of a national scheme of health insurance, so far as medical services are concerned, and the relationship of such a scheme to other services concerned with public health, form the subject of a Memorandum drawn up for the British Medical Association by a Committee over which Dr. R. A. Bolam presided, and accepted by the Council of the Association at its meeting on Dec. 17th, 1924. This draft Memorandum, which appears as a Supplement to the *British Medical Journal* of Jan. 3rd, 1925, is to be discussed at local medical meetings, whose replies will be considered by the Council on Feb. 5th with a view to the issue of a revised Memorandum on Feb. 18th, to be followed by further local meetings from Feb. 25th to March 5th. A representative meeting is to be summoned on March 12th, when after a final sitting of the Council on March 25th it is hoped that the printed evidence will be ready for submission to the Royal Commission on April 4th, so that any time after April 13th witnesses may be heard by it.

The draft Memorandum is divided into five sections, dealing with: (a) Persons to be provided for; (b) Extension of provision to be made; (c) Regulations and terms of service; (d) Administration; (e) Remuneration, with a preface of a more general character.

Prefatory Note on General Principles.

At the outset it is posited that the organisation of a national health insurance scheme is not necessarily (or even probably) the best means of utilising limited resources for the promotion of national health. An equal or better return would probably follow expenditure on such things as housing, town-planning, smoke abatement, pure milk-supply, regulation of alcohol, destruction of vermin, education, or the aiding of medical research. The principle of a scheme being accepted, regard should primarily be had to the maintenance of health and the prevention of disease. A scheme of national health insurance is defined as one through which in return for premiums or contributions participants are entitled to medical attendance and treatment together with certain ancillary services and also to cash payments (under certain conditions) during ill-health or disablement. The medical profession as such is concerned only with the former class of benefit and with the giving of such certificates and reports as may be required in connexion with the latter class.

A brief historical survey sets out how in 1913 the success of the system was jeopardised by antagonism, professional and lay, and by the lack of experience which led to unsatisfactory arrangements both for practice and administration. War and demobilisation followed, leaving barely three years of smooth and normal working.

Comparison of conditions before and since 1913 leaves no doubt in the medical mind that (a) many now receive medical attention who formerly did not; (b) the proportion of practitioners to population in densely populated areas has increased; (c) medical attention is superior to that of the old club practice; (d) illness is now coming under observation at an earlier stage; (e) there is a growing bias towards prevention; (f) clinical records are being provided which may be of service to research and public health; (g) co-operation among practitioners is encouraged; (h) the collective responsibility of the profession to the community in respect of all health matters is growing. If not wholly due to the insurance scheme, these advantages have been hastened and intensified by it.

The main difficulties of the present scheme are then set out: the strain on the practitioner in time

of widespread epidemic, the oppressive and even menacing nature of the quasi-judicial machinery with its volume of regulations. The mind of the individual doctor dealing with an individual patient may be diverted by fear of transgressing rules and regulations made for other purposes, with detriment to his work. The work of the medical service is rendered less (not more) efficient by multiplicity of departmental requirements.

The broad general principles regarded by the Association as fundamental are laid down as follows:—

(a) Medical provision should be available for those persons, and only for those persons, who would be unable to obtain it without the help of the insurance scheme.

(b) This provision should be, as far as possible, complete.

(c) Conditions under which medical attention is given should approximate as nearly as possible to those of private practice.

(d) Medical representatives should be closely associated with the administration of the scheme, and as far as questions of purely professional conduct and treatment are concerned, judgment should be in the hands of purely professional bodies.

(e) Remuneration should be on such a basis as (i.) would produce an income not less than that which corresponding responsibility and work should produce in comparable private practice, and (ii.) would not prejudice the continuous supply of the best type of practitioner.

Persons to be Provided For.

In general terms it is agreed that the scheme must include those economically dependent upon persons at present insured and other workers in like economic position, and that the same system might be extended to the actually destitute. Assuming the number of persons now insured to be 15,500,000, the number of dependants is estimated at one-and-a-half times as great, and the total number of persons to be insured at 38,750,000. There is no reason to suppose that the new entrants would be less costly to the scheme. Essential conditions of any extension would be the maintenance of infant welfare centres, adequate home nursing, a minimum of records and reports, and revision of the methods of dealing with complaints.

With a view to bringing the whole problem within measurable compass, it is suggested that:

(a) The classes of persons exempt from the scheme by reason of their contract of service including provisions giving benefits equal to those of the national scheme, should be extended to include others (e.g., bank and insurance clerks) not at present excluded.

(b) Persons with an unearned income of an amount per week not less than that prescribed for sickness benefit should be excluded.

(c) Any income limit (whether £250 a year or a lower amount) should be applied alike to the non-manual worker, the manual worker, and the voluntarily insured person.

(d) A lower income limit than that which is applied generally to insured persons should be necessary for the inclusion of dependants.

From the purely medical side the problem of provision of advice and treatment for the poor person not under contract of service, or for the necessitous person, is not regarded as specially difficult.

Extent of Provision to be Made.

Under the present scheme, medical advice and treatment provided is broadly such as can reasonably be expected from general practitioners as a class. The phrase "general practitioner advice and treatment," it is emphasised, does not indicate anything of inferior character. Such services are fully as important as scientific, and as highly skilled as those provided by other practitioners in more special lines of practice. The definition is mainly one of range. Under the auspices of local authorities there are now provided certain pathological facilities, treatment for tuber-

culosis and venereal disease, for infective fevers, for some conditions of children of school age, and provision for maternal and infant welfare. Individual approved societies contribute towards dental, ophthalmological, or institutional treatment. Provision for possible consultative advice through the regional medical officers has so far scarcely at all developed.

The Memorandum desires to make all such services and benefits an integral part of the insurance scheme, to bring them into proper relationship thereto so that they may be generally available, and to extend the provisions so as to include complete consultative and specialist advice and treatment, full laboratory facilities for clinical purposes, residential institutional treatment so far as is possible with a limited accommodation, dental advice and treatment, such ancillary help as can be given by nurses and masseurs, and an ambulance service—all this in addition to the existing general practitioner advice and treatment and the provision of necessary drugs and appliances.

All these benefits should, it is contended, be available equally to all insured persons alike, regardless of membership of any particular society. To avoid excessive demands they should be available only on the recommendation of the general practitioner, with some safeguarding against unreasonable or excessive use, and for composing differences of opinion between practitioner and patient or society, which might require an official referee. This general rule might be modified for the prescribing of necessary drugs or appliances by the consultant or specialist and for direct application by a patient to a dentist for dental treatment.

The medical personnel of the consultant or specialist service should consist of every registered medical practitioner willing to accept service and having satisfied the following criteria as to status:—

(a) That he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; or

(b) That he has had special academic or post-graduate study of a subject which comprises the service rendered, and has had actual recent practice as aforesaid; or

(c) That he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

From the list of consultants and specialists so compiled, the practitioner, in agreement with his patient, would choose the individual considered most suitable for the particular case. In normal circumstances consultations would take place at the consultant's, the practitioner's, or the patient's house. Exceptional conditions might require the establishment of special premises or sometimes the use of a hospital out-patient department, when general practitioners not on the specialist list should be eligible as clinical assistants. Arrangement would be made for exchange of opinion and co-operation between practitioner and specialist, and provision made for insistence upon actual personal consultation where either considered it necessary, the primary responsibility of the general practitioner in charge being preserved in all cases. Existing clinics provided by local authorities would remain to function as centres for education in health matters, as places of appointment, as specialist clinics where consultations cannot be held elsewhere, and for persons not coming under the insurance scheme.

Complete provision of maternity care is regarded as an integral part of the medical service, whereby attendance at confinement and during the puerperal period together with special examination and supervision during pregnancy would be brought within the scope of the scheme. Such inclusion presumes an efficient service of registered midwives, provision for institutional treatment of serious cases, the liberty of the

practitioner to decline the work or to place his name upon the list for maternity purposes only. Remuneration would be on a special scale. Any insured woman would thus obtain medical examination (if desired) and supervision during pregnancy, attendance by a registered midwife during normal labour and the puerperal period (the ideal being both midwife and doctor), attendance of the practitioner when requested by the midwife under defined conditions, or when as the result of his examination he has declared his personal attendance to be necessary.

The clinical laboratory service standing as it does to gain by association with research work, is on a rather different footing. Routine investigations should not be allowed to interfere with the proper function of a University department. The work should be divided between a relatively small number of large central laboratories with special facilities and a larger number of small laboratories in which the tests would not involve the use of elaborate or exceptional apparatus. Highly trained pathologists being required it would be undesirable to restrict their activities to work under the insurance scheme. The Memorandum therefore regards it as desirable that laboratories should be established and maintained under other auspices with a suitable financial contribution from the insurance fund. Some approved clinical laboratories under private management might be recognised. Exchange of opinion between clinicians and laboratory should be arranged for.

Provision for resident institutional treatment envisages the use of existing voluntary hospitals of various types, of the hospitals for infectious disease, of the tuberculosis sanatoriums of local authorities, and of the present Poor-law hospitals, none of which could be restricted to persons under the insurance scheme, the cost of treatment to be defrayed in full out of the medical benefit funds, in accordance with the hospital policy of the Association.

A final recommendation under this heading suggests the abolition of restriction on appliances which may be ordered under the scheme; all appliances necessary for the sick person should be available, possibly in some cases on loan.

Regulations and Terms of Service.

The Memorandum lays down that the conditions of insurance practice should approximate as nearly as possible to those of private practice, and should preserve within wide limits professional customs and traditions. Some modification is entailed by the insurance principle and by the responsibilities incurred to State and administrative bodies. It is regarded as essential that any registered medical practitioner should be able to participate in the service as a right, and that the conditions of acceptance should be uncomplicated and un-onerous, in order that as large a number as possible should be willing to engage in the work. Questions of supposed neglect or lack of success or improper behaviour on the part of a doctor, and of unreasonable conduct on the part of a patient, may be solved very simply, the Memorandum suggests, by the exercise on both sides of complete freedom of choice, it being understood that no practitioner shall abandon his responsibility for an actually ill person until other attendance has been secured. Over and above this obvious solution of the whole question of complaints, the Memorandum takes no exception to a statement in general terms as to what constitutes reasonable conduct on the part of a patient or what in general are the duties which the doctor undertakes to perform.

Two requirements on the part of the patient, unnecessary in private practice, are laid down. An insured person should be required (1) to seek acceptance by a doctor before the occasion for medical treatment arises; (2) to claim treatment by the production of a medical card or otherwise at the first consultation. On the other side, the insurance practitioner should be liable to a penalty for (1)

wilfully charging a fee for any service undertaken as a part of his insurance service; (2) such general conduct as is held to be detrimental to the interests of the service. Statements made in records, reports, or certificates about a patient's condition, should, it is held, if honestly made, be regarded as matters of professional judgment not liable to complaint beyond that to which all practitioners are liable. Wilful failure to keep records or wilful false statement are excepted. Certain definite proposals are made in regard to official complaints: (1) that all complaints against a practitioner should, in the first instance, be sent to the chairman of the local medical committee and the chief administrative medical officer of the local authority; (2) that only such as cannot be settled by them should proceed further; (3) that questions of general conduct detrimental to the service should be reported upon in the first instance by the local medical committees; (4) that appeal to the courts should be possible not only on the ground of improper procedure, but also against a penalty out of proportion to the offence; (5) that in the case of proposed removal from the service the practitioner should have the right of appeal to a duly constituted central professional committee.

It is admitted that uniform regulations or terms of service are difficult of general application and the special conditions of rural and colliery areas are dealt with in appendices. Opinion is expressed that the standard of treatment at so-called medical aid institutes is not equal to that given by the service as a whole; that the great majority of medical men decline to take service under the conditions laid down for them, and that the need to the community of such institutes does not justify their being placed outside the general scheme of medical benefit.

Administration.

Unification of medical services contemplated in the Memorandum would involve the disappearance as such of insurance committees and the transfer of the health functions of the Poor-law guardians, although, of course, members and officers of these bodies would be indispensable for the work of the unified authority. Each such authority would have a chief administrative medical officer, no doubt in most cases the existing medical officer of health. A statutory local medical committee would take the place of both the existing panel committee and the existing local medical committee, with funds provided for administrative purposes. This committee would appoint representatives on the local health committee to conduct negotiations on behalf of the profession, to advise on professional matters, and to perform any other statutory duties imposed. This committee should have the right to present its view directly to the Ministry of Health and to the public.

Administration of the cash benefits, it is remarked, does not primarily concern the medical profession, but evidence of serious imperfection in the administration of approved societies, both in notifying the enrolment of insured persons and their suspension from medical benefit, continually comes before the notice of practitioners. The Memorandum points out, with admirable fairness, that the proportion of cases in which there is cause for complaint is no doubt small in relation to the total number of occasions on which complaint might have arisen. But the delay to notify members who have passed out of medical benefit is regarded as serious enough to form the object of a special statement. On the evidence of the Central Index Committee there were during a period of 18 months 503,000 persons whom doctors were liable to attend in respect of whom no contribution was forthcoming.

The Memorandum stresses the high importance with which medical certification is regarded by the medical profession. Any conclusions to the opposite effect drawn from examination of large numbers of medical certificates or from references to regional medical officers are due to misinterpretation or

misunderstanding. Bodies responsible for the administration of cash benefits certainly have a right to be consulted with regard to certification arrangements, and in the main, medical certification in relation to sickness benefit is remarkably well done. Certain alterations in the forms of certification would conduce to harmonious working. The phrase "incapable of work," the technical meaning of which has needed a pamphlet to set forth accurately, should be altered. Initial and final certificates might remain, but the intermediate certificate requires modification.

In the event of separation of the administration of medical benefit from that of cash benefits, many doctors, it is stated, believe that this administration is likely to be more satisfactory and sympathetic in the hands of certain classes of approved societies than in the hands of a large State organisation or committee of a local government authority. If approved societies are to continue, the following requirements are suggested. They should be: (1) of such a size as would constitute a properly insurable group; (2) of such a character as not to vitiate a uniform insurance scheme; (3) of a constitution so simple as not to put their members at a disadvantage; (4) obliged to classify all their members on a territorial basis; (5) uniform in their rules for the conduct of insured persons.

Approved societies as at present constituted do not as a whole in any sense represent insured persons, their wishes, or opinions.

Remuneration.

The remuneration of members of the medical profession working under the scheme should be determined on its merits by negotiation between the Ministry of Health on the one hand and a central body representing the profession on the other. The British Medical Association holds strongly that the remuneration of the general practitioner service should be by a capitation system, although local option might be allowed as now in the distribution of the amount allotted in each area. On the other hand, consultation and specialist work must be by tariff or sessional fees. The principle on which the amount of this remuneration must rest is that it should compare not unfavourably with that forthcoming from similar responsibility and work in private practice of a like nature, allowance being made for security on the one hand and for work done for the State or public body on the other.

The Memorandum does not reopen the question of the actual amount of the capitation fee settled by the Court of Enquiry in January, 1924, except to make two observations:—

1. That the capitation fee of 9s. is still too low to be a proper remuneration for the responsibility undertaken and work done under the insurance scheme.

2. That the extra amount allowed for rural conditions requires reconsideration.

Determination of fees for services of whatever kind must depend largely upon the nature of the insurance scheme recommended by the Royal Commission and enacted by Parliament.

Sir Leslie Wilson, Governor of Bombay, unveiled recently in that city a memorial tablet to the late Dr. J. A. Turner, who was for 18 years the zealous and distinguished health officer of the city. On Dr. Turner's death some two years ago a general movement among the citizens was organised for the foundation of a lasting tribute of respect to one who had discharged duties in connexion with the health and sanitation of Bombay with such energy and success. It was decided that Dr. Turner's memory should be perpetuated by the foundation of an annual prize in the form of a gold medal, to be named the Turner Memorial Medal and to be awarded annually to the student who secured the best position in the examination for Bachelor of Hygiene in Bombay University. The residue of any fund raised, it was resolved, should be employed in placing a medallion to Dr. Turner in the Hall for the Bombay Sanitary Institute.

MEDICAL RESEARCH COUNCIL. THE ANNUAL REPORT.

THE annual report of the Medical Research Council just issued deals, as usual, with the activities promoted or subsidised by the Council up to Sept. 30th of the previous year. The report is set out on the plan familiar to those who have come to look forward to studying in the first weeks of every calendar year an official publication which is at once a review of the progress made in this country and an index to the lines on which medical research is developing throughout the civilised world. After an introductory review of the second quinquennium in the life of the Council the report deals with the work being done in the six departments of the National Institute for Medical Research at Hampstead. The next section gives an account of progress in the determination of biological standards and in the methods of biological assay and measurement, and then experimental medicine and the research work of clinical units are surveyed. The largest section of the report, occupying 59 pages, deals with research schemes in specific subjects, and this is followed by brief reference to industrial medicine and industrial fatigue and to the interchange of travelling Fellowships between this country and America. The personnel of investigation committees for special subjects is given in an appendix, while three indices of personal names, of institutions, and of scientific subjects give easy clues to the pages on which any desired information may be obtained.

The plan on which the sections are divided is as usual partly geographical and partly according to subjects under investigation, and a certain amount of overlapping is thus inevitable. We propose to give some account of the review of the developments of the last five years given in the introduction to the report, and then to select from the mass of interesting material some examples of work in progress which appears to have a direct bearing on clinical medicine, irrespective of where it is being carried out. Much of the important work summarised in the report has appeared in full in *THE LANCET*, where there is also recorded the way in which radium and insulin, for example, from rare and expensive therapeutic agencies almost impossible to obtain have been made readily available for any individual patient. It is those aspects of the year's work throughout the country which are likely to be less familiar to our readers that we have selected for notice.

The Period 1919-1924 Reviewed.

Considering the dangers to which the cause of research was exposed by the general impoverishment following the war, the extension of facilities for medical research during this period is regarded as gratifying. Parliament has made increased provision for the universities, and thus stipends paid to those holding responsible posts are less inadequate. Private beneficence has freely supplemented Government support of research work, unfettered research professorships have been founded by bequests and gifts to the Royal Society, and the lay authorities of hospitals have become newly alive to their responsibilities for aiding the advancement of knowledge.

In the last five years considerable change has taken place in the position of the sciences contributory to medicine, and in their relation to each other and to therapeutics.

Physiology.—During the war the pressing need for bringing the best physiological knowledge to the aid of sailors, soldiers, and workers in their exposure to every kind of violence, hardship, and physical stress, brought the physiologists increasingly to their proper place within the fields of preventive and curative medicine. Moreover, it is now becoming recognised that long years of work which physicians were apt in the past to label as academic have given us the

clinical weapons of adrenalin and pituitrin and insulin. The studies of muscle function are beginning to remove empiricism from practical studies of physical training and of industrial labour, while the practical value of the new knowledge of the dietetic control of growth is now universally recognised.

The rapid rise of *biochemistry* has demanded special technical facilities which have been lavishly provided in endowed chairs and well-equipped institutes at Edinburgh, Glasgow, Oxford, Cambridge, and University College, London, among other centres. These improvements in financial provision and material equipment have been no barren ostentation. The annual output of good, original work in this subject is now more than treble that of four years ago or of any year before the war, and the progress already made is of the happiest augury for the future.

Of the present position of *pathology and bacteriology* the Council speak in less optimistic terms. They hold that the position and progress of these sciences, on which so much of the current work of medicine depends, cannot be regarded as satisfactory. It is noted that accidents of historical development have tended to divorce pathology from experimental physiology and from biochemistry, to its great disadvantage and theirs, though this separation now shows many signs of healing. They deplore the fact that the professor of pathology in some universities is still not only allowed or encouraged, but often practically compelled, to do commercial routine work, in the analysis of water and milk for public health authorities, or in the examination of material submitted by medical practitioners. At the great hospital schools the pathologist has been commonly so poorly paid that he has found it necessary, and indeed has been expected, to augment his salary by making paid routine examinations for his colleagues in practice or by taking the remunerative path of vaccine therapy. They hold that this commercial work is at best a grave handicap, and at worst a destructive influence, upon the progress of these sciences in our country, and in the national interest plead strongly for early and earnest consideration of this subject by universities and medical schools.

As to *experimental medicine and clinical research* the period under review has been of great significance, for it is just five years ago that the first "units" of medical and surgical teaching, organised on a university basis, were introduced with financial aid from public funds. The Council are of opinion that during the past five years these university clinics have wholly justified their foundation by their success, and regard them as a quite indispensable part of the national system of medical research.

Referring to the increased recognition and support recently given to *comparative pathology*, the Council point out that the science of human pathology is itself built up by experimental studies of animals, and the powers of prevention and treatment of disease, whether in animals or man, must be derived from one and the same science.

The Council suggest that the most recent gains that have come to practical medicine illustrate well this general retrospect of the positions of the contributory sciences. The work which has made a real difference to the daily tasks of preventive and curative medicine in the last few years has come from the laboratories of physiology and biochemistry rather than from those of bacteriology and pathology, and it is notable also that the chief contributions coming from the new clinics have, as it happens, been in clinical studies of the functions of the heart, the regulation of the respiratory mechanisms of the body, and the excretory efficiency of the kidney, carried out by men trained to use the precise methods of physiology or biochemistry.

Dietetics and Nutrition.

Among the most important of the broad questions being attacked by workers subsidised by the Council is that of nutrition. Problems of diet are being studied in relation to growth, gestation, lactation; quantitative and qualitative mass experiments are being carried

out on school-boys by Dr. H. Corry Mann, on cows by Prof. J. C. Drummond and Captain J. Golding, on pigs by Dr. S. S. Zilva, also in collaboration with Captain Golding, and on that convenient animal, the rat, by a large number of workers.

An interesting observation made by Prof. Drummond with Dr. Parkes is that as the deficiency of vitamin B in the diet of the male rat becomes more and more severe the ratio of the sexes of the young produced shows marked changes in the direction of an increased proportion of females. The observed differences are said to be well outside the range of possible error. Prof. V. Korenchevsky and Miss M. Carr have shown in rats that if the diet of the father is deficient in fat-soluble factor there is either no conception or, if litters are born, the offspring are eaten by the mother, probably because of their weakness. The diet of the father had, however, no influence upon the chemical composition of the skeleton of the offspring. The results of other experiments on rats tend to show that adequate maternal feeding is even more important during pregnancy than during lactation. The growth-promoting powers of particular proteins are being studied by Prof. V. H. Mottram and Dr. Gladys Hartwell.

The Special Report, No. 87, on the Nutrition of Miners and their Families, is likely to be of value both as a record of the conditions studied and as an example of the advantages and disadvantages of the method of investigation by sampling. The results of investigations into the dietaries of working-class families in various agricultural districts in Scotland will shortly be published. Dr. T. Y. Finaly has taken note of the types of feeding during the first year of life of 4000 children. It is proposed to examine the physical condition and state of nutrition of these children as they reach school age. Diet in relation to dental disease is being studied by many workers.

Cardio-vascular Diseases.

Effort has been made during the past year by Sir Thomas Lewis and his assistants, Dr. A. N. Drury and Dr. R. T. Grant, with the numerous voluntary workers from all countries attached to the Council's Department of Clinical Research and the Cardiographic Department of University College Hospital Medical School, to advance the existing knowledge of the peripheral blood circulation, with a special view to its practical application in medicine. On a full examination of the clinical phenomena of capillary pulsation, Sir Thomas Lewis has concluded that the pulsation is in large measure independent of high pulse pressure, and that it is due essentially to widening of the arterioles of the skin or mucous membrane in which it occurs. It has been shown that capillary pulsation is normal in the warmed human skin, provided that the arterioles are present and capable of sufficiently expanding, as in young and healthy persons. Further work has been done upon the condition known clinically as *urticaria factitia*, a type of rapid skin oedema following upon skin injuries. It is concluded that oedema of the skin produced by mechanical, thermal, and chemical agents is due essentially to changes in the capillary vessel walls and to their increased permeability. When the skin is injured mechanically, or by heat, the reaction is complex, but is chiefly determined by the liberation of a chemical substance locally from the tissue cells. This chemical substance, which is shown to resemble histamine closely in its action and which is held to be responsible for local phenomena (reddening and oedema) when liberated in relatively small quantities, would when liberated in larger quantities and when passing into the general circulation produce the general symptoms of shock. Since minute amounts of tissue poison are liberated in this way by injuries so mild that they are of almost daily occurrence in active people, it is suggested that the liberated substance is a chief factor in a normal mechanism of defence. Thus shock, on this view, is

provoked by an exaggeration of a normal physiological process.

Under the direction of Dr. W. E. Hume, Dr. Mona Kirkhouse has continued her work upon the therapeutic values of various diuretic drugs. The evidence gained already shows that diuretics are valuable in the treatment of cardiac oedema, but useless or harmful in cases of true renal oedema.

A cardiac clinic has been established in Glasgow under the supervision of Prof. Leonard Findlay. The cardiac efficiency of the cases is tested by the graduated exercises used by W. St. Lawrence and E. Louise Adams, of St. Luke's Hospital, New York, more recently by the use of an ergometer devised by Prof. E. P. Cathcart. Normal cases are also being tested as controls.

Tuberculosis.

Widespread efforts have been made to improve the technique of the current methods of combating tuberculosis and to ascertain whether any new ones can be commended to the attention of the practising physician. Chronic, severe cases of surgical tuberculosis are being treated by artificial light at the New End Hospital, under the supervision of Dr. Leonard Hill, who, working with Dr. L. Colebrook, has found that bactericidal efficiency of the blood is raised by exposure to certain light and heat rays. It is suggested that this enhanced power of the blood to kill microbes plays an important part in the beneficial action of sunlight upon tuberculosis and other infections. In conformity with clinical experience it has been found by experiment that irradiation for purposes of treatment must be carefully graded, since excessive exposures cause a deterioration of the blood no less striking than the improvement obtained with smaller doses.

Dr. L. S. T. Burrell has studied the treatment by artificial pneumothorax of nearly 400 cases, and will report upon these. Results of observations of the "vital capacity" in tuberculous patients show that vital capacity is of little, if any, value in forming a prognosis. With Sir Henry Gauvain, Dr. A. S. Griffith is now making experiments to determine whether tubercle bacilli in the skin or in other tuberculous tissues are killed or become modified in virulence by exposure to light rays from the Finsen-Reyn lamp. The special actions of oils and allied substances on the tubercle bacillus are being studied by Dr. Griffith and also by Dr. G. R. Ross. The important work by Sir Almoth Wright on the leucocytic reactions of the body to tuberculous infection (THE LANCET, Feb. 2nd, 1924) is summarised.

A general statement of the impressions gained in the clinical use of diaplyte vaccine, as to the value of which hopes were entertained last year, is given as follows:—

(a) Diaplyte vaccine in the dosage and by the methods used has no definite influence in checking the progress of the disease in active pulmonary tuberculosis. (b) Generally speaking, its use is contra-indicated in active febrile cases. (c) It is of some value as an adjunct to conservative treatment in tuberculosis of lymphatic glands. (d) In ambulant non-reactive cases of pulmonary tuberculosis it appears to encourage the formation of fibrous tissue. It may be a useful adjunct to sanatorium treatment. The cases treated should be those in which complete control of auto-inoculation has been secured and in which there exists evidence of beginning fibrosis.

Some clinicians, by careful adaptation of doses and their spacing to the clinical condition, have found the vaccine a useful weapon, but on the whole most of the observers have concluded that the vaccine is of no value in the treatment of tuberculosis and find its results discouraging and disappointing. It has, however, been found possible by use of diaplyte vaccine to produce an immune horse-serum having very high precipitative value against tubercle bacilli. This has allowed Prof. G. Dreyer to develop a simple precipitation method of standardising tuberculins, as supplied for veterinary or medical use, which appears to give results of an accuracy far beyond that of the indirect methods at present available (see THE LANCET, Nov. 15th, 1924).

Anticipations.

In fairness to workers, the Council cannot anticipate publication of results not yet prepared for press. In several instances, however, it has been found possible to give an indication of the promising way in which certain work is developing. Dr. E. P. Poulton and Dr. J. M. H. Campbell have worked on the clinical uses of oxygen, making extensive tests in three different types of myocardial disease varying in the respiratory symptoms present. Their results will be published in full. The report by Prof. E. Mellanby of his further studies of the rickets-producing influence of cereal foods, especially that of oatmeal, will be awaited with interest. It is hoped that by next year the family histories and hygienic conditions of about 1000 cases of rheumatism in children will have been examined by workers in London and Glasgow. In this connexion the Council express gratitude to Dr. J. Forest Smith and Dr. C. K. J. Hamilton for much voluntary help in examining children. The results of clinical trials in this country of tryparsamide, a new arsenical compound prepared at the Rockefeller Institute, may be expected at an early date. The prevalence of small-pox in this country in the year under review has provided Dr. M. H. Gordon, with the opportunity of comparing the virus of this disease with that of vaccinia, and his results will soon be available. Work in progress on the filter-passing virus of the Rous chicken sarcoma is said to be showing great promise in the hands of Dr. W. E. Gye. A report on an investigation of 100 outbreaks of food poisoning is in the press and will be issued as No. 92 of the Special Report Series of the Council. The study by Dr. John Brownlee and Prof. E. L. Collis of the occupational incidence of cancer is almost ready for publication. Inquiries into the influence of menstruation on the efficiency of the woman worker and into the psychological characteristics of the menstrual period are nearing completion.

The standardisation of insulin, which is well described in the report as a cure for diabetes in the same sense as that in which food is a cure for hunger, is in this country carried out in the department of biochemistry and pharmacology of the National Institute for Medical Research under the supervision of Dr. H. H. Dale. The department has nearly completed the important duty entrusted to it of preparing a dry stable standard of insulin, with a view to redefinition of the Toronto unit. A preliminary sample of dry non-hygroscopic insulin hydrochloride, derived from a mixture of equal contributions received from five manufacturers working in different countries, has been submitted to the Toronto Insulin Committee, in order that agreement may be reached on the exact form in which the mixed standard preparation shall be distributed. Samples will then be submitted to the experts concerned with the assay of insulin in all countries having an appropriate organisation, with a view to a comparative evaluation of existing units. When the Toronto unit has been defined in terms of the standard preparation, this should serve as a means of stabilising its value, and as a currency for its transmission to all countries. Mr. H. P. Marks has been able, while making the routine assays for potency of insulin, to devise better assaying methods. He will shortly publish a comparative method which appears to have important advantages over those hitherto in use. In this the factor of individual variation of sensitiveness is eliminated altogether, and that of day-to-day fluctuation is eliminated as far as possible.

Conclusion.

Altogether the outlook appears hopeful in many directions. We congratulate the Council on the modesty of the claims made and on the balanced, critical manner in which their report is presented. Their plans for the allocation of the grant-in-aid of £140,000 provided by Parliament for their expenditure during the present financial year are as follows: For administration expenses, £8500;

for the total expenses¹ in connexion with the National Institute for Medical Research at Hampstead, £18,500; for research grants to workers and for the expenses of researches in specific subjects at other centres in the United Kingdom, £83,000. The present personnel of the Council is as follows: Earl of Balfour (Chairman), Lord Mildmay of Flete (Treasurer), Mr. William Graham, Sir Frederick Andrewes, Prof. E. P. Cathcart, Prof. Georges Dreyer, Prof. T. R. Elliott, Sir Archibald Garrod, Dr. Henry Head, Sir Cuthbert Wallace, and Sir Walter Fletcher (Secretary). We wish them success in their constant endeavours to bring an increasing number of able men into the service of medical science.

Correspondence.

"Audi alteram partem."

ALASTRIM, PARA-SMALLPOX, AND VARIOLA.

To the Editor of THE LANCET.

SIR,—The comprehensive review by Prof. Ricardo Jorge, of which a translation was published in the last two issues of THE LANCET for 1924, is a valuable contribution to the epidemiology of an infectious disease which has given rise to considerable controversy.

Having been compelled for many years to take a special interest in the differential diagnosis of small-pox, I have read the review several times and also the article on the subject appearing in your issue of Jan. 3rd, in the hope of obtaining assistance which might enable me to distinguish alastrim or para-smallpox or amas from cases of small-pox in its discrete and mild examples. But the only features of the former conditions or condition which are brought into prominence in the review because they are the least subject to exception are the low case-mortality or the absence of fatality and the persistence of type of disease. Unfortunately, a knowledge of these epidemiological facts is of little value to the practitioner as bedside equipment. The practitioner requires clinical or other diagnostic differences. He must have much more definite distinctions for his guidance if he is to avoid calamity when small-pox is in question. Even if he is so bold as to wait and see if his patient dies or if the type of the disease persists in the succeeding generation of cases, he has not solved his difficulty, because all small-pox is not fatal and all alastrim is not equally benign, and as the "dualist" tells us, epidemics of real small-pox do occur in which a large proportion of the cases is of a mild type. In a recent outbreak in the north of London the first case which came under observation was, I believe, so benign as to give rise to considerable difficulty in diagnosis. The patient was an unvaccinated child. But in the next generation of cases there were examples of obvious small-pox of virulent type. Many similar instances of this dangerous deception on the part of small-pox might be given. How is the practitioner or the medical officer of health or the consultant to deal with a case of this type? How is he to determine whether he is dealing with small-pox or alastrim or para-smallpox? Is he to base his diagnosis on the fact that he has heard that several mild cases stated to be cases of alastrim have occurred in a neighbouring township?

In the leading article in your issue of Jan. 3rd it is stated that: "The epidemic disease . . . has qualities which, both for practical and scientific purposes, require to be differentiated from the variola or small-pox which is ordinarily understood and described in the textbooks." I cannot see how this differentiation is to be made for practical purposes in the present state of our knowledge because the conditions are clinically indistinguishable. If, for scientific purposes, we are to rely on the epidemiological argument, how many generations of benign cases will justify the announcement that we are dealing with alastrim and not with mild

small-pox? and on whom is the duty of making this announcement to be laid?

These questions are important, because in the last paragraph of the leading article already mentioned the necessity is advocated of adopting a "special term" for "the benign type of small-pox" for the sake of "clarity of thought as well as for administrative convenience." It is difficult to understand how the adoption of a special name for a sub-variety of small-pox, or for a disease which is apparently clinically indistinguishable from small-pox, will promote clear thinking, or how the special name will render administrative procedure in dealing with dangerous infectious disease more convenient. Administrative measures are brought into play by the expressed opinion of the practitioner, an opinion based on the observation of the clinical features which distinguish one disease from another. If the practitioner considers that his case is one of chicken-pox or if he notifies it as small-pox, appropriate and definite administrative procedure follows. Under existing regulations the administrative procedure which follows the notification of alastrim or para-smallpox or amas is the same as for small-pox. But if the practitioner notifies his case under any of these names, the administrative authority is hampered by the want of definite knowledge of the practitioner's opinion, a condition which promotes neither efficiency nor convenience in administration. Notification of a case under any such terms can hardly have any other effect until clinical or bacteriological or other diagnostic differences between alastrim or para-smallpox and small-pox are definitely formulated and proved.

The onus of proof rests with those who have expressed the opinion that we are dealing with a disease which is not simply mild small-pox. Until that proof is produced, discussions on nomenclature are premature, academic, and unpractical. They serve only to confuse administrative procedure in its dealings with a disease which has great potential power for social and commercial injury, and they tend to mislead the intelligent but inexperienced citizen by inducing him to believe that we have attained to a greater knowledge than we really possess. Let us wait for the proof.

I am, Sir, yours faithfully,

A. F. CAMERON,

Medical Superintendent, River Hospitals and Ambulance Service for Small-pox and Fever,
Jan. 3rd, 1925, Metropolitan Asylums Board.

To the Editor of THE LANCET.

SIR,—I have read your leading article on this subject in THE LANCET of to-day with very great interest, and am in complete accord with the views stated.

I believe the name "para-smallpox" which you suggest for the mild disease now endemic in England was first used by myself in a letter to the *British Medical Journal*, May 13th, 1922. Shortly after this I received from a medical friend, who occupies a distinguished official position abroad, a letter in which he informed me, in the language of friendly banter, that, "for foisting upon hapless humanity a terminological and etymological barbarity such as para-smallpox, I ought to be court-martialled and shot." It was with some amusement, therefore, that I learned from THE LANCET of to-day's date that the Editor had earned a similar fate.

In the last three years—and especially in the last 15 months, during which the disease has been epidemic in this borough—I have had exceptional opportunities of studying it, and the more closely it is studied, the more difficult does it become to reconcile the mild disease with classical small-pox. Clinically and epidemiologically the mild infection is a disease sui generis.

Every person interested in this problem should read carefully the excellent paper by Prof. Ricardo Jorge, a translation of which appears in THE LANCET of

Dec. 20th and 27th, 1924. The terms "alastrim" and "amaas" have no obvious meaning in English, but "para-smallpox" at once conveys to any medical mind the correct meaning—a disease closely related to small-pox. The practical advantage of this term is such that, as you suggest, its unpleasantly hybrid nature might well be ignored.

I am, Sir, yours faithfully,

R. P. GARROW,

Medical Officer of Health and School
Medical Officer, Chesterfield.

Jan. 3rd, 1925.

ACTIVE IMMUNISATION AGAINST DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—You have done much during the past few years to help those interested in the public health aspects of the Schick test and active immunisation against diphtheria. They will owe you a further debt for the information given by your Vienna correspondent in your issue of Nov. 22nd, 1924, relating to the recent accident in that city, for it is only by obtaining full information such as your correspondent tried to get, that those who are using these methods can feel full confidence in their work.

The Vienna accident is the second reported within the past few years. In connexion with the first, in January of last year, Kelley (1924) reported that toxic symptoms occurred after the injection of toxin antitoxin mixture into a number of children at Concord and Bridgewater, Mass. A careful inquiry was made and it was found that some bottles of a batch of prophylactic mixture had been exposed to a very low temperature. After thawing, the contents of these bottles proved to be very toxic, whereas the toxin-antitoxin mixtures which had not been frozen were non-toxic. The effect of intense cold upon toxin-antitoxin mixtures was investigated experimentally by a number of American workers; some found that freezing increased toxicity, others did not. Mr. Glenny and Mr. Pope have investigated the problem at these laboratories and are preparing a paper for publication from which they have kindly allowed me to quote. They found that the toxicity of the mixtures they worked with did not increase after freezing. It occurred to them that the local concentration of the phenol or other antiseptic present, which takes place during freezing and thawing, would vary with the composition of the mixture and the exact physical conditions during the freezing and thawing, and that certain concentrations of phenol might be more destructive to the antitoxin present than to the toxin. They therefore tried the effect of various concentrations of phenol first upon antitoxin and toxin separately and finally on mixtures of toxin and antitoxin. They found that, if they made the phenol concentration 5 per cent. in a solution of antitoxin containing three units per c.cm., the antitoxin quickly disappeared. A similar concentration of phenol was added to a solution of toxin containing 3 L+ doses per c.cm.; about 10 per cent. of the original toxicity remained. And finally they found that non-toxic mixtures became toxic, without freezing, if 5 per cent. of phenol were added. Trikresol acted in the same manner. We have thus available a simple explanation of the increase in toxicity observed at Concord. During the freezing and thawing a local concentration of phenol occurs and the interesting dissociation and destruction of antitoxin takes place.

The only report of the second accident in Vienna available at the time of writing is that given in your issue of Nov. 22nd. Your Vienna correspondent writes: "It is well known that the antitoxin is liable to disintegrate much more quickly than the toxin." You, Sir, evidently held the same view when you wrote: "It is not safe to risk toxin and antitoxin becoming dissociated in the mixture by long keeping." I feel that this explanation is difficult to reconcile with the general experience of workers in America and

England. The Bacteriological Committee of the Medical Research Council, in referring to toxin-antitoxin mixtures, say: "No increase in toxicity has ever been observed on keeping." This view is apparently in accordance with American experience, for the official recommendation of the Bureau of Hygiene is that slightly toxic mixtures should be held until the toxicity is so reduced that the mixture complies with the official standard.

Our own experience agrees with this. Mr. Glenny has in preparation a paper giving the details of tests of the toxicity of mixtures from three months to four and a half years old. Samples were kept at room temperature, in the cold room, and in the incubator, but in no instance has there been an increase of toxicity. I may remark here that the mixtures we have worked with in these laboratories have always been adjusted to have a toxicity lower than that prescribed in the official U.S.A. regulations. Whereas 5 c.cm. of the mixtures officially allowed in America may kill acutely two out of five guinea-pigs, and may kill the remaining three with paralysis in 15 to 35 days, we have from the outset made a practice of using mixtures of which 5 c.cm. would not kill any of the animals injected within 15 days; few of the guinea-pigs receiving 5 c.cm. of the various batches of toxin-antitoxin mixture died within 21 days, and many lived and developed no paralysis. The more we know of these accidents the more certain we can be that similar accidents will not occur in future. It is obvious that no safeguards can overcome the danger if the toxicity of all mixtures is not adequately tested before their issue. Now that the danger from freezing is known, we are justified in concluding that an accident similar to that at Concord will not again occur. With regard to the second, we must await further information, but there is no evidence that the explanation put forward as the cause of the Vienna misfortune is applicable to the mixtures in use in England.

It is possible that the process of active immunisation may be considerably improved by the use of formalinised toxin, which is practically non-toxic. This interesting method of modifying toxin was apparently first described by Salkowski (1898) and investigated and used by Loewenstein in 1904 (1914). It was in use in these laboratories in 1904 for the immunisation of horses. Glenny and Sudmersen (1921) found that guinea-pigs could readily be immunised with this toxoid, and in 1923 Glenny, Allen, and Hopkins suggested its use for human immunisation. It was, later, independently discovered and investigated by Ramon (1924). A considerable amount of work with formalinised toxin has been carried out by Park and Zingher in New York, by Ramon in France, and at these laboratories. The results so far obtained are encouraging, but one is not yet ready to advocate the immediate complete replacement of toxin-antitoxin mixtures by toxoid. We can advance safely only if we proceed slowly.

May I comment on the expression "Schick serum must be fresh"? It would seem that the use of the expression "serum" when applied to mixtures of toxin with antitoxic serum is not in accordance with ordinary pathological practice, and although we owe the valuable test to Prof. Schick, whose name it bears, he had but little to do with the introduction of toxin-antitoxin mixtures, and his name is not usually attached thereto.

References.

- Glenny, A. T., Allen, K., and Hopkins, B. E.: Brit. Jour. Exp. Path., 1923, vol. iv., p. 19.
Glenny, and Sudmersen, H. J.: Jour. Hyg., 1921, vol. xx., p. 176.
Kelley, E. R.: Jour. Amer. Med. Assoc., 1924, vol. lxxxii., p. 567.
Loewenstein, E.: Zeitsch. f. Exp. Path. u. Therap., 1914, vol. xv., p. 281.
Ramon, G.: Ann. de l'Inst. Pasteur, 1924, vol. xxxviii., p. 1.
Salkowski: Berl. Klin. Wchnschr., 1898, p. 545.

I am, Sir, yours faithfully,

R. A. O'BRIEN.

Wellcome Physiological Research Laboratories,
Beckenham, Jan. 1st, 1925.

REX v. BATEMAN.

To the Editor of THE LANCET.

SIR,—As pathologists we were interested in the case of Dr. Bateman (THE LANCET, Jan. 3rd, p. 38), and followed the evidence of the medical witnesses closely in an endeavour to understand the facts and their interpretation by these gentlemen. From the evidence of the pathologist it appears clear and undisputed that a severe injury to the generative organs had taken place before or during the manipulations required for the delivery of the child and placenta. The most important point then to be decided was, to what extent did Dr. Bateman's after-treatment contribute to the recovery or death of the patient? In our opinion this was entirely a matter to be decided by clinicians specialising in the practice of obstetrics. The obstetricians attached to large hospitals have special facilities for gaining experience in such cases, and consequently their opinions should carry great weight and be duly respected. When we read the report of the two obstetricians it appeared to us that their evidence was clearly in Dr. Bateman's favour. To our utter dismay their opinions were apparently ignored and the case decided against the prisoner.

We are, Sir, yours faithfully,

ERNEST H. SHAW.

London, Jan. 2nd, 1925.

WILLIAM H. MCKINSTRY.

To the Editor of THE LANCET.

SIR,—This distressing case impresses upon one the fact that a large number of young medical men go out into practice with no practical knowledge of difficult midwifery at all. At least 50 per cent. of newly-qualified practitioners have never put on forceps themselves. They go into practice full of zeal for their job, are called out to assist a midwife in what may be a very difficult forceps case, and what happens—severe injury perhaps to mother and death of infant. Dr. Bateman, who through an error in judgment was instrumental in causing the death of his unfortunate patient, pays the penalty with imprisonment and professional ruin. When one considers the scale of fees payable for this class of work (viz., two guineas for a difficult case of forceps delivery, one guinea for a miscarriage, and subsequent attendance for ten days) it seems to me that if, as the result of an unfortunate accident, one is liable to imprisonment as well as the fee, the game isn't worth the candle, and I for one have withdrawn my name from the list of practitioners willing to undertake this work.—I am, Sir, yours faithfully,

Exeter, Jan. 6th, 1925.

CHARLES H. CARROLL.

To the Editor of THE LANCET.

SIR,—I am glad to observe that your columns are enabling more light to be thrown upon the tragic case of Rex v. Bateman. The need for this is urgent.

After reading the summing-up in full, which contrasts forcibly with briefer reports of it, one can no longer be much surprised at the verdict, for listening to it the average jurymen must surely have been impressed with two things chiefly: (1) That the patient suffered terrible injuries at the hands of the doctor; (2) that the doctor tried to conceal the condition after delivery.

But, whereas the injuries sustained by the patient were described and even dwelt upon in a manner which must have distressed the laymen on the jury, the clinical side of the case was not even explained, so that a calm consideration of the case as it first presented itself to Dr. Bateman was made impossible. Some of the injuries described, moreover, occur in text-book accounts of rupture of the uterus, and this fact was not put to the jury. So far as this side of the case is concerned, it is difficult to see how a medical man can hope for a just estimate of his work from a lay jury. The case of other professional people whose work involves matters of life and death—e.g., ships'

captains and military officers—is, I believe, quite different, the verdict depending upon the collective and considered advice of their professional associates and superiors.

With regard to the so-called concealment of the case, I well remember a meeting of a hospital medical society at which surgeon after surgeon got up and confessed to specific errors of technique, which had resulted, some of them, in the deaths of the patients. One admired these men for their courage and self-criticism, but no one supposed that these errors should have been explained to the patients' relations.

In his own interests, Dr. Bateman should have endeavoured to obtain expert opinion at the bedside, but the difficulty of getting such an opinion in such circumstances was pointed out by the judge, and is a terrible comment upon the system of midwifery existing in this country. As Dr. Bright Banister says in his letter in your issue of to-day, there is no evidence of a material improvement in the patient's condition justifying an earlier removal to the hospital, and the verdict of manslaughter appears to have been prompted on both scores rather upon natural feeling than upon the obstetrical evidence.

I am, Sir, yours faithfully,

Broadstairs, Jan. 3rd, 1925.

MARTIN O. RAVEN.

To the Editor of THE LANCET.

SIR,—In the case of Rex v. Bateman, as reported in your issue of Jan. 3rd, in Mr. Justice Shearman's charge to the jury Sir Bernard Spilsbury is reported to have said that it would want some considerable force, *whatever happens*, to pull away the womb; and again, that here was the womb out and there was nothing to support the pelvic floor, and the intestines must drop as soon as she got up, and something had got to be done to see that the bowels were kept from prolapsing, which means falling down, and to see that these wounds which had been bleeding were in some way sewn up or fastened so that there was a chance of her recovery; and that Sir Bernard Spilsbury particularly said unless something was done recovery was hopeless.

May I call your attention to the spontaneous pan-hysterectomy reported by Fallon¹ in which a five-para, aged 29, when two months pregnant began to have pain and flooding with difficulty in passing urine. She suspected a miscarriage and sent for a midwife, who pressed gently over the bladder and expelled the uterus which was hanging merely by a few shreds. These were cut and the mass removed. A doctor, sent for, arrived two days later (the case occurred in North Newfoundland), cut away a piece of omentum protruding through the vagina, and the woman was up on the seventeenth day and at work three weeks later. A coloured illustration of the expressed uterus is given.

It will be observed: (1) That no great force was necessary to express the almost separated uterus; (2) that no repair to the pelvic floor was necessary, nor ligation of any vessel; (3) that nothing was done, except rest in bed, yet the woman made a rapid and successful recovery. Could not torsion of the uterus with a side presentation have produced necrosis of its vaginal and pelvic attachments?

I am, Sir, yours faithfully,

Jan. 6th, 1925.

F.R.C.S. ED.

¹ Ann. Surg., Philadelphia, 1918, lxvii., 204.

SOFIE A. NORDHOFF-JUNG CANCER RESEARCH PRIZE.—Dr. Sofie A. Nordhoff-Jung of Washington, Columbia, U.S.A., founded, in the early part of 1923, this prize, designed to encourage researches in the aetiology, prevention, and treatment of cancer (see THE LANCET, 1923, i., 481). The prize as originally intended was a sum of 500 dollars, to be awarded annually by a commission composed of members of the University of Munich, Bavaria; but the commission, in agreement with the foundress, has now resolved to distribute the prize henceforth every two years only, and to increase this biennial award to 1000 dollars. The next award will be made in 1926.

Obituary.

PROFESSOR BERGONIE.

THE death of Prof. Bergonié at his home in Bordeaux on Jan. 2nd adds one more name to the roll of those gallant explorers in the unknown fields of science, whose courage and selfless enthusiasm in probing Nature's secrets is often so cruelly requited. Prof. Bergonié's state of health had offered no hope of recovery for some time past, the end was not unexpected, and the manner of his going was in keeping with the stoicism which had characterised his life of devotion to the science of medicine. His death is not France's loss alone, it is world-wide. Born at Casseneuil (Lot et Garonne) in 1857, he studied medicine at the Faculté of Bordeaux. At an early stage in his career he developed an interest in the application of physics to medicine, and became assistant to his teacher, Prof. Merguet, of Bordeaux, whom he afterwards succeeded in the chair of medical electricity. He specialised in the treatment, which has since borne his name, of employing electricity in muscular affections, and as early as 1895 devoted himself to the study of radio-active bodies. When the discovery of radium was first made known in 1898, through the work of Prof. and Mme. Curie, Bergonié threw himself into the study of the properties and applications of radium emanations, a study which he pursued indefatigably for the rest of his life. During the war he became director of the radiographic centre of the Eighteenth Region, from 1914 to 1918, and made several important contributions to the rapidly accumulating knowledge of his specialty. The hostilities over, he turned his attention more particularly to the treatment of cancer by radium. His work, however, brought its penalty, and in 1922 he was compelled to undergo the amputation from the shoulder of his right arm. Since that time Prof. Bergonié has been instrumental in founding the first anti-cancer centre in France, at the Hospital of St. André at Bordeaux. This centre was formally opened in December last, when Prof. Bergonié received, at the hands of Marshal Pétain, the insignia of the grand-croix of the Legion of Honour. In his will Prof. Bergonié desired that his body should be submitted for post-mortem examination to the Bordeaux University, and the autopsy was carried out on Jan. 3rd. He left his library to the University, and bequeathed the installation of his clinic to the anti-cancer centre, together with a sum of 100,000 francs for cancer research. His name will not be forgotten.

JOSEPH MANSERGH PALMER, F.R.C.S. IREL.

WE regret to record the recent death, after a brief illness, of Mr. Joseph Mansergh Palmer, a prominent surgeon of Ulster. Mr. Palmer, who was in his seventy-fourth year, was the eldest son of the late Mr. Thomas Palmer, Durrow, Queen's County, and was educated at Trinity College, Dublin, and the Ledwich School of Medicine. He took the licence of the Royal College of Surgeons in Ireland in the year 1872, and became Fellow of that institution in the year 1880. His professional life was spent in the city of Armagh, where he was for 52 years in the service of the County Armagh Infirmary. He was a magistrate for County Armagh, was appointed Deputy Lieutenant in 1906, and in the same year was High Sheriff of the county. Amongst other positions which he held were consulting physician to the Armagh District Lunatic Asylum, Visitor in Lunacy, consulting physician to The Retreat, Armagh, and surgeon to H.M. Prison for the counties of Armagh, Cavan, and Monaghan. He was at one time president of the North of Ireland Branch of the British Medical Association. He contributed several interesting cases to surgical literature, and enjoyed a high reputation as an operator. He took an active part in the affairs of the Armagh Cathedral Parish, and was well known in political and public life. Three of his

sons took part in the war—Commander E. M. Palmer, O.B.E., R.N., Major R. L. Palmer, D.S.O., M.C., and Lieut.-Commander I. M. Palmer, R.N.

The Services.

SMALL-POX RESTRICTIONS IN THE NAVY.

A NEW fleet order restating the provisions in reference to men going on leave to places in which an outbreak of small-pox has been notified schedules the following places as coming within the restrictions at the present time: Ashington U.D. (Northumberland), Ashton-under-Lyne (Lancs), Bolsover U.D. (Derbyshire), Chesterfield Borough and Rural District, Derby, Dukinfield Borough (Cheshire), Gainsborough U.D. (Lincs), Hucknall U.D. (Notts) (reimposed), Mansfield Borough (Notts), Melton Mowbray U.D. (Notts), Middlesbrough, Nuneaton Borough (Warwickshire) and Redcar.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdrs. A. C. W. Newport, N. H. Harris, and R. W. Stanistreet are placed on the Retd. List with the rank of Surg. Capt.

R. L. G. Proctor and H. E. M. Martin to be Surg. Lts. Surg. Lt.-Comdrs. (D.).—R. R. Adams to *Pembroke*, for R.N. Barracks, Chatham; A. T. Dally to *Pembroke*, addl., for R. N. Hospl., Chatham, and R.M. Infirmary, Chatham (on relief); W. C. Murray to *Pembroke*, addl., for R.M. Infirmary, Deal (on relief); J. F. Place to *Pembroke*, addl., for R.N. Barracks, Chatham, addl., temp. (on relief); and A. D. McHaffie to *Victory*, addl., for R.M. Infirmary, Eastney (on relief).

Surg. Lt. (D.).—J. L. Edwards to *Columbine*, for R.N. Hospl., S. Queensferry, and for Port Edgar Naval Base. Surg. Lt. D. Duncan to *Thistle*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. F. S. Irvine to be Bt.-Col.
Lt.-Col. W. M. B. Sparkes retires on ret. pay.

TERRITORIAL ARMY.

Maj. (Prov.) A. F. Lee is confirmed in his rank.
Capt. E. Phillips, R.A.M.C., to be Divisional Adjut. 54th (East Anglian) Div., vice Maj. R. K. Mallam.

SUPPLEMENTARY RESERVE OF OFFICERS.

A. S. Burns to be Lt.

ROYAL AIR FORCE.

The following promotions were published with the list of New Year Honours on Jan. 1st:—

Squadron Leader to be Wing Commander: T. S. Rippon.

Squadron Leader to be Honorary Wing Commander: E. Huntley.

Flight Lieutenants to be Squadron Leaders: J. T. T. Forbes and J. Kyle.

Flight Lieutenants to be Honorary Squadron Leaders: W. R. Reith and J. W. H. Steil.

INDIAN MEDICAL SERVICE.

Col. C. H. Bensley to be Hon. Physician to the King (Ind. Mil. Forces), vice Col. Bhola Nauth, ret., and Col. H. Ainsworth to be Hon. Surg. to the King (Ind. Mil. Forces), vice Maj.-Gen. B. H. Deare, ret.

Col. G. N. Salmon, on ceasing to be empld., is placed on half pay.

The King has approved the resignation of his commn. by Capt. H. Watts-Taylor.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 27TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely, small-pox, 65; scarlet fever, 1438; diphtheria, 846; enteric fever, 52; pneumonia, 944; puerperal fever, 30; cerebro-spinal fever, 2; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 44; dysentery, 8; ophthalmia neonatorum, 67. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 5 deaths from enteric fever, none from small-pox (during the last 13 weeks no deaths have been recorded), 12 from scarlet fever, 35 from diphtheria, 71 from measles, and 83 from influenza. In London itself the deaths from diphtheria numbered 15 and from whooping-cough 22.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Six Hunterian lectures on Recent Discoveries of Fossil Man will be delivered in the theatre of the College, Lincoln's Inn-fields, by Sir Arthur Keith, Conservator of the Museum, on the following days at 5 P.M.: Monday, Wednesday, and Friday, Jan. 19th, 21st, and 23rd, and Monday, Wednesday, and Friday, Jan. 26th, 28th, and 30th. The lectures will be illustrated by casts and preparations from the Museum and by lantern slides. During February the following lectures will be given at 5 P.M.: Monday, Feb. 2nd, Extravasation of Bile, by Prof. Zachary Cope; Wednesday, the 4th, The Pathology of Hydronephrosis, by Prof. H. P. Winsbury White; Friday, the 6th, Syphilitic Arthritis, by Prof. A. H. Todd; Monday, the 9th, Some Disorders of the Larynx, by Prof. V. E. Negus; Wednesday, the 11th, Osteitis Deformans, and its Relation to Osteitis Fibrosa and Osteomalacia, by Prof. R. Lawford Knaggs; Friday, the 13th, Regional Anæsthesia, by Prof. Stanford Cade; Monday, the 16th, The Ætiology, Pathology, and Treatment of Ectopic and Imperfect Descent of the Testis, by Mr. C. P. G. Wakeley; Wednesday, the 18th, and Friday, the 20th, The Anatomy and Physiology of the Thyroid Apparatus, by Dr. G. Scott Williamson; Monday, the 23rd, Wednesday, the 25th, and Friday, the 27th, The Nature of Tumour Formation, by Dr. G. W. De P. Nicholson.

BRIGHTON HOSPITAL SUNDAY.—As the result of the Hospital Sunday collections in Brighton, Hove, and Preston the sum of £1270 has just been divided among the local hospitals and the Royal Surgical Aid Society.

TUBERCULOSIS SOCIETY.—An ordinary meeting of this society will be held on Friday, Jan. 16th, at 8 P.M., at 1, Upper Montague-street, Russell-square, when Dr. Anthony Feiling will give a paper on Tuberculosis of the Central Nervous System.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The fourth meeting of the session will be held at the Miller General Hospital, Greenwich, S.E. to-day (Friday), at 8.45 P.M. Dr. H. S. Knight, the President, will occupy the chair. Clinical cases will be shown by Dr. E. P. Cumberbatch, Dr. M. Davidson, Mr. H. Davis, Mr. C. A. Joll, Mr. D. C. Taylor, and others.

VIROL RESEARCH SCHOLARSHIP IN HÆMATOLOGY.—On the report of the examiners (Sir William Willcox, Dr. Alfred Piney, and Dr. Knyvett Gordon) the Directors of Virol, Ltd., have awarded the above scholarship to Mr. R. A. Hickling, L.R.C.P. Lond., Demonstrator of Pathology at Charing Cross Hospital. The scholarship is of the value of £200 for one year.

At the recent examination of the Chartered Society of Massage and Medical Gymnastics the three students who were prepared in the Massage School of the National Institute for the Blind successfully qualified—namely, Mr. E. Stitch, Mr. F. Bradford, and Mr. L. Wells. These three students are ex-Service men who have received considerable financial help from the fund for ex-soldiers organised by Captain Towse, V.C., chairman of the institute.

GUILD OF PUBLIC PHARMACISTS.—Under the auspices of the Guild a lecture will be given at St. Bartholomew's Hospital on Thursday, Jan. 15th, by Sir Robert Armstrong-Jones, entitled "The Influence of Suggestion in Social Life." Lord Stanmore, treasurer of the hospital, will take the chair at 8 P.M., and the pharmaceutical departments will be open to visitors from 7 P.M. Those intending to be present should notify A. H. Jenkin, the hon. secretary, 64, Wray Crescent, N. 4.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—A post-graduate course on Diseases of the Nervous System will be held at the hospital, Queen-square, London, W.C., from Feb. 2nd to March 27th. The general course will consist of clinical lectures and demonstrations, teaching in the out-patient department, and pathological lectures and demonstrations. Other courses are as follows: Lectures on the Anatomy and Physiology of the Nervous System (if sufficient applicants); clinical demonstrations, chiefly on Methods of Examination of the Nervous System; ten lectures and six demonstrations on Neurological Ophthalmology to a limited number of students (applications should be made early). Further information may be obtained from the secretary of the Medical School.

THE Scientific Press, Ltd., announce that the 1925 edition of Burdett's Hospitals and Charities, the Year-book of Philanthropy and the Hospital Annual, will be published during January.

ORDER OF THE HOSPITAL OF ST. JOHN OF JERUSALEM.—The following have been appointed Esquires: Dr. Lennox Wainwright, Dr. Walter Rogers, and Dr. Arthur Maitland Ware.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—A course in Parasitology has been arranged by the school authorities at the tropical division of the school to supplement the teaching in other subjects for the Diploma of Public Health given at other recognised teaching centres. The course includes lectures and demonstrations in Entomology by Colonel A. W. Alcock from Jan. 17th to 22nd; in Helminthology by Prof. R. T. Leiper from Jan. 26th to Feb. 11th; and in Protozoology by Dr. J. G. Thomson from Feb. 24th to 26th. Further particulars may be obtained from the Secretary, at the temporary offices in the Institute of Historical Research, Malet-street, London, W.C. 1.

ROYAL INSTITUTION OF GREAT BRITAIN.—On Tuesday, Jan. 13th, at 5.15 P.M., Prof. A. Fowler begins a course of two lectures at the Institution, 21, Albemarle-street, London, W. 1, on the Analysis of Spectra; and on Thursday, Jan. 15th, at the same hour, Mr. Julian Huxley delivers the first of two lectures on the Courtship of Animals and its Biological Bearings. The Friday evening discourse on Jan. 16th, at 9 o'clock, will be delivered by Sir William Bragg on the Investigation of the Properties of Thin Films by Means of X Rays, and on Jan. 23rd by Dr. A. W. Crossley on Science and the Cotton Industry.

THE LATE DR. J. R. LAMBERT.—John Reginald Lambert, M.B., Ch.B. Vict., died, after a brief illness, on Dec. 26th at his home in Farsley, Leeds, aged 50 years. He was the son of the late Dr. F. W. Lambert, upon whose death he succeeded to the practice. He studied at the Yorkshire College, Leeds, and graduated at the Victoria University, Manchester, in 1897. In the same year he obtained the L.R.C.P., L.R.C.S. Edin., and L.R.F.P.S. Glasg. Dr. Lambert was M.O.H. for Farsley, public vaccinator, Poor-law doctor, and one of the medical officers at the Calverley Joint Hospital. In addition he had one of the largest panel practices in the district. He leaves a widow and a family of four sons and four daughters.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.—The Association is organising with the full approval of the Board of Education a three months' training course in which the needs of teachers of classes for dull and backward children and of special difficulty classes will be specially catered for. Besides lectures on psychology and the medical aspects of the problem, every opportunity will be given to them of observing the necessary adaptation of ordinary methods of individual teaching to the special needs of the subnormal child. Throughout the course, teachers will be given opportunities of themselves teaching groups of difficult children, of learning various forms of manual work, and of taking part in classes for eurhythmics and other physical exercises. This course, however, is not a substitute for the ordinary short courses organised by the Central Association for Mental Welfare for the Board of Education, two of which are being held this year. A preliminary prospectus of the course, giving particulars of the special arrangements sanctioned by the Board of Education, may be obtained from the offices of the Central Association, 24, Buckingham Palace-road, London, S.W. 1.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A new series of lectures arranged by the Fellowship of Medicine will be started on Tuesday, Jan. 20th, when the President of the Fellowship of Medicine, Sir Arbuthnot Lane, will deliver a lecture on the Treatment of Fractures, in the West Lecture Hall of the Royal Society of Medicine, at 5.30 P.M. The London Temperance Hospital, in conjunction with the Bethlem Royal Hospital, Central London Throat, Nose, and Ear Hospital, Royal Eye Hospital, St. Peter's Hospital, and the West End Hospital for Nervous Diseases, will hold a Post-Graduate Course in General Medicine, Surgery, and the Special Departments from Jan. 12th to 24th. A four weeks' course in Urology will take place at the St. Peter's Hospital for Stone from Jan. 12th to Feb. 7th. Clinical work will be available daily, followed by a lecture given by members of the staff.—The following courses will take place in February: A fortnight's intensive course at the North-East London Post-Graduate College (Prince of Wales's General Hospital), Tottenham;

combined course in Children's Diseases at the Paddington Green Hospital, Victoria Hospital for Children, and the Children's Clinic; Dermatology at the St. John's Hospital for Diseases of the Skin; Gynaecology at the Chelsea Hospital for Women; Tropical Medicine at the London School of Hygiene and Tropical Medicine; and Venereal Disease at the London Lock Hospital (Dean-street). Copies of the syllabus of each course and also of the January *Bulletin* may be obtained from the Secretary to the Fellowship, 1, Wimpole-street, London, W. 1.

CORONERS' INQUESTS AT LIVERPOOL, MANCHESTER, AND SALFORD.—Last year 846 inquests were held in the Liverpool Coroner's Court—a somewhat smaller number than usual. Of the total nearly 40 per cent. arose from accidents of all kinds in the streets, workshops, and factories. On an average two inquests due to motor vehicles were held every week in Liverpool. There were only ten cases of death attributed to drink, a great decrease, as in 1913 drink was indicted at 131 inquests, and at an earlier period often 200 a year. Accidental suffocation of babies has been greatly reduced in recent years. There were only 15 last year, while in 1913 the number was under 50, and not many years before that no fewer than 204 cases of suffocation of babies were recorded in a twelvemonth. There were 48 cases of suicide and 32 open verdicts were returned. Only two murder verdicts were returned and not a single one of manslaughter. The Salford coroner, Mr. A. Holmes, during 1924 held 251 inquests—145 on males and 106 on females. In 111 cases death was due to natural causes, suffocation accounted for seven cases, there were eight suicides by poisoning, and in four other deaths by poison the verdict was accidental death; 26 persons died from injuries due to falls, and 25 deaths were caused by injuries in street accidents. In Manchester the number of inquests was 625, including 29 deaths from burns, 22 scalding cases, and 18 due to suffocation. Chloroform accounted for 17 fatalities.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, Jan. 15th, at 4.30 P.M. *The following Papers will be read:* Sir Charles Sherrington, P.R.S., and E. G. T. Liddell: Further Observations on Myotatic Reflexes. Prof. A. V. Hill, C. N. H. Long, and H. Lupton: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen, Parts I., II., and III. Prof. A. P. Chattock: The Physics of Incubation. The following will be communicated by the President: H. M. Carleton: Growth, Phagocytosis, and other Phenomena in Tissue Cultures of Foetal and Adult Lung. J. F. Fulton: The Influence of Tension upon the Electrical Responses of Muscle to Repetitive Stimuli. J. F. Fulton: Some Observations upon the Electrical Responses and Shape of the Isometric Twitch of Skeletal Muscle. J. F. Fulton: The Relation between the Durations of the Isometric Twitch and of the After-action of Tetanus.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Jan. 13th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.

Papers:

Dr. S. S. Zilva: Recent Progress in the Study of Experimental Scurvy.

Dr. G. F. Still: The Clinical Treatment of Infantile Scurvy.

PSYCHIATRY
NEUROLOGY
DISEASE IN

CHILDREN } at 8.30 P.M.

EPIDEMIOLOGY

Special Discussion on

The Mental Sequelæ of Encephalitis Lethargica.

Opening Speakers:

Dr. P. C. P. Cloake and Dr. F. C. Shrubbsall (Psychiatry).

Prof. Edwin Bramwell (Neurology).

Prof. Arthur Hall and Dr. J. C. Spence (Disease in Children).

Dr. A. S. MacNalty and Dr. Parsons (Epidemiology).

Dr. Worcester-Drought, Dr. Edward Mapother, and others will also speak.

Wednesday, Jan. 14th.

BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.

Paper:

Dr. Vincent Coates: Clinical Types of so-called Infective Arthritis.

Thursday, Jan. 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases:

Dr. H. W. Barber: Lichen Nitidus (two cases).

Other cases will be shown.

Friday, Jan. 16th.

MEDICINE

ELECTRO-

THERAPEUTICS

Papers:

Sir Thomas Horder: Preliminary Communication concerning Electro-tonic Reactions of Abrams with a special reference to the "Emanometer" and the technique of Boyd.

ELECTRO-THERAPEUTICS: at 8.30 P.M.

Papers:

Dr. E. P. Cumberbatch } Treatment of Gonorrhoeal Infection
Dr. C. A. Robinson } by Diathermy.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Jan. 12th.—8 P.M. Pathological Meeting. Exhibition of Specimens and Skiagrams.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, W.

THURSDAY, Jan. 15th.—8.15 P.M. *Papers by* Lieut.-Colonel A. T. Gage, I.M.S., and Lieut.-Colonel Clayton Lane, I.M.S., on the Alkaloids of Cinchona and Malaria. Mr. Bernard Howard and others will take part in the Discussion. The Meeting will be preceded by a Demonstration at 7.45 P.M.

TUBERCULOSIS SOCIETY, 1, Upper Montague-street, Russell-square, W.C.

FRIDAY, Jan. 16th.—8 P.M., Dr. A. Feiling: Tuberculosis of the Central Nervous System.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 12th. to **SATURDAY, Jan. 17th.**—**LONDON**

TEMPERANCE HOSPITAL, Hampstead-road, N.W. Post-graduate Course in General Medicine and Surgery.

Intensive Course. Details as per Syllabus.—**ROYAL**

EYE HOSPITAL, St. George's Circus, Southwark, S.E. Lectures and Demonstrations on Diseases of the Eye.

Daily at 3 P.M. Clinical Cases, followed at 5 P.M. by a Lecture.—**WEST END HOSPITAL FOR NERVOUS**

DISEASES, 73, Welbeck-st., W. Intensive Course in the

Diagnosis and Treatment of Common Diseases of the

Nervous System. Daily at 5 P.M., Lectures, including

Clinical Demonstrations upon selected cases.—**BETHLEM**

ROYAL HOSPITAL, St. George's Fields, S.E. Tuesday and Saturday, at 11 A.M., Lecture-Demonstrations

by Dr. Porter Phillips and Dr. Thomas Beaton.—**ST. PETER'S**

HOSPITAL, Henrietta-street, Covent Garden, W.C. Clinical Work at the Hospital daily

from 2 P.M. Special Lectures as follows: Monday by

Mr. J. Alban Andrews, Tuesday by Mr. Swift Joly,

Wednesday by Mr. Clifford Morson, Thursday by Mr.

F. J. F. Barrington, Friday by Sir J. Thomson Walker,

and Saturday by Mr. H. C. Brayshaw.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 12th.—11 A.M., Surgical Registrar: Surgical

Wards. 12 noon, Mr. Simmonds: Applied Anatomy.

2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—11 A.M., Dr. McDougal: Electrical Dept.

12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair:

Surgical Out-patients.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology.

2 P.M., Dr. Owen: Medical Out-patients.

2 P.M., Dr. Dowling: Skin Dept.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological

Dept. 11 A.M., Sir Henry Simson: Gynaecological

Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-

patients.

FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Dept.

10.30 A.M., Dr. Pritchard: Medical Wards. 2 P.M.,

Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy.

10 A.M., Dr. Saunders: Medical Diseases of Children.

10 A.M., Mr. Banks-Davis: Operations on Throat,

Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M.,

In-patients, Out-patients, Operations, Special Depart-

ments.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Jan. 13th.—5 P.M., Dr. A. M. H. Gray: The

Erythemata and Urticarial Eruptions.

THURSDAY.—5 P.M., Dr. Fagan: Demonstration of Fungoid

Diseases of Hair and Skin.

ROYAL DENTAL HOSPITAL OF LONDON POST-

GRADUATE LECTURES.

FRIDAY, Jan. 16th.—5 P.M., Mr. F. Coleman: Recent

Work on the Development of the Jaws.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Jan. 13th.—4 P.M. (at the University of Glasgow).

Prof. Cathcart: Metabolism with Special Reference

to the Kidney. Discussion to be opened by Prof.

Herring and Dr. Hynd.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LEC-

TURES. (At 3.30 P.M.)

MONDAY, Jan. 12th.—(At the Children's Hospital.) Dr.

Armstrong: Clinical.

TUESDAY.—(At the Southern Hospital.) Dr. Coope:

Intestinal Intoxication.

WEDNESDAY.—(At the Northern Hospital.) Mr. Monsarrat:

Septic Fingers.

THURSDAY.—(At the Stanley Hospital.) Mr. Arthur Evans:

Surgical Cases.

FRIDAY.—(At the Royal Infirmary.) Dr. Matthews:

Medical Cases.

Appointments.

- HASLAM-FOX, H. C., M.B., Ch.B. Edin., has been appointed Whole-time Medical Officer to the Ormskirk Board of Guardians.
- JONES, J. L., Certifying Surgeon under the Factory and Workshop Acts for the Hawarden District of the County of Flint.
- LEIGHTON, T. W., PARKINSON, M.B., Ch.B. Manch., Medical Officer for Withnell (Chorley).
- MILLER, CHARLES HEWITT, M.D. Camb., F.R.C.P. Lond., Consulting Physician to the London Hospital.
- MOCATTA, SYBIL G., M.D. Lond., F.R.C.S. Eng., Assistant Surgeon to the Elizabeth Garrett Anderson Hospital.
- NANKIVELL, A. T., M.D. Lond., D.P.H. Camb., Medical Officer of Health for Plymouth.
- WARREN, ELSIE, M.B., B.S. Lond., D.T.M. & H. Camb., Acting Medical Secretary to the Zenana Bible and Medical Mission.
- All Saints' Hospital, Finchley-road, N.W.: DREADON, J., F.R.C.S. Eng., Senior House Surgeon; SPENCE, C. A., M.B., Junior House Surgeon.
- Jessop Hospital for Women: JONES, A. M., M.B., Ch.B. Manch., Senior Resident Medical Officer; SMITH, PENELOPE, M.B., Ch.B. Shet.; and JAMESON, HILDA G., M.B., Ch.B. Birm., Asst. House Surgeons.
- Kensington, Fulham, and Chelsea General Hospital, Earl's Court, S.W.: DONALD, J., M.B., Ch.B., Senior Resident Medical Officer; PARK, W., M.B., Ch.B., Junior Resident Medical Officer.
- Manchester Royal Infirmary: FERGUSON, F. R., M.D., Ch.B. Manch., Resident Medical Officer; FAIRBROTHER, R. W., M.B., Ch.B., First Assistant in Clinical Laboratory; HICKSON, S. K., M.B., Ch.B. Manch., M.R.C.P. Lond., Medical Registrar; RYRIE, B. J., M.B., Ch.B. Manch., Senior Pathological Registrar; SCOTSON, F. H., F.R.C.S. Eng., First Surgical Registrar; PANTON, J. A., M.D., Ch.B. Manch., Second Surgical Registrar; PATERSON, R. S., M.B., B.Ch. Manch., D.M.R.E. Camb., Honorary Asst. Radiologist and Electro-Therapeutist.—The following reappointments have been confirmed: DR. A. GRAHAM BRYCE, Asst. Resident Surgical Officer; DR. JOHN COWAN, Medical Officer in Charge of the Physio-Therapeutic Department; Mrs. KATE KING MAY-ATKINSON, Asst. Medical Officer in charge of the Physio-Therapeutic Dept.; DR. G. E. LOVEDAY, Director of the Clinical Laboratory; Mr. S. R. WILSON, Mr. EDWARD MOIR, Dr. T. COOGAN, Dr. G. M. BENTON, Dr. K. B. PINSON, Dr. W. SANKEY, Dr. E. FALKNER HILL, and Mrs. MARGARETTA MCLEAN POSTON, Administrators of Anæsthetics; Dr. J. HOLKER, Dr. J. D. BYRD, and Dr. J. KNOWLES LUND, Asst. Medical Officers; Mr. JOHN GOW, Mr. A. H. SOUTHAM, Mr. R. L. NEWELL, Mr. E. E. HUGHES, Mr. G. B. WARBURTON, and Dr. F. G. WRIGLEY, Asst. Surgical Officers; Mr. E. W. TWINING, Junior Asst. Radiological Officer.
- Royal Infirmary, Edinburgh: MERCER, W., M.B., Ch.B. Edin., F.R.C.S. Edin., COCHRANE, W. A., M.B., Ch.B. Edin., F.R.C.S. Edin., Assistant Surgeons.
- Salford Royal Hospital: STENHOUSE, G. B., M.B., Ch.B. Manch., Resident Medical Officer; MCCLELAND, T. A., M.B., Ch.B., B.A.O. Belf., House Physician.

Vacancies.

For further information refer to the advertisement columns.

- Birmingham, Queen's Hospital.—Med. Reg. £100.
- Bradford City Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.
- Brighton, Royal Sussex County Hospital.—H.S. £150.
- Cape Town University.—Asst. to Professor of Bacteriology. £500.
- Chichester, Royal West Sussex Hospital.—H.S. at rate of £185.
- City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. at rate of £125.
- City of London Mental Hospital, near Dartford, Kent.—Second Asst. M.O. £350.
- Derbyshire Education Committee, Derby.—Asst. Sch. M.O. £600.
- Evelina Hospital for Children, Southwark, S.E.—H.P. £120.
- Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Election of the Medical and Surgical Staff.
- Hampstead General, &c., Hospital, Haverstock-hill, N.W.—Electro-Therapeutist. £50.
- Haywards Heath Hospital.—Hon. Consulting Throat and Ear S. Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. Six months. £50.
- Hospital for Sick Children, Great Ormond-street, W.C.—Cas. O. £400.
- Leeds, West Riding Mental Hospital, Menston.—Fourth Asst. M.O. £400.
- Liverpool Royal Infirmary.—Hon. Asst. S.
- Lord Mayor Treloar Cripples' Hospital and College, Alton, Hants.—Second Asst. Res. M.O. £250.
- Manchester, Ministry of Pensions Hospital, Grangethorpe.—Radiologist. £300.
- Manchester, St. Mary's Hospitals.—H.S. at rate of £50.
- Metropolitan Asylums Board.—Director Pathological Services. £1100. Also Director Diphtheria Antitoxin Establishment. £900.
- Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—H.S. £150.

- National Hospital for the Paralyzed and Epileptic, Queen-square, W.C.—Hon. Anæsthetist.
- Northampton General Hospital.—Third H.S. at rate of £150.
- Nottingham General Hospital.—H.P. and H.S. Each at rate of £150. Also Res. Cas. O. at rate of £200.
- Plaistow Fever Hospital.—Second Asst. M.O. at rate of £200.
- Royal College of Surgeons of England.—Election to Court of Examiners.
- Royal Free Hospital Gray's Inn-road, W.C.—H.P.
- St. Leonards-on-Sea, Buchanan Hospital.—H.S. £100.
- St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. P.
- Southwark Hospital, East Dulwich Grove, S.E.—Asst. M.O. £300.
- Sydney University, New South Wales.—Professorship of Obstetrics. £1100.
- Walsall County Borough.—Asst. M.O.H. £650.
- West London Hospital, Hammersmith-road, W.—Hon. Med. Registrar. £100. Also Hon. Obstet. Itg.
- Westminster Hospital.—S. to Ear, Nose, and Throat Dept. Also Asst. S.
- Wolverhampton and Staffordshire Hospital.—Res. Surg. O. £250. Also H.S. at rate of £150.
- The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: St. Just, Cornwall; and Staplehurst, Kent.

Births, Marriages, and Deaths.

BIRTHS.

- LANSDOWN.—On Dec. 26th, 1924, at Woodcote Grove-road, Coulsdon, Surrey, the wife of R. P. B. Lansdown, M.B., B.Ch., of a son.
- LUMB.—On Jan. 1st, at Crewkerne, the wife of Norman P. L. Lumb, O.B.E., M.B., B.S. Lond., F.R.C.S. Eng., of a son.
- LUNN.—On Dec. 28th, 1924, at Southampton, the wife of Major W. E. C. Lunn, M.C., R.A.M.C., of a son.
- ROMANIS.—On Jan. 2nd, at Harley-street, W., the wife of W. H. C. Romanis, M.C. Camb., F.R.C.S., of a son.
- WOODS.—On Dec. 28th, 1924, at St. Andrew's-street, Cambridge, the wife of R. S. Woods, M.D., F.R.C.S., of a daughter.

MARRIAGES.

- FRAMPTON—BROWN.—On Dec. 10th, 1924, at Agra, Henry James Frampton, M.C., I.C.S., to Hilda Mary Brown, M.B., W.M.S.
- JONES—WILLIAMS.—On Jan. 1st, at Christ Church, New Southgate, London, Tudor Jenkyn Jones, M.B., Ch.B., to Gladys Mary Thurlow Williams, M.R.C.S., L.R.C.P.
- RUTHERFORD—FORBES.—On Jan. 1st, at Princes-row, London, Colonel John V. W. Rutherford, T.D., M.B., C.M. Edin., M.R.C.S. Eng., J.P., to Isabella Robertson Forbes, younger daughter of Mr. and Mrs. Charles Forbes, Rohallion, Murthly, Perthshire.
- SCHLESINGER—REGENSBURG.—On Jan. 1st, at the West Hampstead Synagogue, Bernard Edward Schlesinger, M.B., B.Ch., to Winifred Henrietta, elder daughter of the late Mr. Hermann L. Regensburg and Mrs. Regensburg, of Parsifal-road, London.
- TEMPLETON—MURRAY.—On Jan. 3rd, in London, William Lees Templeton, M.D., to Christina Scott Murray, youngest daughter of Mrs. Scott Murray, of Glasgow.

DEATHS.

- CRABTREE.—On Jan. 1st, suddenly, at Ludlow, Angelo Matteo Crabtree, F.R.C.S., of Surrey Cottage, Weybridge, Surrey.
- FAGAN.—On Jan. 5th, Dr. J. Patrick Fagan, of Scarsdale-villas, W., late P.M.O., Northern Nigeria, aged 57.
- HOLROYDE.—On Jan. 3rd, at Orrest Foot, Windermere, Douglas Holroyde, M.A., M.B., B.Ch. Camb., late of Barnsley, aged 48.
- NUNDY.—On Dec. 28th, 1924, Edward Nundy, L.R.C.S., L.S.A., Barrister-at-Law, dearly beloved husband of Lily Nundy, aged 74.
- SWAN.—On Dec. 26th, at 75, Wimpole-street, after a painful illness most patiently borne, Una Gladys, the beloved wife of R. H. Jocelyn Swan, M.S. Lond., F.R.C.S.
- N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	..	..	..	£2 2 0
	Six Months	..	..	..	1 1 0
	Three Months	..	..	..	0 10 6
ABROAD	One Year	..	..	..	2 10 0
	Six Months	..	..	..	1 5 0
	Three Months	..	..	..	0 12 6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "Westminster Bank, Ltd., Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET OFFICES, 423, Strand, London, W.C. 2.

Notes, Comments, and Abstracts.

A METHOD OF TREATMENT OF VISCEROPTOSIS.

BY CORTLANDT MACMAHON, M.A. OXF.,

INSTRUCTOR FOR SPEECH DEFECTS AND BREATHING EXERCISES
AT ST. BARTHOLOMEW'S HOSPITAL.

AN experience of the physical treatment of visceroptosis over a period of some years has established definite conclusions which I believe to be of some importance. There are very varying opinions as to the seriousness of this condition. Some hold that visceroptosis is really unimportant and is merely an incident in a condition of neurasthenia, that nearly everyone has it to some degree and that very little disability results.

That there are cases that do matter is, in my opinion, certainly true. The cases sent to me for treatment are often in a pitiable condition. One of the worst features is the condition of the mind; the memory is seriously affected and powers of concentration are markedly impaired. Physically there are weariness, flatulence, abdominal pains, headaches, and severe constipation and, in some cases, nausea. That some patients are neurasthenic there is no doubt, but I believe that the neurasthenic condition is set up by the ptosis and is not the cause of it. Some of the sufferers from visceroptosis are comparatively young women who are intensely keen to be able to resume a normal existence. Some have been troubled with abdominal discomfort from childhood, others have developed ptosis following childbirth. The child with a greatly distended abdomen and flat and contracted upper chest is surely a potential sufferer from visceroptosis unless the condition is taken in hand.

Principles Underlying Treatment.

In every case of visceroptosis it will, I believe, be seen that in addition to the abdominal muscles having given way in a more or less marked degree, the lower ribs have dropped in to a degree corresponding more or less with the advance of the abdominal wall. It is interesting to watch the act of inspiration in the visceroptosis patient. A dangerous advance of the abdominal wall is almost certain to be seen. The collapse of the lower ribs means that the large abdominal viscera no longer have their original accommodation, nor can they possibly regain it until the accommodation is given by broadening out the lower costal region so that there is ample room for them. This forms the first part of the physical treatment, the lower ribs are trained to expand eventually to a line almost or quite vertical with the axilla. Then the abdominal muscles are made to contract and pressure is applied with the hand of the operator on the lower portion of the abdomen. By advancing the pressure upwards the viscera are made to ascend, and as the accommodation provided, as explained, increases their ascent is not difficult. The patient by degrees gets an enhanced power of contraction of the abdominal muscles and eventually can often contract the abdominal wall practically to the spinal column. Each treatment with an operator lasts for 40 minutes with plenty of rest between the various series of exercises. As the lower ribs become well expanded and the abdominal muscles extremely strong, the viscera progress upwards towards their normal position with no need of help by manual pressure. Once a good position of the viscera is established no operator is required and the exercises are reduced to about ten minutes daily.

The Exercises Described.

The following exercises are those which I have found most efficacious in patients with visceroptosis. Each exercise should be carried out 18 times, with a rest after each six movements of the exercise. All the exercises should be carried out in a recumbent position, with the head and shoulders slightly raised. It is most important that the act of inspiration and expiration should be silent.

1. The operator places his hands on the side of the lower ribs level with the bottom of the breast-bone. The patient should breathe in through the nose, and the lower ribs should be felt to be expanding strongly. There should be as little movement as possible of the upper chest. When the fullest inferior lateral costal expansion is acquired, the patient should breathe out through the open mouth, and the ribs should be felt to regain their normal position.
2. The patient should breathe in in three distinct movements, and the lower ribs should be felt to expand with each breath. By degrees the expansions are increased to five movements.
3. The abdominal wall should be contracted inwards, and then allowed to recover its normal position so that an in-and-out movement is made. The operator helps this contraction by pressure on the lower portion of the abdomen. (This is a physical and not a breathing exercise. It should be carried out in series of ten contractions until 50 contractions in all have been made.)

4. The same movement as in No. 3 exercise, but the contractions are made in 1-2-3 movements instead of one movement. On each contraction the operator presses upwards with his hand, increasing the amount of pressure on each contraction.

5. Combine Exercises 1 and 3—i.e., the patient breathes in through the nose, and the lower ribs are felt to be strongly expanding. The mouth is then opened and the abdominal muscles slowly and strongly contracted so that the air is driven from the lungs.

6. The same inspiratory movement, but the breath should be held and the abdominal muscles contracted in three to five deliberate movements before breathing out. The operator helps the contraction as before.

7. The patient should breathe in deeply, the breath should be held and two more breaths taken in through the nose and, as air is inspired, two simultaneous contractions of the abdominal muscles should be made. (N.B.—This exercise is somewhat severe and at first should only be carried out six times.)

The following exercises are given so that the muscles of the chest are made very elastic, and resistance to the contracting power of the abdominal muscles is thereby reduced very considerably. These exercises are carried out with the breath held.

8. Grasp the right wrist of the patient with the left hand, carry the arm forwards, and bring it to a right angle with the body. The operator should then place his right hand well under the scapula of the patient and pull the arm backwards and downwards as the patient strongly contracts the abdominal wall. Changing the hands, do the same movement on the other arm of the patient.

9. Grasp the wrists of the patient as the arms lie at the side of the body, the operator standing behind the patient. Draw the arms outwards and upwards to above the head, pull on the arms steadily when the arms are at their fullest extent, then relax the pull. The patient should then breathe out quickly.

10. Arms as before. Bring them together in front and carry upwards to a right angle. Part the arms strongly backwards and horizontally.

11. The same exercise as the preceding one, but the arms are carried backwards at an angle of 45° upwards.

12. Commence with the patient's arms above the head, with the palms of the hands facing each other. The operator grasps the arms between the wrists and the elbows and presses the arms strongly downwards, and when the elbows approach the sides the abdominal muscles should contract. Force the elbows into the side and make the patient breathe out strongly.

The average number of treatments is six to ten. A patient who has had visceroptosis is well-advised in carrying out a modified amount of exercises daily, if only for a few minutes, so that any danger of relapse may be avoided.

Psychotherapy.—Posture.—Belts.

It is desirable to convince patients that by carrying out exercises themselves they are greatly helping recovery by their own efforts and determination. Also that, however ill they may feel, they are not suffering from any organic disease and that the chances of recovery of their health are good. It is essential to impart optimism to these patients, since they are inclined to be introspective and depressed. Exercises cannot of themselves at once obviate uncomfortable symptoms and medical treatment is generally necessary for this purpose. However, many sufferers from visceroptosis feel relief from their abdominal discomfort within a few days after commencing exercises. The stimulus given to the liver and bowel appears to cause both to function more actively and the necessity for taking strong aperient medicines is gradually done away with.

It is important that the posture and carriage of the body should be carefully observed. All movements should be strong movements. Active exercises are increased very gradually. When the patient is standing or walking, the body should lean a little forwards from the hips and the shoulders should be pressed back. This movement raises the upper chest if the rectus muscle of the abdomen, strengthened by exercises, is slightly contracted. The lower ribs, by training, are permanently well expanded and the support of the viscera is assured.

The question of supporting belts is important. Mild cases certainly should not need them, but in a case of long standing they are a necessity for a time, but, if exercises are not indulged in, they are apt to cause the muscles to become extremely weak, and the weight of the viscera is thrown into the belt with unpleasant results. By degrees the belt should be discarded at intervals, and eventually in many cases it should be discarded altogether. In no case should it entirely replace physical exercises.

Unless a patient is very weak and incapable of much effort one visit a week is quite sufficient and the exercises are carried out daily at home.

It is reported in the French newspapers that the Department of Charente-Inferieure is thinking of changing its name to Charente-Maritime, to avoid the danger of English and Americans thinking that the cognac brandy produced in the Department is "Inferior Charente Brandy." It is true that we do not often use the word inferior as meaning lower in the spatial sense. But we do know that Bad Nauheim is not bad.

THE HEALTH OF PALESTINE: A COMPREHENSIVE REPORT.

THE official census of the population of Palestine in October, 1922, was the first recorded in modern history, and the estimated population for 1923 has been calculated from the actual figures of births and deaths notified, and from the records of immigration and emigration kept by the Department of Immigration and Travel. The total inhabitants are estimated at 662,013, of whom 250,258 dwell in the towns and 411,755 in the districts (excluding Beersheba). "It is probable, on account of the greater liability of births to escape notification than deaths, that the increase of population obtained in this way has been under-estimated, which would result in an artificial increase of the calculated rates per 1000." On the other hand, deaths of infants (especially in the first month of life) in rural districts may escape notification; while in the towns, where district health offices are situated, notification of all deaths is ensured by strict control of the cemeteries. The total births recorded numbered 31,402, as against 27,516 in 1922, giving a ratio of 47.43 per 1000, compared with 42.39 in the former year; this increase is attributed to "the more settled conditions of life which prevail in the country, and to the improving social conditions of the populace." In some cases there has been an apparent decrease. In Jaffa district this was due to an error in the 1922 rate, which had been calculated on a population under-estimated to the extent of 5000. In Bethlehem, Nazareth, and Safad districts the notifications appear to have been less satisfactory than in 1922. Taking the figures as they stand, the birth ratios in the towns varied from 30.18 per 1000 at Bethlehem and 31.93 at Haifa to 61.94 at Majdal, 62.00 at Beersheba, and 64.61 at Gaza; in Jerusalem the ratio was 36.48, and for towns as a whole 42.26. In the districts (excluding towns) the average was 50.57, ranging from 35.28 in Beisan and 38.80 in Jaffa to 61.10 in Gaza and 68.41 in Safad.

Vital Statistics.

The total deaths notified throughout the country numbered 16,994, as compared with 12,172 in 1922. The ratio per 1000 (for the estimated population on July 1st, 1923) was 25.67, an increase of 6.92 over that of 1922, due chiefly to measles and its sequelae. "Regrettably the published census tables [October, 1922] only state the population by age-groups, 0-5, 5-15, &c., . . . so that the only rates which at the moment can be calculated are those of the age-group 0-5" (p. 5). On pages 8 to 12, however, the infantile mortality for 1923 "under 1 year of age per 1000 births" is fully set forth seriatim for the towns and districts; the deaths numbered 5802, giving a ratio for the whole country of 184.78, as compared with 156.56 in 1922. In the city of Jerusalem itself, where infant welfare work is carried on by the Hadassah Medical Organisation as well as by the health department, the mortality was 140 per 1000 births (p. 6; on p. 8 the ratio is stated as 141.85), as compared with 150 per 1000 in 1921 and 1922. In the other towns the infantile death ratios varied from 88.44 at Ramallah (eight miles north of Jerusalem) and 105.80 at Nazareth to 355.05 at Hebron and 444.09 at Majdal. In the districts, excluding towns, the range was from 78.71 in Nazareth and 91.65 in Tiberias to 284.08 in Majdal and 319.78 in Gaza. For towns as a whole the infantile mortality was 217.99 per 1000 births; for the districts, excluding towns, 167.88; and for the whole country, 184.76.

Incidence of Infectious Disease.

With regard to the prevalence of infectious disease, the general incidence has been low, except in the case of measles. This disease appeared (towards the end of 1922) first in Jerusalem, Gaza and Hebron being infected shortly after. There was a rapid increase in February and March, the cases reported in the latter month numbering 1338. During the summer the disease abated, until in September the total cases reported fell to 32; a recrudescence then occurred in the southern half of the country, with an extension later to the northern districts, the highest incidence (2083 cases) being notified in December. The total cases numbered 6936, and the deaths 1232. On page 17 it is stated that "the morbidity-rate for the year was 17.6 per cent."; as the case-mortality, or fatality, works out at 17.76 per cent. this ratio appears to be intended, not "morbidity." Though "this [fatality] ratio is undoubtedly raised by incomplete notification of mild cases . . . there is no doubt that the disease must be regarded as more serious in its effects on the life of the community than in European countries." Ignorance and lack of proper medical attention in the villages are the chief factors leading to high mortality; the deaths are chiefly due to broncho-pneumonia or enteritis, complicating or following the disease.

The total cases of plague numbered only 15, of which four were fatal. Its reappearance in Jaffa, which was fully anticipated after the experience of the previous year, did not take place until June. Anti-rat and anti-plague measures

had been carried out energetically throughout the winter; 1436 premises were inspected and 816 reinspected; nuisance notices were served in 644 cases, where the action required by the department had not been taken and 94 prosecutions resorted to; 364 premises were rendered rat-proof. Of 823 rats examined post mortem not one was found to be infected with *B. pestis*. There was not a single case of cholera during the whole year, but the department was prepared for action in the event of its introduction from Irak, where a widespread outbreak occurred in the autumn. Small-pox was introduced from Aleppo in January at Tiberias, where seven other cases occurred; the disease was of very virulent type, and four cases were fatal. "The customary epidemic measures were employed, accompanied by wholesale revaccination of the population of the town. Fortunately in Palestine this valuable prophylactic measure is not as yet hindered either by the profession of conscientious scruples or by the ill-advised propaganda of anti-vaccinationists. Vaccination of the population has been steadily pursued since the occupation of the country. . . . Vaccination of immigrants arriving by the ports is a routine procedure. The population as a whole is now fairly well protected, a fact which is of considerable value in view of the increasing prevalence in neighbouring territories."

The cases of enteric fever notified during the year numbered 202, of which 17 were fatal; there were also 77 cases of paratyphoid, with eight deaths. Jerusalem, Jaffa, and Haifa were mainly affected. Of the 202 enteric cases 161 occurred in the six months June to November; and of the 77 paratyphoid cases 55 occurred during the same period. The same three towns, together with Tiberias, suffered most from dysentery, which was much more prevalent than in 1922; 234 cases and 16 deaths, compared with 129 cases (11 fatal) in the previous year. The report states that "the shortage of reliable drinking water is most acute just before the commencement of the winter rains, and questionable supplies are brought into use, this probably explaining the higher incidence in October." There were 35 cases of typhus, only two fatal; the majority (18), as in 1922, occurred in Jaffa town; the disease was probably a modified type similar to that described by Brill in New York. There were only eight cases of relapsing fever, only 13 of scarlet fever, and 39 of diphtheria, as compared with 25, 83, and 83 for these diseases respectively in the previous year; seven diphtheria cases were fatal, but none of the other two diseases. Of whooping-cough 268 cases and 18 deaths were notified, Hebron and the Jaffa district being most affected. Schistosomiasis was reported in 26 cases, the source of infection in every case being either the endemic focus near Jaffa or Egypt. The public are warned against the danger of bathing in freshwater pools or streams near Jaffa, and school-children in that town are periodically examined for this condition. The large cisterns in the orange gardens surrounding Jaffa are frequently inspected, and those found harbouring *Isodora contorta* are emptied and cleansed; but the river Auja and its tributaries and adjacent marshes remain as a potential danger.

Small-pox and Vaccination.—Malaria.

Over 43,000 vaccinations with anti-small-pox calf-lymph were performed during the year, and it is satisfactory to learn that the people appreciate its value, and that opposition is seldom encountered. It is hoped that before long the department will receive sanction for manufacturing its own calf-lymph. Routine inoculation "with T.A.B. vaccine," as well as anti-small-pox vaccination, is carried out at the ports with all immigrants; and Mecca pilgrims are inoculated with "anti-cholera vaccine" and are vaccinated against small-pox before departure.

"The most successful branch of public health work during the year has been the campaign against malaria. The incidence of the disease was lower throughout Palestine than in any previous year since the occupation." The health department, with the active co-operation of the municipalities, has carried on and improved its routine measures for the control of mosquitoes in the town areas, and no new infections have occurred in any of the large towns, except Haifa. Here it has not been possible to prevent mosquito breeding in the Kishon marshes, but a scheme has been prepared for effectively dealing with them during the coming year. In the rural areas, "by enlisting the help of the landowners and villages and settlements likely to benefit; and when necessary by enforcing the provisions of the anti-malarial ordinance, drainage and reclamation schemes have been completed, the carrying out of which a few years ago was thought to be impossible without Government loan funds." The result has been a permanent reduction in the incidence of malaria. "In the valley of Jezzeel, the whole way from Merchavia to Beisan, where in previous years there have been severe epidemics of malignant malaria among the newly settled colonists, the extensive works undertaken have reduced the amount of primary malaria in 1923 to a few sporadic cases. This shows that much well-watered and

fertile land, now lying waste on account of malaria, can with one or two years' well-planned work be rendered healthy and suitable for settlement. . . . The steady diminution in malaria throughout Palestine from year to year has been due chiefly to the measures which have been taken during the last five years." During 1923, in the towns, 6792 possible breeding places were discovered. The total number of such places inspected was 933,236, of which 478,735 were oiled, and 27,336 made mosquito-proof by sealing, covering, or other means. In the villages, 3019 new wells, or cisterns, or other possible breeding places were found; 148,251 places were oiled, and 3463 closed, repaired, or made mosquito-proof.

A marked increase in the number of rabid animals at large was found throughout the country; 6571 were destroyed. In June an Antirabic Institute was established in Jerusalem, and ten treatment centres throughout the country, each supplied with "vaccine" manufactured in the department's central laboratories. The total number of persons treated was 609, and the number of treatments "carried out regularly and completely" was 544. The failure rate, "cases of hydrophobia occurring after 15 days of the completion of treatment," was only 0.56 per cent. (three deaths); the total mortality (five deaths) was 0.93 per cent. The destruction of ownerless dogs was energetically pursued, and in certain districts the Department of Agriculture carried out an effective campaign against jackals.

Hospital Administration.

In regard to hospital provision, "economy has been the feature of the year." The cost of maintenance of the Government general and infectious hospitals has been reduced from £45,000 to £20,000; their number, from 11 to 8, and their bed strength from 375 to 243. All military hospitals were closed, except the Palestine General Hospital at Sarafand (the ancient Sarepta, on the coast between Tyre and Sidon). This increased the work of the Government hospitals, especially at Jerusalem, Haifa, and Nablus; and, unfortunately, out of an establishment of six matrons, there were six resignations. The total admissions numbered 4905, a marked decrease from the figures of the three years preceding, when the patients admitted had numbered 5768, 6608, and 6646 respectively. No explanation is suggested from this decrease, which would seem to be due to want of accommodation. Of the total admissions, 36 were soldiers, 1364 gendarmes, police, and railway or other Government employees, and 155 prisoners. There were also 916 "ordinary paying patients"; and 425 prisoners were treated for minor and chronic ailments in the sick detention wards in the Jerusalem and Acre prisons and the Jaffa lock-up. The work of the Government dispensaries has been curtailed, particularly in towns where treatment at voluntary institutions was available; but ophthalmic cases (which formed 25.6 per cent. of the total treated) have been dealt with as far as possible, and at Nablus the number of new cases was nearly 10,000. In Galilee, where there are no Government hospitals, and at Gaza, where the Government hospital has been closed, the voluntary hospitals have undertaken the treatment of sick gendarmes, police, and other officials unfit for removal to a Government hospital. Several new dispensaries were opened in different parts of the country by the Jewish Co-operative Labour Association, which has a membership of 6600, provides medical assistance and food for its members when they fall sick, has clinics in places where large numbers of Jewish workmen are employed, and during the year admitted about 400 of its members to its convalescent homes—a truly excellent institution.

Maternity and Infant Welfare.

For financial reasons it has not been possible to develop the Government scheme for maternity and infant welfare. The Princess Mary Maternity Centre in Jerusalem has, however, made good progress; 128 women were admitted, and there were 111 births, as compared with 60 and 55 in the previous year. The Hadassah Medical Organisation has extended its work both in Jerusalem and in other towns, and has established a course of training for nurses in health welfare work. In Jaffa two infant welfare centres, under the New Zealand Plunket Society, have been conducted by the ladies of Tel Aviv. Another measure necessitated by reasons of economy was the permanent closure of the Travelling Ophthalmic Hospital at the end of June. During the 31 months it had been open, from 1919 to 1923, a total of 81,848 out-patients were treated, and 295 admitted to hospital; the operations performed numbered 5378. After the closure of the Travelling Hospital special attention was given to the development of ophthalmic clinics in Jerusalem and 11 other towns. These are made centres for school ophthalmic work in each district. Special or operation cases are referred to Jerusalem. The Government Mental Hospital at Bethlehem was opened in September, 1922, and now contains 40 beds, the daily average of patients present being 31.

Medical Examination of School-children.

The number of schools in Palestine in 1923 was 711, of which 314 were Government schools, and 397 "non-Government" schools, which are, however, inspected by Government medical officers. The total pupils numbered 53,467, of whom 35,703 were boys and 17,764 girls. In the Government schools the boys numbered 16,046 and the girls only 3285; in the others the respective numbers were 19,657 and 14,479. In the villages the boys in Government schools numbered 10,748 and the girls only 529; the disproportion is noteworthy. "In the Government schools the prevention and treatment of trachoma made the greatest progress during the year"; 62 per cent. of the children in these schools were affected in one or other stages of the disease, and there were 459,742 attendances at the school clinics for treatment; the results are not stated. A complete medical examination was made of 10,482 children in 294 Government schools; 5.5 per cent. suffered from enlarged spleen; in 5.3 per cent. the vision was defective; 1.5 per cent. had four or more decayed teeth; 0.5 per cent. had some lung affection other than tuberculosis; 0.3 suffered from heart disease; 0.3 from tuberculosis; and 0.3 were mentally defective.

A Comprehensive Report.

Many other subjects are dealt with in this interesting and valuable report, which contributes striking testimony to the thorough and practical character of the sanitary administration, and to the zeal and energy with which the work has been carried out, no doubt under difficult circumstances, in a country and amongst a population where sanitary science is probably neither valued nor understood. The report is most comprehensive, but bears no signature.

INTOLERANCE TO A DENTURE.

To the Editor of THE LANCET.

SIR,—Your correspondents have not solved my difficulty. I am a general practitioner, 45 years of age, and have had an upper denture fitted with a gold plate alloy. I am not the least neurotic and am in good health. Would your readers help me by suggesting any treatment to retain my dental plate? I can keep the plate in whilst eating, but almost immediately, when the meal is finished, I have to take it out owing to threatened retching or vomiting. I have tried 10 per cent. novocaine as recommended in THE LANCET recently, but it has not been a success. My mouth is otherwise normal.—I am, Sir, yours faithfully,
MEDICO.
Jan. 3rd, 1925.

NEW ZEALAND PHYSIQUE.

To the Editor of THE LANCET.

SIR,—Darwin mentions a place in South America blessed with matchless facilities for apple growing; not only were the crops unrivalled, but a ship of apple-wood thrust anywhere into the ground was nearly sure to take root and thrive. The influence of the *genius loci* may indeed be of great and peculiar strength, though less in the case of animal than of vegetable life. Still, who would have expected the wet climate of Ireland to suit so thoroughly the Arab-descended thorough-bred horse, or torrid Australia to produce a heavy wool clip, or red deer imported into the New World to double the size of their antlers in a generation? Incontestable human instances of improvement are harder to find, but California has for some time had the reputation of being particularly favourable to the physical development of the northern European, and it now becomes a question, after the familiar successes in this country of the "All Black" Rugby football team, ascribed in the main to superior speed, size, and weight, whether New Zealand should not share this reputation. There are plenty of a priori reasons why it should. Industrialism, that curse to a nation's physique (at any rate as practised in this country, with no smokeless fuel in use and practically no pit-head baths), is nearly absent there. The inhabitants are largely pastoralists, living, since the interior of the country is mountainous, mostly on or near the sea-coast. The advantages of a marine climate, among which has been lately reckoned increased sunshine, from the reinforcement of direct rays on the land by those reflected from the sea, are too well known to repeat. The one adverse factor, the slightly intemperate heat of North Island, is relieved by the sea breezes; it is jocularly said that the citizen of Wellington, the capital, may be distinguished by his habit of automatically clutching at his hat at intervals, to save it from being blown away. The clemency of climate favours, as in California, open-air life; and lastly, New Zealand has a good record in puericulture. The young Antipodean athletes may be congratulated on their successes, and their country upon being the nursery of an admirable physical type. I am Sir, yours faithfully,
GENEALOGIST.
Jan. 3rd, 1925.

An Address

ON

ACUTE DRUNKENNESS.

ITS MEDICO-LEGAL ASPECTS, SYMPTOMS, AND TESTS.

Delivered before the Society for the Study of Intebriety on Jan. 13th, 1925.

BY SIR JAMES PURVES-STEWART, K.C.M.G.,
C.B., M.D. EDIN., F.R.C.P. LOND.,
SENIOR PHYSICIAN TO WESTMINSTER HOSPITAL.

ACCORDING to the Oxford Dictionary, a drunk man is defined as one who is "overcome with liquor." We note that this is not quite synonymous with alcoholic intoxication or poisoning by alcohol, for a person may have taken a mildly toxic dose of alcohol which may be insufficient to overcome him and make him drunk. We naturally inquire at what stage, then, of alcoholic intoxication a person is to be regarded as drunk. This is not a mere dialectic quibble but a very practical question, for, under certain conditions, a drunken person is liable to various legal penalties.

DEFINITION.

Curiously enough, according to Byrne's Law Dictionary, no statutory definition of drunkenness exists, and "a man may be held drunk for the purpose of one offence when he would not be held drunk for the purpose of another offence. The degree of intoxication which would make an engine-driver drunk if he were driving an express train would not make him drunk if he were walking along a country lane." Mr. Serjeant Stephen, in his Commentaries on the Laws of England, defines drunkenness as "that which deprives men of their reason and occasions in them an artificial madness or phrenzy while it lasts." We medical men have to be even more precise. Therefore, with all deference to the learned legal authorities already quoted, I would submit the following definition for consideration:—

"A drunk person is one who has taken alcohol in sufficient quantity to poison his central nervous system, producing in his ordinary processes of reaction to his surroundings a temporary disorder, which causes him to be a nuisance or danger to himself or others."

In the foregoing definition two classes of transient disability are referred to. One, the intoxicated person's personal incapacity, is mainly a medical question; the other (comprising the final phrase of my definition) has to do with the relations of the drunk man to his fellow-citizens and is a medico-legal affair. In the eyes of the law (and here I am strengthened by the opinion of an eminent solicitor, Mr. H. C. Haldane) a prisoner is liable to punishment not for being merely drunk, but for the combined offences of being drunk and disorderly, drunk and incapable, drunk and unfit to drive a motor-car, and so on. I am not aware that there is now any penalty for being drunk, so long as the drunkenness does not inflict harm or risk on other people. In the reign of James I. the offence of drunkenness was an offence against public morals and convenience and was punished (4 Jac. I., Chap. 5, and 21 Jac. I., Chap. 7, Sect. 3) with the forfeiture of 5s. to be paid within one week after conviction to the churchwardens for the use of the poor. These statutes, however, appear to have been repealed by the Licensing Act of 1872 (35 and 36 Vic., Chap. 94, Sect. 12), which runs as follows (the italics are not in the original):—

"Every person found drunk in any highway or other public place, whether a building or not, or on any licensed premises, shall be liable to a penalty not exceeding ten shillings, and on a second conviction within a period of twelve months shall be liable to a penalty not exceeding

twenty shillings, and on a third or subsequent occasion within such period of twelve months shall be liable to a penalty not exceeding forty shillings.

"Every person who in any highway or other public place, whether a building or not, is guilty while drunk of riotous or disorderly behaviour, or who is drunk while in charge on any highway or other public place of any carriage, horse, cattle, or steam-engine, or who is drunk when in possession of any loaded fire-arms, may be apprehended, and shall be liable to a penalty not exceeding forty shillings, or in the discretion of the Court to imprisonment with or without hard labour for any term not exceeding one month.

"Where the Court commits any person to prison for non-payment of any penalty under this section, the Court may order him to be imprisoned with hard labour."

CAUSATION.

Alcoholic intoxication occurs when the quantity of alcohol absorbed becomes enough to poison the central nervous system, according to the above definition, and to disturb its normal reactions. The total amount necessary to produce nervous symptoms varies widely in different cases. Habituation or acquired tolerance to the drug is one factor; the seasoned toper may consume large and increasing quantities daily for many years and may never show any symptoms of drunkenness, whereas a moderate drinker, or still more a habitual teetotaler, will become acutely drunk if he attempts to keep up with him for an hour. The degree of concentration of the alcohol is another factor so self-evident as to require no further discussion. The majority of cases of alcoholic intoxication nowadays are due to spirit drinking; only in a small proportion is it attributable to light wines or beer. Another factor is the relation between drinking alcohol and the taking of food. Alcohol swallowed before or between meals—i.e., unmixed with food—is more rapidly absorbed than when taken with or immediately after food. Incidentally another curious fact is that sometimes the vomiting of alcohol, or of a mixture of food and strong alcohol, instead of preventing the person from becoming drunk, may actually precipitate the symptoms of acute intoxication. This is probably due to removal, during the act of vomiting, of the protective barrier of mucus from the gastric mucous membrane, thereby rendering the residue of alcohol which remains in the stomach more readily absorbed than before. Fatigue and excitement may also be factors in predisposing to rapid alcoholic intoxication. A sudden fall in atmospheric temperature may also precipitate intoxication. Many a man from sad experience hesitates to leave his host's fireside without an escort, owing to vivid memories of previous open-air tragedies. The most rapid method of alcoholic intoxication which I know of is by means of intravascular injection. Needless to say, this is an accidental and very exceptional affair, never self-induced by the patient.

I can recall the case of a restless young man in whom I was injecting absolute alcohol into the stylo-mastoid foramen, for the purpose of inducing temporary facial palsy so as to relieve facial hemispasm. During this injection he suddenly moved his head; consequently some of the alcohol, perhaps 20 or 30 minims, was accidentally delivered into the adjacent structures, probably into the internal carotid artery, conveying it directly to the brain. Within a few seconds symptoms of acute alcoholic intoxication supervened, with mental confusion, singing, shouting, and fighting; these phenomena subsided completely after a few minutes.

SYMPTOMS AND SIGNS.

The symptoms of alcoholic intoxication are familiar to us all (of course, I only mean by the observation of other persons). May I be allowed to recall the most important of the clinical phenomena.

The early effects of alcohol, like those of similar narcotic drugs, vary from one individual to another, affecting different parts of the central nervous system with varying intensity according to each person's special vulnerability. In moderate doses, one of its early effects is to dull the critical and inhibitory centres in the cerebral cortex. Thus the cares and

worries of everyday life are less keenly felt, so that the individual becomes temporarily happier and more sociable. The Old Book tells us how "wine maketh glad the heart of man," and if this were the end-result of alcoholic celebration many people would be none the worse and possibly the better for it. You may know the story of an eminent London physician, now dead, with a huge and complicated practice, who was asked what he did if he came home at night tired out and found an unusually heavy pile of letters waiting for him. He replied: "I drink a half-bottle of champagne at dinner and then I don't care a damn about letters or anything else." Everyone who organises a charity dinner in aid of some benevolent institution knows how alcohol tends to set free the latent generous impulses of the diners. Therefore the subscription list is never sent round until near the end of the banquet, by which time the pangs of hunger are allayed, the happy guests are sipping vintage port and smoking choice cigars, and their generous instincts are no longer subject to the same degree of inhibition as during the less altruistic period of the hors d'œuvres or soup.

Somewhat larger doses of alcohol cause pathological inhibition of various other functions, producing a mild degree of mental confusion or toxic delirium. At this stage some individuals become humorous and hilarious; others become gloomy and quarrelsome. The old dictum, *in vino veritas*, reminds us of the well-established fact that under the influence of excess of alcohol the individual's temperamental and emotional reactions, no longer controlled by the higher inhibitory centres, now reveal themselves to a critical world. One man becomes garrulous and tells stories, funny or otherwise. Another becomes boastful and aggressive, or even "fighting drunk." Another becomes sentimental and lacrymose; Englishmen call this condition maudlin, Scotsmen call it "greetin' fou." In many persons the sexual passions tend to become uncontrolled. This combination of excess in *Baccho et Venere* is familiar, and unhappily accounts for a large proportion of cases where venereal diseases are acquired by persons who in their sober senses would have taken care to avoid such infections.

Besides the higher psychical functions, the lower nerve-centres for muscular coördination, reflex tonus, &c., may also become imperfectly controlled. Thus, for example, the cerebellum may bear the brunt of the poisoning. The familiar reeling gait of acute alcoholic poisoning with inability to walk accurately along a straight and narrow path is typically cerebellar in type; it is accompanied by muscular hypotonia and by a sensation of giddiness, sometimes moderate in degree, in other cases so severe that the patient lies helpless on the ground, distressingly conscious of his condition but unable to raise his head or trunk without the most violent vertigo, causing him to collapse helplessly on the floor. Cerebellar incoördination may be brought to light by a sudden change in posture. Many a guest realises that he has dined not wisely but too well only when the moment comes for him to rise and leave the festal board. Cerebellar ataxia may also appear in the upper limbs when executing fine movements; the returning roysterer's difficulty in inserting the key into the keyhole of his home is part of the stock-in-trade of the comic journals. These ataxic phenomena are unaccompanied by nystagmus, and this would indicate that the cells of the cerebellar cortex rather than the intracerebellar nuclei are mainly disabled by the poison.

Other familiar toxic phenomena are due to disorder of the ponto-bulbar nuclei, notably those for the ocular muscles beneath the floor of the iter and for the articulatory muscles in the lower part of the medulla. The pupils are usually moderately dilated but at this stage still react to light. Double vision is not uncommon. To illustrate alcoholic diplopia, Hughlings Jackson used to tell of a Scotsman who remarked to his friend at the end of a joyous alcoholic evening, "When ye gang oot o' the door, Tam, ye'll see twa cabs. Jist get intae the first yin, for the second yin's no there."

Dysarthria or indistinctness of articulation is another familiar symptom in alcoholic intoxication, well known to the man in the street. The sufferer who tries to pronounce difficult test-phrases, such as "British Constitution," "terminological inexactitude," "sixty-sixth battery of artillery," and so on, sometimes omits a syllable here and there, or slurs his consonants into one another. In other cases he is alert enough to be conscious of his own difficulty and bravely tries to conceal it, but betrays himself by the undue emphasis with which he pronounces his words, sometimes repeating a specially difficult one twice over, to make sure that he can do it.

Alcoholic vomiting sometimes appears at this stage and may tend temporarily to aggravate the nervous symptoms as already explained; in other cases vomiting is postponed until six or seven hours later, accompanied by bursting headache, as the toxic symptoms are wearing off. The smell of the breath, and of the stomach contents if the patient is vomiting, has a characteristic indescribable aroma, probably due to the admixture of alcohol with the pharyngeal and gastric secretions. The smell of alcohol is conclusive evidence that the patient has recently swallowed alcohol but of nothing more, for it may be produced by a single glass of alcoholic refreshment. Nevertheless, uncharitable observers so often place an unkind interpretation on its presence that even temperate City men, so I am told, often chew a couple of cloves after their mid-day glass of sherry as a sort of smoke-screen. Onions, various cheeses, and other aromatics may also serve the same kindly purpose.

Hiccup, myoclonic contraction of diaphragm, is a pathological bulbar reflex due to abnormal excitation of the inspiratory centre. It occurs in cases of poisoning by alcohol, but also from other blood-borne poisons as in uræmia and from various reflex causes. Alcoholic hiccup occurs at an early or only moderately advanced stage of alcohol poisoning and is commonly associated with dysarthria.

A deeper stage of alcoholic poisoning is that of alcoholic stupor, in which the individual is unconscious, with flaccid limbs and trunk, dilated and sluggish pupils, and warm, moist skin; his temperature is subnormal and his breath, as in the lighter stages of poisoning, smells of alcohol. But even here we must be cautious in our diagnosis. The presence of an alcoholic aroma in a comatose patient, although suggestive, is not conclusive evidence that the coma is of alcoholic origin. Firstly, a patient with an attack of cerebral hæmorrhage may have had alcohol given him just at the onset of his symptoms; or whilst drinking alcohol an intercurrent attack of apoplexy may have supervened; or again, he may have fallen and sustained a head injury, producing cerebral compression. Therefore, every patient who is seen in a condition of stupor or coma coexisting with an alcoholic breath, or in surroundings suggestive of alcoholic poisoning, should be carefully examined for other causes of coma. Unilateral signs such as localised paralysis of a limb, an extensor plantar reflex on one side, inequality of the pupils, and so on, would point to a unilateral intracranial lesion. Pin-point pupils suggest either pontine hæmorrhage (often associated with a high temperature), or opium poisoning (with a subnormal temperature and a cold, clammy skin). The urine should be examined to exclude diabetic and uræmic poisoning, whilst various other poisons, especially opium, veronal, and alcohol itself, can be recognised by appropriate tests of the gastric contents, the urine, and even the cerebrospinal fluid, preferably withdrawn by cistern-puncture, if the observer is skilful enough. Typical alcoholic stupor has a less profound degree of unconsciousness than in opium or veronal poisoning or than in cerebral hæmorrhage, for the alcoholic patient can usually be roused temporarily by energetic stimulation. As the alcoholic stupor passes off, it is followed by sleep, from which the patient wakes up with an acute bursting headache, dryness of the mouth (the so-called parrot's tongue), intense thirst, nausea, and sometimes vomiting, after which he begins to feel better. The

cortical symptoms, cerebral and cerebellar, together with the diplopia, the dysarthria, and other ponto-bulbar phenomena which characterised the onset of the process of intoxication, do not recur on the "morning after the night before."

Amongst the rarer paralytic phenomena following acute alcoholic poisoning must be mentioned the tragic one of acute optic atrophy. No case of this sort, so far as I am aware, has yet been recorded in England, but it has been frequently observed in the United States especially since the days of prohibition and extensive smuggling, or as the Americans call it, "boot-legging." It results from the drinking of methylated alcohol or wood-spirit. Such a patient, after recovery from his alcoholic stupor, becomes rapidly and permanently blind owing to acute retro-bulbar degeneration of the optic nerves.

TESTS FOR DRUNKENNESS.

We now come to the practical problem which has to be solved daily—namely, whether a given individual is drunk or not. The diagnosis is often so easy that it is arrived at by what trade-unionists would term unskilled labour—i.e., by non-medical observers. As a matter of fact, in most cases the diagnosis is made by a policeman, who has then to decide whether to take the person into custody, for the safety of the drunk man himself or for that of his fellow-citizens. At the police-station the police officer's diagnosis is confirmed or otherwise by the police surgeon, who may be too open to suggestion. And here I would like to make it perfectly clear that in nine cases out of ten the policeman's diagnosis is correct.

A good deal of loose thinking has been going on upon the subject of so-called tests for drunkenness. With the possible exception of a positive reaction for alcohol in the cerebro-spinal fluid, to which I shall refer later, there is no single clinical sign which is pathognomonic of alcoholic poisoning of the central nervous system, because drunkenness is not a simple clinical entity like a broken bone or a consolidated lung, but a way in which certain nervous tissues react, evidenced by a whole series of transient phenomena following an initial poisoning.

The first question we always have to ask ourselves is, "Has the person recently taken alcohol?" If he has not, we need proceed no farther. If we smell alcohol in his breath, this is *prima facie* evidence of the possibility of alcohol poisoning, but only so far as it goes. And, by the way, it is important that the observer who claims to recognise the smell of alcohol in others, whether he be a police-officer or medical officer, shall himself be free from recent alcoholic consumption. Second, has he taken alcohol in such quantity as to produce disorder of the central nervous system and to render his reactions to the outer world temporarily abnormal? This is where the various so-called tests for drunkenness come in. But it must be remembered that these are not tests for alcoholic poisoning itself, but only for cerebral, cerebellar, ponto-bulbar, or other disorders. Such disorders may be due to alcoholic intoxication, but they may also be produced by various other causes. Take, for example, the common case where a policeman arrests a man for being drunk and incapable in a public place. When asked in the witness-box what was the condition of the accused, the constable usually replies confidently and dogmatically, "He was drunk." If pressed by the court or by the defending counsel to say how he knew that the accused was drunk, he generally says, "He smelt of drink; he was disorderly in his conduct; he spoke indistinctly; and he staggered in walking." Such facts as these are certainly strong presumptive evidence of drunkenness. But, being human, even a policeman may be mistaken, for, apart from the smell of alcohol, everyone of the foregoing evidences of drunkenness may be found in certain persons who are perfectly sober. As crude examples of what I mean, it is easy to understand how an individual with the unsteady gait of locomotor ataxia or of cerebellar or labyrinthine disease, or a patient with dysarthria

from bulbar palsy, palatal deficiency, or even with a stammer, or another who is nervous, angry, or emotionally excited from perfectly legitimate cause, say after a street accident, may quite innocently be charged with being drunk. How are we to avoid such errors? Sometimes by obtaining evidence as to the presence of these disabilities before the onset of the alleged intoxication, and in any case by examining him after the supposed drunkenness has had time to pass away when, if he is suffering from a gross organic lesion, he will still be found to display the same clinical disorders, with the exception that the alcoholic aroma has now faded from his breath "like the snows of yester-year."

A little while ago a medical colleague, who suffers from a large perforation of the palate, together with chronic Eustachian catarrh and frequent labyrinthine vertigo, was driving his motor-car when he had to swerve to avoid someone at a street corner. His car ran on to the side path, bruising the legs of a bystander. As bad luck would have it, he had recently had a glass of gin and vermouth. The police-constable, noticing his alcoholic breath and observing his unsteady gait and indistinct articulation, promptly, and quite reasonably, arrested him. He was accused, and convicted, of being drunk in charge of a motor-car. Only on appeal was he able to establish the facts of his chronic palatal deficiency and recurrent labyrinthine vertigo and to secure acquittal on the charge of drunkenness.

In doubtful cases the court, in my opinion, should insist on a second examination being carried out more frequently than it does at present, which is almost never.

Common Clinical Phenomena Used as Tests.

Let us now briefly consider some of the commoner clinical phenomena employed by medical men as tests in the recognition of drunkenness at a given moment. And once more let me emphasise the fact that these are not in themselves tests for alcoholic poisoning, but merely for cerebral, cerebellar, or ponto-bulbar disorders, as the case may be.

Disorder of the higher cerebral centres may be evidenced by the presence of mental confusion, incoherence of thought and speech, emotional excitement on the one hand or apathy on the other. Sensation may also be disordered so that the patient is relatively insensitive to stimuli, especially painful stimuli, and may cut, bruise, or otherwise injure himself without noticing it. Such cerebral phenomena when transient, of recent origin, and associated with a recent dose of alcohol, are strong presumptive evidence of drunkenness. But we have to bear in mind the possibility that the patient may be habitually emotional or excitable, that he may have recently sustained some acute emotional or physical shock adequate to produce these phenomena in a perfectly sober person, or that the patient may be actually insane.

Cerebellar disorder is recognised by its characteristic incoördination of voluntary movement and by its muscular hypotonia. It is most readily detected in the lower limbs. The reeling cerebellar gait, whether from alcoholic poisoning or from other causes, is noticeable by onlookers and sometimes by the patient himself, who takes "more than his share of the pavement." Amongst the common manoeuvres for eliciting the presence of cerebellar ataxia, a favourite one is to ask the patient to walk along a straight and narrow path, then to turn quickly and come back again. The more difficult feat of walking heel-and-toe along a chalk line is an entirely artificial test which quite a number of sober persons may fail to accomplish. Failure to stand on one leg with the eyes shut, of which I have recently read as a supposed test of cerebellar disorder, is a mild acrobatic feat which the most sober of us might easily fail to execute during the emotional excitement following police arrest. The most exemplary abstainer may well feel apprehensive if he falls into the hands of a medical officer who exacts so high a standard of cerebellar efficiency.

Cerebellar ataxia of the upper limbs is conveniently tested by asking the patient to place one finger quickly on our own finger-tip, or to raise a glass of

fluid (water, of course) to his lips, or to carry out the more domestic ordeal of putting a key into its keyhole. In cerebellar disorder these movements are performed jerkily, partly owing to deficient muscular tonus and partly from inability correctly to estimate the range, so that the patient cannot arrest the movement at the desired target but either plunges past it, or may underestimate the range of movement and stops short before reaching the mark, finally swooping down on it with excessive force.

Tabetic ataxia of the lower limbs may be mistaken for drunkenness, but only by a careless medical observer. Unlike cerebellar ataxia, tabetic ataxia is aggravated by closing the eyes. Absence of the ankle-jerks and usually also of the knee-jerks, together with the condition of the pupils, &c., will usually prevent a mistaken diagnosis of this sort.

Turning now to the phenomena of *ponto-bulbar disorder*, dilatation of the pupils is a sign upon which considerable emphasis has often been laid. In my opinion, its importance is often exaggerated; the pupillary dilatation in alcoholic intoxication is usually moderate in degree, and in slighter degrees of intoxication sometimes absent. In alcoholic stupor, on the other hand, dilatation of the pupils is the rule with sluggish response to light.

A few days ago, when sitting at a table in a Pullman carriage, during a short railway journey of an hour and a half, I found myself opposite a fellow-passenger who consumed, under my own eyes, five large whiskies-and-sodas in rapid succession, thereby incidentally providing me with an opportunity of studying with ease and comfort the onset of toxic nervous phenomena. Towards the end of the journey he became mentally confused, happy, noisy, and slightly dysarthric. As he leaned hospitably across the table to offer me, although a complete stranger, the compliments of the season, I carefully observed his pupils; they were not dilated and reacted normally to light.

Transient weakness of the external ocular muscles is frequently produced during the process of alcohol poisoning. In its milder degrees it manifests itself by deficient power of convergence, and when combined with mild cerebral symptoms which so frequently coexist, this helps to account for the drunk man's difficulty in visual fixation and for his characteristic fatuous look. A somewhat greater degree of weakness of the ocular muscles produces double vision, a symptom which usually impresses itself even on the sufferer's fuddled consciousness. Disorder of lower bulbar nuclei may produce temporary indistinctness of articulation or dysarthria. We must be careful to exclude dysarthria from various organic causes, whether in the brain-stem or bulbar nerves, or in the palate, lips, or tongue. Moreover, ocular and bulbar symptoms, not unlike those of alcoholic poisoning, varying in degree and sometimes of transient duration, are also met with in *myasthenia gravis*, admittedly a rare disease.

Amongst the *vascular and visceral phenomena* indicative of disorder of the vegetative nerve-cells, some of which are situated within the brain-stem, we may mention the flushed face, rapid pulse, and warm, sweating skin, also the occurrence of salivation and vomiting, although this latter symptom may be partly gastric in origin.

The pupils, when they happen to be dilated, still preserve their reaction to light, contrasted with the extremely dilated and insensitive pupils of poisoning by belladonna, hyoscine, and similar drugs.

Disorder of the reflexes, in my opinion, is of no practical value in the recognition of alcoholic poisoning. Exaggeration of the knee-jerks and other deep reflexes is sometimes mentioned by medical officers as a sign indicating acute alcoholic poisoning, but the degree of briskness of these reflexes varies so widely in normal individuals that we cannot regard their exaggeration as of any diagnostic significance. Ankle clonus never occurs from acute alcoholic poisoning; nor do we find extensor plantar responses, which may be present in uræmic coma or that of poisoning by opium, sulphonal, veronal, or coal-gas.

UNCONSCIOUS STAGE OF ALCOHOLIC INTOXICATION.

In the deepest stage of alcoholic intoxication, when the whole brain is inactive with the exception of the vital medullary centres, there results a condition in which the patient is unconscious with flaccid limbs and trunk. The depth of unconsciousness ranges from stupor to coma, according to whether the patient can be roused from his unconsciousness or not by energetic stimuli. In profound alcoholic poisoning stupor and not coma is what we find, even when the patient is what is called "dead drunk." In recognising the cause of such unconsciousness the *smell of the breath* is of value, with certain limitations to which I have already referred. Alcoholic stupor is usually associated with a warm, moist skin, and accompanied by the characteristic alcoholic odour, coexisting with fairly wide dilatation of the pupils, which still react to a bright light. The odour of the breath may point to poisons other than alcohol. The smell of opium is characteristic when laudanum has been taken by the mouth, and in opium or morphine poisoning the pupils are closely contracted. The toxic coma of uræmia is often accompanied by a urinous odour in the breath and that of diabetic coma by the sweet hay-like smell of acetone.

Analysis of the urine is helpful in cases of deep unconsciousness. In alcoholic poisoning alcohol can be detected by adding bichromate of potassium solution followed by a few drops of strong sulphuric acid; if alcohol is present, a bright green colour appears, together with a smell of aldehyde. Another simple test is by adding an equal quantity of a strong solution of iodine in iodide of potassium, followed by a few drops of caustic potash, drop by drop, until the iodine is decolorised. Iodoform crystals are produced, accompanied by a characteristic odour. Other substances should also be looked for in the urine in cases of unconsciousness. Patients with diabetic coma will show not only sugar but also oxybutyric acid, aceto-acetic acid, and acetone. The presence of albumin, on the other hand, together with casts and epithelial elements, is suggestive of uræmic coma, although in some cases of interstitial nephritis albumin and casts may be scanty or absent.

Tests can also be carried out on the *cerebro-spinal fluid*. To my mind the presence of alcohol in the cerebro-spinal fluid is really the only sign at our disposal which can be regarded as pathognomonic. If positive, it is conclusive evidence of alcoholic poisoning which has actually reached the central nervous system. Unfortunately, it is not always feasible to carry out lumbar or, still more, cistern puncture. Through the kindness of my house physician, Dr. J. G. Wilson, I have recently had the cerebro-spinal fluid analysed for alcohol in three recent cases of severe alcoholic poisoning, with a positive result in each case. Incidentally, in uræmic coma urea is present in excess in the cerebro-spinal fluid and an excess of sugar in diabetic coma.

SUMMARY OF DIAGNOSTIC PROCEDURE.

Let me here offer a short summary of the procedure suitable to be adopted when we are called to see a comatose patient:—

First we inquire into the history, as to the patient's previous health, whether he has recently had a head injury, under what circumstances he was discovered to be unconscious, whether the unconsciousness was sudden or gradual in onset and whether it was preceded by other symptoms such as convulsions or headache. We then examine the patient, feel the head for signs of injury, smell the breath, examine the pupils, noting their size, equality or inequality, and their reaction to light. We examine the heart and note the character and frequency of the pulse and respirations. We note the radial systolic blood pressure and measure it by a manometer if possible. We observe whether the face is symmetrical or not, and whether there is conjugate deviation of the head and eyes in any direction. The optic discs and fundi should be examined in all cases of coma or stupor. We lift the limbs in turn and let them fall, observing whether

there is any difference between the flaccidity of the two sides. We test the knee- and ankle-jerks and examine the plantar and abdominal reflexes on both sides. Then we pass a catheter, draw off the urine, note its specific gravity, and test it for albumin, for sugar, and for acetone. Finally we note the temperature in both axillæ, and in all doubtful cases we perform a lumbar or cistern puncture and examine the cerebro-spinal fluid. In patients from malarious districts we should also examine a blood-film for the malaria parasite.

Looking back on the successive stages of alcoholic poisoning of the nervous system, it is evident that the average case of drunkenness presents little or no difficulty in diagnosis. The really difficult cases are at the two extremes of the series—namely, those in which the impairment of cerebral function is very slight and those in which it is so profound as to cause deep unconsciousness or stupor.

Let us take the slighter cases first. In such cases two distinct and successive facts must be proved to have occurred in order to establish a diagnosis of drunkenness. First, it must be shown that the person has recently taken alcohol. The immediate antecedent history of the case, the surroundings under which the person came under observation by the police, the alcoholic odour of the person's breath, are all suggestive, so far as they go, but not conclusive. Whilst a drunken man's breath will usually smell of alcohol, so may a perfectly sober man's, otherwise it would be dangerous for an archbishop to drink a glass of sherry with his lunch. Conversely, the absence of alcoholic odour in the breath, so far as it goes, is against the presence of alcoholic poisoning. Second, the reactions of the person's central nervous system to his surroundings must be shown to be temporarily so disordered as to be injurious to himself or others.

If a person already suffers from disease of the central nervous system, thereby presenting corresponding cerebral, cerebellar, ponto-bulbar, or other symptoms, and happens to come under observation after taking alcohol in the most moderate amount, he may easily be the victim of an injustice. But in such a patient the phenomena will not be temporary; they will be present both before and after the alleged alcoholic poisoning. Apart from pre-existing diseases of the nervous system, even anatomical abnormalities, such as deformities of the lower limbs, have been known to give rise to mistakes. I remember the case of a taxi-driver with deformed feet who had the misfortune to be arrested on a cold winter's night outside a bar after consuming a single glass of ginger wine. A police officer, quite reasonably, suspected him of being drunk, but subsequent investigation showed that the man's deformity was the adequate cause of his chronic insecurity of gait.

Excluding people with pre-existing disabilities of various sorts, and coming to temporary disorders of function, we have a class of persons in whom transient excitement—e.g., the fact of being arrested—may simulate alcoholic poisoning of the central nervous system. This is really the most difficult case of all. Where the decision is doubtful, it is the duty of the medical officer, resisting the human tendency to corroborate without careful consideration the snapshot diagnosis of the police-constable, to give the patient the benefit of the doubt. And I am sure that many medical officers do pursue this course. If an excited person, examined in the humiliating environment of a police-station, is nevertheless able to give a clear and coherent account of his recent doings, his transient excitement and indignation are not necessarily evidence of toxic cortical disorder. If his breath does not smell of alcohol, this is in favour of sobriety; on the other hand, if it does smell of alcohol, this, so far as it goes, is in favour of alcoholic poisoning. But again I would insist that even the combination of an alcoholic odour with emotional excitement is not sufficient evidence of cerebral disorder due to alcohol.

Matters are different, however, in cases where, superadded to the alcoholic breath and emotional excitement, we have, as is so commonly found, incoherence of thought and speech together with

signs of temporary cerebellar and ponto-bulbar disorder. Unsteadiness of the limbs, evidenced by a staggering gait and by difficulty in performing coördinated movements such as pointing to or picking up a small object, true dysarthria, known to be different from the sufferer's ordinary articulation, and diplopia, if it can be demonstrated, are, all of them, definite evidence of disorder of central nervous mechanisms. Accessory phenomena, inconclusive by themselves, such as hiccup, a warm, moist skin, flushing of the face, &c., are valuable corroborative signs. To my mind the best physical evidence of all is a positive reaction for alcohol in the cerebro-spinal fluid. It must be admitted, however, that few persons are likely to submit voluntarily, and fewer still are likely to volunteer, to have this valuable diagnostic procedure carried out.

In the deeper stages of alcoholic poisoning where stupor has supervened, the history and surroundings of the case, together with the appearance of the patient are usually characteristic, but we must always be careful to exclude the possibility of other varieties of coma, not only from outside poisons (such as opium, veronal, ether, the late stages of belladonna and hyoscine poisoning, and so on), but from auto-genous toxins as in diabetic and uræmic coma. Gross vascular lesions must also be borne in mind, such as cerebral or pontine hæmorrhage, and traumatic lesions, as in head injuries.

There is no short cut to accurate diagnosis. Our only safe guide is by means of careful and systematic clinical examination. The main difference between a superior medical opinion and one which is less valuable, is not that the one man necessarily knows so much more than the other, but that he is wise enough to make a more careful and more accurate examination of his cases.

The Relation

OF

MEDICINE TO THE NATURAL SCIENCES.

A Presidential Address delivered to the Science Masters' Association on Jan. 5th, 1925.

BY SIR BERKELEY MOYNIHAN, BART.,
K.C.M.G., F.R.C.S. ENG.,

PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF LEEDS.

[In the earlier sections of his address Sir Berkeley Moynihan traced from prehistoric times, through Grecian and Roman civilisation, the concept and development of the scientific idea—"the idea that the world in which we live is governed by laws, that the laws can be formulated by a close observation of their methods of working and by their failures to work, and that by experiment the processes by which they work can be tested." He then showed how the science of the Greeks from the first to the last was the child of Medicine; Hippocrates was the true originator of inductive logic, but his followers for centuries added nothing to the science or the art of medicine, being only concerned with following uncritically the teachings of the master. He alluded to the one great exception to an acquiescence in tradition which marked five centuries—namely, the famous anatomical work done at Alexandria. Later came the experimental work of Galen, the parent of the deductive method, and he with Hippocrates ruled the science of medicine until at the Renaissance, Bologna, Padua, and Salerno became centres for the study of medicine. There followed a great development of natural science largely due to medicine, which, said Sir Berkeley Moynihan, "has in truth proved the fairy godmother of many of the natural sciences," for Copernicus, whose views were later confirmed by Galileo, was a medical man, and William Gilbert, the

author of "De Magnete" and the founder in modern times of experimental science, was also a physician. Among famous chemists and physicists who have been doctors of medicine, the lecturer mentioned Robert Boyle, John Mayow, Boerhaave, W. H. Wollaston, the inventor of the reflecting goniometer, and Young, who revived and established the undulatory theory of light and unlocked by the Rosetta stone the mystery of hieroglyphics. To these may be added the Florentine physician known as Steno, the discoverer of the parotid duct, who was a pioneer in mineralogy, while the famous Linnæus was a Doctor of Medicine. Sir Berkeley Moynihan continued:—]

The influence of medicine, and of the training that a career of medicine necessarily involved, has therefore been very considerable in the creation and in the development of many of the natural sciences. Yet for several centuries the growth of medicine hardly kept pace with the slowest of its intellectual children. For despite a few but most conspicuous exceptions the methods were sterile methods; they were deliberately designed to search the ancient written words, and were timorous or disdainful of contact with the raw truths of daily experience. A search in the common law, however industrious, and however ingenious and protracted, can reveal nothing that is not therein contained. Criticism, exposition, interpretation, correlation of any text, however honoured, can never lead to discovery; no creative act is thereby involved. And medicine for generations was turned in upon itself, and sought no new experience.

It is not difficult now to see some reasons for this long delay. In organic diseases there are structural changes in the tissues. These structural changes had never yet been studied with care, because of the indignity of manual employment, nor had any of the morbid parts been submitted to examination by the microscope. The science of pathological anatomy created by Morgagni (1682-1771) and by John Hunter gave for the first time the opportunities of correlating the symptoms observed during the lifetime of a patient with the changes found on examination of the body after death. To examine these changes during the life-time of the patient was not possible, for every wound was serious, and any opening of a body cavity almost inevitably fatal. Lister's work, founded upon and inspired by the work of Pasteur, made all surgical procedures safe, and gave to surgery the strongest weapon ever forged, not only for the relief and cure of disease, but also for the pursuit of a purposeful inquiry into structural changes in the bodies of those afflicted by disease, in an early stage of the morbid changes. So at last the two methods of scientific inquiry, after so long a divorce, came together. Observation could be tested by inquiry into the pathological changes then present; and analogical research could now safely be conducted upon the bodies of animals.

THE EXPERIMENTAL METHOD IN MEDICINE.

The tendency in modern medicine is unhappily threatening to go astray. The methods of experiment, necessary though they are to all right and rapid progress, have been given an undue relative importance and have been regarded as the chief, or even the only, means by which truth can be discovered or established. In the physical sciences observation, hypothesis, and experiment are, perhaps, the whole story, and of chemistry, which seems more and more to become a province of physics, the same is true. In other sciences experiment may play no great part, our knowledge being chiefly gained by observation, and by a steady, if slow, progress from individual and isolated truths to a universal law. Of such geology is, perhaps, the best example. In medicine there should be a close confederacy between observation and experiment; but in observation there lie difficulties far greater than in any other science, and in experiment we may often argue only by an analogy. To observe with accuracy in the physical sciences is a matter which chiefly concerns the trained observer; the cold facts presented are there, without distortion and

free from gloss; power of perception and of interpretation, patience, and strict intellectual integrity on the part of the recorder are the chief qualities required. In medicine the conditions are not presented with the same simplicity. The symptoms, and even sometimes the signs, of disease are coloured by the personality of a patient, and may be hidden behind a veil that at first seems quite impenetrable. To elicit a true anamnesis demands, not seldom, the most inexhaustible patience, the most acute perception of relevancies; an accurate measurement of those deflections from truth which are the unconscious results of a patient's temperament or fleeting emotions; the re-examination of first impressions in the light of later revelations, each step being taken without prejudice. All this is more anxious and more difficult than any placid observations carried out in the laboratories, and needs a different and, I hold, a far sterner training. The close and continued observation of a multitude of facts, at first apparently disjointed and irrelevant, each captured only by surmounting difficulties that may baffle one repeatedly; the exercise of an unbiased faculty of reason upon all these until each takes its true place in the series, and the combination of observed and appraised truths into an accurate diagnosis or prognosis may require the full exercise of the powers of the mind. The Hippocratic method still finds an arduous and its noblest use in the science and in the art of medicine. When so much has been won from ignorance each step in the progress may then be tested, illustrated, or explained by experiment. We must, as Harvey said, seek out the secrets of Nature by way of experiment. But, again, it is only observation that discovers exactly where the secrets lie, what the experiment should be, and precisely what it is asked to explain. Yet experiment upon animals in the laboratory touching any knowledge gained by contact with the disease of man may be open to error. Such experiment is necessary upon a scale far larger than any upon which we in this country are permitted to engage. The lessons to be learnt are innumerable and of high value. But we must not repeat the error of Galen, and argue "analogically" with too ready an acceptance of the accuracy of the analogy. Experiments may and do reveal much of the intricate processes of physiology, but in pathology their value is a little restricted. So many factors enter into the origin, the course, and the interpretation of disease in man that nothing exactly similar can be expected to occur in animals. This warning seems necessary. For close as the relationship between laboratory methods and clinical experience should continue to be, we cannot fail to recognise that it is clinical experience which must govern our decisions, and that laboratory methods are chiefly necessary as auxiliaries and as illustrations rather than as final and controlling influences. We have not proved ourselves free from the grave error of allowing the clear and irrefutable evidences of clinical experience to be placed in a position of subservience to the disclosures of the laboratory. The proof of the validity of laboratory works in connexion with human diseases is not their success in the test-tube or retort, but in the effects witnessed when applied to the patient in clinical work. The physician or the surgeon must needs pay due regard to all the help that can be gained by the researches, the tests, the relevant experiments of the laboratories; but the right appraisal of the value of each, and the use of the knowledge so placed at his disposal are his responsibility alone. For a disease is not the sum of its symptoms, nor of its chemical or microbic reactions, but is a morbid state in a living patient; and it is in dealing with his patient, when fully cognisant of all that can be learnt of him, that the physician proves his power.

SURGERY: ITS HIGHEST FORM.

The highest form of the experimental method in medicine is that which surgery offers. As by swift changes surgery has grown safer and still more safe, until at last it can be claimed that a further increase

of safety for the patient can only depend upon an earlier access of the surgeon to him, the therapeutic side of our craft has not remained the only one. Surgery is now a strong arm of research, and has accomplished much in many directions. In the last half century the operation theatre has proved to be a most procreant laboratory. Our knowledge of all abdominal diseases has been so greatly and so quickly changed by operative research, that a complete revolution in thought and in action has resulted. I can think of few researches which compare either in scientific or in therapeutic importance with those which have been made by the surgeon during the last 50 years. Certainly no more fruitful combination of the inductive method with the method of apposite and felicitous experiment has ever been known. We look forward now to a time of help from our laboratory associates which may bring us to an understanding of the causes of those local diseases whose consequences alone are eradicated or rendered less injurious by the operations we perform. The first step at least has already been won by the surgeon in demonstrating the inter-relation of various morbid states, but the task remains to be carried on, and perhaps solved, by the methods of the laboratory along lines which our clinical experience will indicate as necessary. Experimental methods may offer us the proof of a truth which clinical observation has already confidently recognised. Every Arctic explorer, for example, knew of the necessity for certain ingredients in the dietary of his shipmates. Gowland Hopkins has given the reason of the ancient experience in terms of vitamins. On a large scale among our troops in Mesopotamia the application of this new knowledge received the clearest illustrations. Among the Indian troops an absence of "C" vitamin involved 20,000 men in an attack of scurvy; and among the British troops an absence of "B" vitamin caused a heavy incidence of beri-beri. Had such occurrences taken place at the time of the South African war an explanation, true in essentials, would no doubt have been forthcoming: but there would have been no approach to the precise and accurate and demonstrable explanation which the work of Gowland Hopkins now allows us confidently to offer. It may be that we expect too much at first from laboratory methods. One of the new weapons put by them into our hands is that of vaccine therapy. No one can deny the occasional value, and at certain times the incomparable value, of this procedure; nor can any deny the grave disappointments which have so frequently attended its adoption. The hypothesis upon which it is based is probably very incomplete and many new aspects of a great truth remain to be discovered. But so far as focal infections are concerned our trust is still in operative treatment. The great triumph of vaccine therapy is in prophylaxis, which is difficult to measure in the individual case but easy to recognise in the mass. The complete record of the incidence of enteric fever in our own army, and in other armies in the last war, is evidence enough to convince the most sceptical.

EXAMPLES: CANCER AND TUBERCLE.

At this moment there are laboratories all over the world engaged in cancer research. The quest is for the cause of cancer. We do not know whether a micro-organism is sometimes, or never, or always, the agent: whether a habit of body, or a congenital disposition, or a mode of life contributes something to a larger causative influence. We do know that repeated minor insults to certain surfaces will produce a local response which, though not at first cancerous, makes haste to become so. If the cause of cancer is discovered we may learn how to prevent cancer, or even be brought to realise that there is a method of cure which directly depends upon our knowledge of the cause. But let us never forget that we already know how to eradicate cancer from almost all the parts of the body in which it commonly occurs. Nothing is more certain in clinical experience than this: that cancer, whatever its occult nature may be, is in truth a local disease in the first instance; that it

remains a local disease for periods which are sometimes short and sometimes very long, and that if then treated by operative methods upon a plan conformable to modern notions the disease is completely and permanently eradicated. The unending difficulty is to obtain access to the disease while it is still in the local stage. This, I venture to assert, imposes a new and larger duty upon the profession of medicine, the duty to enlighten the public as to the early symptoms and signs and to make it a matter of common knowledge that cancer is not, as everyone supposes, a disease from whose immediate or recurrent ravages there is no escape. We must broadcast the truth that, with few exceptions, an early operation for any cancerous disease is attended by the slightest risk, if, indeed, by any, and may confidently be expected to confer a permanent immunity from a return of the same disease. We do not know the cause, or causes, of cancer, but we do certainly know how to "cure" it, if only early opportunities are vouchsafed to us.

We most gratefully pay our tribute to Koch for his discovery of the tubercle bacillus. A knowledge of the existence of this organism, of its properties, of its causative influence in those "strumous" diseases whose exact nature was formerly unsuspected is all to the good. But our therapeutic power has not been increased by our recognition of the existence of the bacillus. No chemical attack made upon the bacillus while in the living body can destroy it, and the extent to which, if at all, we can augment the defensive powers of the body by any vaccine therapy is quite uncertain. The measures we adopt in the treatment both of the medical and of the surgical forms of tuberculosis are really independent of our acquaintance with the properties of the bacillus; they are measures which clinical experience little by little has indicated and improved. In other diseases, as in tetanus and in diphtheria, our therapeutic efficiency depends almost entirely upon the knowledge of their specific bacterial origin. All the efforts of all of us in league together are therefore necessary in our struggle against every disease, and we must surely base our strength not less upon the methods of the father of the inductive sciences, Hippocrates, than upon Galen, the father of the experimental method.

FEEDING OF THE ABNORMAL BABY BY THE SO-CALLED TRUBY KING METHODS.

A REVIEW OF THIRTY-NINE CASES.

BY MILDRED M. BURGESS, M.D. LOND.

THE object of this paper is to endeavour to show that however reasonable and scientific the theory that the formula of a baby's feed should bear a close analogy to that of human milk, it fails in many cases in its practical application, particularly in the abnormal baby. After a considerable experience in percentage feeding, I am forced to the conclusion that there is something more in human milk than is expressed in its percentage formula and caloric value, and that until we find a fat that can be tolerated by the infant we are doing incalculable harm to the infant population by insisting on a strict adherence to percentage feeding.

The 39 cases described below passed through the infants' ward of a babies' dietetic hospital during 1923. The remaining cases in the ward are not considered for various reasons; some were non-dietetic cases, some prematures, some on a new dried milk, in some the stay was too short for a satisfactory test, and some died from causes other than dietetic.

This paper contains: (a) A brief description of the methods adopted; (b) a summary of the cases under observation; (c) criticisms and deductions drawn from the results of the treatment.

Methods of Feeding Adopted.

The treatment (feeding) was carried out as closely as possible to the routine methods taught by the advocates of the system, and we had the advantage of a nursing staff trained in these methods. In every case the cause of admission was nutritional or dietetic—e.g., wasting, not getting on, screaming, sudden weaning, dyspepsia, or difficult feeding. In the majority of cases not one, but many of the above troubles were present. On admission the baby was weighed and a food chosen from one of the formulæ given below (usually H.M. III.) with no added fat. The amounts were regulated by a comparison with the previous feeding (if known) and by a consideration of the baby's theoretical food requirements. If the stools were unsatisfactory a dose of castor oil was given.

*Formulæ.**H.M. III. (New Formula).*

	Sug.	Fat.	Prot.
Milk, 8 oz.			
Lime water, 1½ oz.	P.c. comp.	6.9 . . . 3.3 . . . 1.3	
Lactose, 8 tsf., or cane sugar,	N.a.f.	6.9 . . . 1.4 . . . 1.3	
6 tsf., or dextri-maltose,	Cal. value	18.8 per oz.	
10 tsf.	N.a.f.	13.3 . . .	
Cod-liver oil emulsion, 5 level			
tsf. in 24 hrs.			
Water to 20 oz.			

H.M. III. (Old Formula).

	Sug.	Fat.	Prot.
Milk, 10 oz.			
Lime water, 1½ oz.	P.c. comp.	6.9 . . . 3.4 . . . 1.6	
Lactose, 7 level tsf., or cane	N.a.f.	6.9 . . . 1.7 . . . 1.6	
sugar, 5½ level tsf., or dextri-	Cal. value	19.6 per oz.	
maltose, 9 level tsf.	N.a.f.	13.9 . . .	
50 % C.L.O. emulsion, 4 tsf.			
in 24 hrs.			
Water to 20 oz.			

H.M. I.

	Sug.	Fat.	Prot.
Milk, 6 oz.			
Whey, 6½ oz.	P.c. comp.	7.1 . . . 3.1 . . . 1.3	
Lime water, 1 oz.	N.a.f.	7.1 . . . 1.4 . . . 1.3	
Lactose, 6½ tsf.	Cal. value	18.6 per oz.	
50 % C.L.O. emulsion, ½ oz. =	N.a.f.	12.6 . . .	
4 tsf.			
Water to 20 oz.			

R. K. (Ideal).

	Sug.	Fat.	Prot.
Ideal milk, 3½ oz. 1 oz. =			
6 tsf.	P.c. comp.	7.5 . . . 3.0 . . . 1.4	
Lactose, 1½ oz. = 9 tsf.	N.a.f.	7.5 . . . 1.4 . . . 1.4	
50 % C.L.O. emulsion, ½ oz.	Cal. value	18.5 per oz.	
Water to 20 oz.	N.a.f.	14.1 . . .	

Modified Dried Milk.

	Sug.	Fat.	Prot.
Cow and Gate, 1½ oz.			
Cane sugar, 1½ oz.	P.c. comp.	7.1 . . . 3.1 . . . 1.5	
50 % C.L.O. emulsion, 1 oz.	Cal. value	18.25 per oz.	
Water up to 30 oz.			

P.c. comp. = Percentage composition. Cal. = Caloric.
N.a.f. = No added fat. Tsf. = Teaspoonfuls.

Orange or lemon juice was given daily and an abundance of plain boiled water.

Value of Boiled Breast Milk.—Breast milk was resorted to when all modifications failed, or if a baby became very ill. It was given in 19 of the 39 cases. An interesting point emerging from this analysis is the value of boiled breast milk. The milk was taken from healthy mothers at lying-in hospitals and to render it sterile it was boiled. It was given in the bottle added to the milk mixture. A curious fact is that the boiling seemed to have no deleterious effect on its value, thereby rather contradicting our previous opinion that one of the chief advantages of breast milk is that it comes straight from the mother to the child unaltered by sterilisation. In the majority of cases a few ounces only were given in the 24 hours, the "dose" being almost medicinal in some cases, and yet in a very large number of cases the effect on the child's digestive organs was rapid, satisfactory and permanent. In some cases, after only a few days' supply of breast milk, fat could be borne where previously it could not be tolerated. Whether some risks are not attendant on its use is another matter.

Ordinary cases were put on to H.M. III. (old formula), plain or peptonised. More difficult cases had Ideal milk, and a few were given whey and milk. Dried milk was used in a few cases. The ideal was to grade all modifications gradually on to H.M. III.

After 6 months of age Bengers' food was given in some cases, but the babies were graded off this before they were discharged.

There is no indication that any particular food was responsible for the breakdowns, although cow's milk was found to be rather more difficult of digestion than Ideal. Ideal was rarely used at the start, but after a breakdown the baby was sometimes put on to this.

The fat was given in the form of cod-liver oil emulsion (50 per cent.), prepared by a Grimsby firm. The amounts introduced started with 1½ oz. in the 24 hours, divided as nearly as possible between each feed, and the increases were made by 1½ oz. (sometimes 1/6) at intervals of a varying number of days. Not more than 1½ oz. was given in the 24 hours. When a breakdown occurred, as was shown by relaxed, curdy stools with or without vomiting, the fat was omitted or reduced, but as soon as the stools became normal again the fat was reintroduced, beginning with the smallest amount.

I am of opinion that in these cases the "curds" passed in the stools were invariably fat and not protein. They were soft and easily smoothed out. These so-called "curds" sometimes occurred even when the baby was on a fully peptonised or pancreatised food.

The baby was weighed twice weekly, and the actual caloric value of the food given, compared with its theoretical caloric value, was worked out each week. The temperature, pulse-rate, and respiration-rate, the number and consistence of the stools, and vomiting (if present) were recorded daily, and a note made of the amount of fat that was being given in the 24 hours. The careful records kept have made this analysis possible. The nursing was excellent, the handling and hygienic management of the babies were beyond criticism, and the enthusiasm and devotion of the nursing staff deserve the highest praise.

Principles of Treatment.

The general principles of the treatment are: (1) The percentages of the elements in the feed must be known, and such percentages must approximate to those of human milk; (2) the actual caloric value of the feed should approximate to the theoretical caloric requirements of the baby, although in marasmic babies the actual caloric value may be raised up to half as much again as the theoretical. The percentages in cow's milk were brought to those of human milk by dilution with water, the addition of fat in the form of cod-liver oil, and milk sugar or dextri-maltose. The actual and theoretical caloric values were worked out by means of a series of special tables.

Analysis of 39 Cases.

Uninterrupted recovery	3
Did well but fat had to be omitted or reduced	6
Broke down on fat once	10
" " twice	6
" " three times	3
Might have done better under other treatment	6
Died	5

*CLINICAL RECORDS.**1. Cases that made an Uninterrupted Recovery.*

No. 22.—M., aged 2 months. Admitted for losing weight. Put on to Cow and Gate (modified), graded to H.M. III. Fat increased from 1/12 oz. on 5th day to 7/12 on 30th day. Gain in weight, 9½ oz. in 31 days.

No. 30.—M., aged 7 months. A very bad home; admitted for wasting. On H.M. III. Fat increased from 1/12 to ½ oz. on discharge. Gain in weight, 13½ oz. in 21 days.

2. Cases that did Well but Fat had to be Omitted or Reduced.

No. 6.—M., aged 5 months. At first put on to Ideal, then pancreatised H.M. III., and later H.M. III. and barley-water. Admitted for wasting. Had diarrhoea and vomiting from 18th–22nd day and fat reduced. Otherwise he made continuous progress. Fat was raised from 1.4 per cent. to 2.6 per cent. and reduced to 1.4 per cent. on 19th day. It was raised to 3.4 per cent. by 54th day. Gain in weight, 5 lb. 7 oz. in 170 days.

No. 42.—M., aged 3 months. Fat introduced on 4th day and increased till 18th. Breakdown occurred from 11th–18th day. Breast milk had to be given from 13th to 17th day owing to loss in weight, relaxed stools and slight vomiting. Great improvement noted subsequently when food increased,

thereby raising caloric value and percentage of protein. Gain in weight, 1 lb. 4½ oz. in 55 days.

No. 29.—F., aged 3½ months. Fat introduced 1st day. Partial breakdown 7th–37th day. Stools were frequent, greenish, and relaxed till fat reduced from 1 oz. to ½ and again to ¼ and a higher percentage of milk given in the mixture, thus increasing the percentage of protein. Gain in weight satisfactory throughout, 1 lb. 9½ oz. in 53 days.

No. 43.—F., aged 5 months. Fat introduced 8th day and increased every few days till 33rd day. Breakdown occurred 29th–37th day. Fat taken out 34th day, reintroduced on 40th day. Admitted for vomiting and put on to diluted feeds. Fat undoubtedly increased too rapidly. Gain in weight, 8½ oz. in 47 days.

3. Cases that Broke Down on Fat Once.

No. 13.—M., aged 4½ months. Stools normal on admission; fat introduced on 5th day and increased rapidly up to ½ oz., although weight satisfactorily increasing, and an indication noted in stools that breakdown might occur. Fat was not omitted till six days after the stools became bad. After 29th day fat reintroduced but stools became relaxed again and vomiting occurred occasionally. On 52nd day food was increased and again on 75th day and fat was borne well. Improvement noted after the baby was 6 months old. Gain in weight, 3 lb. 15½ oz. in 108 days. If fat had been introduced more slowly, probably no breakdown would have occurred.

No. 34.—M., aged 3½ months. Fat introduced 4th day and increased on 7th. Breakdown 5th–16th day. Fat taken out 15th day, reintroduced on the 29th and increased every few days till 64th day. Stools normal on admission. After the breakdown stools did not become normal and occasional vomiting occurred, although weight improved. Later satisfactory progress was made till 60th day, when fat increased to 1 oz. (although 5½ oz. gain in weight since last weighing) and vomiting recurred. A further increase to 1 1/12 oz. caused three large vomits. Till discharge there was a tendency to vomiting and food was left. This is a case where more fat was introduced, although weight was already on the increase. Gain in weight, 2 lb. 9½ oz. in 89 days.

No. 41.—F., aged 5 months. Fat introduced 1st day. Breakdown 1st–9th day. Fat taken out 3rd day, but reintroduced on 15th and increased every few days till 57th. Stools frequent with curds till 6th day, then less frequent but curdy till 9th day, when food increased; 16th day food increased again. On 25th day grading to cow's milk from Ideal started and by 48th day cow's milk entirely substituted and food increased. Owing to increase in fat taking place on 56th and on 57th day, stools became relaxed and fat was reduced on 60th day. On the whole this baby stood fat well, but was 6 months of age after 37th day. The gain in weight was 8½ oz. in 63 days.

No. 40.—F., aged 6 weeks. Fat introduced 9th day and increased on 13th. Stools unsatisfactory till 28th day. Fat not taken out till 17th day. Reintroduced 33rd day. Although stool relaxed and curdy with mucus from admission till 9th day, fat was introduced. Breakdown continued a considerable time after fat taken out and was only cured by partial breast-milk feeding on 28th day, which was continued till 32nd day. After this baby improved rapidly. This case shows the value of even small doses of breast milk. Gain in weight, 13½ oz. in 45 days.

No. 14.—F., aged 4½ months. Fat introduced on 6th day and increased daily till 13th. Breakdown 12th–24th day. Fat taken out 15th day. Reintroduced 26th day and increased till 47th. Stools unsatisfactory from 33rd to 54th day, so no further increase made till 60th day. Stools normal or constipated till fat introduced; after breakdown not satisfactory till fat out. Stools relaxed and curdy again after reintroduction of fat till baby 6 months. Food pancreatised, then fat stood well. This baby broke down when protein percentages and actual caloric values were low. Gain in weight, 2 lb. ½ oz. in 103 days.

No. 24.—F., aged 11 weeks. Fat introduced 4th day and increased every few days till 27th. Days of breakdown 5th–11th, and again 33rd–45th. Fat not taken out till 43rd day. Normal stools on admission. After the first breakdown stools righted themselves when food increased. Ideal milk was graded to cow's milk on 19th day and the amount increased 33rd day. Fat was increased although baby was putting on weight rapidly, having gained 13½ oz. in nine days (19th day to 28th). An increase in the amount of food was ordered on 33rd day although the stools had been relaxed and greenish on 31st day. A large vomit occurred on 38th day and breakdown followed. Recovery was rapid after fat stopped and the milk was boiled. On reintroduction of fat vomiting recurred and fat was not being taken well when discharged on 54th day. Gain in weight, 2 lb. 2 oz. in 54 days.

4. Cases that Broke Down on Fat Twice.

No. 25.—F., aged 10 days. 1. Fat introduced 8th day, increased on 10th. Breakdown 9th–15th. Fat taken out

11th day. 2. Fat reintroduced 19th day. Breakdown 22nd–35th day. Fat taken out 35th day. Fat reintroduced 40th day. Increased on 42nd, but baby discharged on 47th day. Twin. Admitted with curds in stool and mucus occasionally. Milk mixture changed to milk and whey mixture on 6th day. Milk then peptonised. After second increase of fat seven stools passed and food was changed to Ideal and fat taken out on 11th day. Breast milk introduced on 13th day. By 16th day stools lessened and improved. From 20th–24th day some vomiting occurred and stools became curdy again on 22nd day. After fat taken out the second time, stools normal for five days (to 41st day), but from 42nd to 51st day stools relaxed with curds and on 45th and 46th day the baby had large projectile curdy vomits. Probably had baby remained in, fat would have had to be omitted again. Gain in weight, 1 lb. in 47 days.

No. 31.—M., aged 3½ months. 1. Fat introduced 4th day and increased on 6th. Breakdown 5th–17th day. Fat taken out 13th day. 2. Fat reintroduced 19th day and increased every few days to 44th day. Breakdown 48th day. Fat taken out 48th day. After effect of ol. ric. stools became normal by 4th day. In spite of gain of 7½ oz. fat was introduced. After first breakdown stools continued normal till fat reached 1 1/12 oz. in 24 hours on 44th day. On 48th day vomiting started and an acute attack of diarrhoea and sickness supervened. Fat was taken out again and other methods adopted with satisfactory results. On day of discharge (56th day) 1/12th fat again introduced and he was discharged on this amount. In this case the rapid increase in fat led to trouble. Gain in weight, 1 lb. 3 oz. in 56 days.

No. 45.—M., aged 6 months. 1. Fat introduced 5th day and increased up to 14th day. Breakdown 15th–20th day. Fat taken out 17th day. 2. Fat reintroduced 27th day and increased up to 51st day. Breakdown 53rd–63rd day. Reduced 59th day. Marasmic baby. Stools normal on admission and remained so for 14 days. From 15th to 18th day baby had attack of diarrhoea and vomiting, necessitating the introduction of breast milk. Stools became normal again. After five days on breast milk, Benger's given with satisfactory result, but from 38th–90th day no increase in milk given and caloric value only increased by introduction of fat. Gain in weight, 15½ oz. (slightly over 2 oz. per week) to 57th day. The increase in fat on 51st day started a breakdown on 53rd day lasting till 63rd day. On 88th day the baby was transferred to Toddlers' Ward. He made great progress after this. Gain in weight, 1 lb. 2½ oz. in 82 days.

No. 49.—F., aged 5½ months. 1. Fat introduced 1st day. Breakdown 4th–32nd day. Fat reduced 11th day, taken out 18th day. 2. Fat reintroduced 36th day and increased up to 63rd day. Breakdown 64th–72nd day. Fat taken out 68th day. Admitted for wasting, reported constipated. Stools normal three days and then became curdy, relaxed, and mucus passed. Diarrhoea and vomiting from 14th to 18th day. Stools bad till 32nd day and vomiting recurred on 36th day when fat was introduced again. Stools became unsatisfactory and some vomiting occurred. Gain in weight, 1 oz. in 25 days. Food was increased by 5 oz. in the 24 hours on 61st day and fat increased on 63rd day, with result that a breakdown occurred necessitating introduction of breast milk for two days and fat was taken out. Fat in another form was introduced on 77th day with satisfactory results. Gain in weight, 8½ oz. in 88 days.

5. Cases that Broke Down on Fat Three Times.

Nos. 19 and 20.—F., aged 3 weeks. (1) Fat introduced 5th day and increased on 8th. Stools curdy with mucus from the start to 7th day, then improved, but became bad again after increase in fat. Fat taken out 9th day. (2) Fat reintroduced 11th day and increased on 26th and 32nd day. Stools unsatisfactory and vomiting started on 31st day. Fat was taken out on the 40th day. (3) Fat reintroduced on the 41st day and increased on the 42nd and 45th day. A bad breakdown occurred from the 44th to 51st day and fat was taken out again on the 48th day. Fat was reintroduced again on the 53rd day and increased till discharge on the 61st day, when the stools were normal but there was some vomiting. Gain in weight, 11 oz. in 61 days.

No. 33.—F., aged 2½ months. This was a normal baby admitted for sudden weaning. Stools normal on admission and continued so for nine days. (1) Fat introduced 4th day and increased on the 6th. Breakdown 10th to 19th day. Fat taken out on the 12th day. (2) Fat reintroduced on the 24th day and increased up to the 39th day. Breakdown 40th–51st day. Fat taken out on the 42nd day. (3) Reintroduced on the 44th day and taken out again on the 52nd day. In spite of watery and relaxed stools fat was reintroduced again on the 62nd day and increased every few days up to the 82nd day. Diarrhoea with "curds" and mucus supervened on the 86th day and fat had to be taken out again. Breast milk was resorted to from the 95th to 108th day, and the stools became normal again. This baby had cow's milk and water, Ideal and partial whey feeding, but there appeared to be no difference in the stools as long as fat was introduced. Gain in weight, 1 lb. ½ oz. in 115 days.

6. Cases that Might have Done Better under other Treatment.

No. 26.—F., aged 10 days; weight 3 lb. 14½ oz. Stools unsatisfactory from admission. Relaxed, frequent, curdy stools with mucus till breast milk given 17th day: very little difference with or without fat. This baby had breast milk on and off from 17th to 36th day, after which stools improved and Ideal milk was given. The food requirements of this baby were never met except with breast milk. Gain in weight, 9½ oz. in 48 days.

No. 48.—F., aged 2 months; weight 6 lb. 15¼ oz. Stools normal on admission. Fat introduced on 4th day and taken out on 6th. Fat reintroduced on 12th day and increased up to 23rd day. A serious breakdown occurred starting with vomiting on the 17th day and the baby was put on to breast milk with some improvement. With the increase of fat, however, the baby became very ill and fat was taken out on the 27th day. From the 28th to the 49th day the baby became rapidly worse and was apparently dying. Weight was 5 lb. 15½ oz. on 51st day, when I abandoned these methods altogether and gave a food with a higher percentage of sugar. Her condition improved, and later on breast milk was added which later was changed to a milk and whey mixture and again to milk and water with a different fat. Weight, 8 lb. 8½ oz. on discharge on the 144th day.

No. 56.—F., aged 3 months; weight, 8 lb. 2 oz. This child had fat intolerance from the start. Three attempts made to introduce fat failed. Breast milk was given for two periods, but the baby had lost 1 lb. 9½ oz. by the 67th day. In consequence of the baby's inability to take fat the food requirements were never met till Benger's food was added. Practically all gain in weight occurred after this.

7. Cases that Died.

No. 36.—M., aged 2¼ months; weight 8 lb. 14 oz. Admitted for dieting. Four out of six previous children dead. The two living were brought up on Nestlé's. Stools bad from the first and vomiting supervened on 22nd day. This was a case where fat could not be introduced and no other attempt was made to raise the caloric value of food. After 17th day breast milk was added. Baby died 54th day.

No. 44.—F., aged 3½ months; weight 8 lb. 8 oz. Admitted for dieting. Stools normal (except on 2nd day) till 9th day. Fat introduced 3rd day and increased twice. After increase in fat on 8th day three vomits occurred, and on 11th day diarrhoea and vomiting supervened. Temp. rose. After fat was taken out stools became normal for a few days and weight increased. Food was increased on 23rd day and stools became relaxed again with vomiting on 26th and 27th days. In spite of this, fat was introduced again on 28th day. Temp. went up again and diarrhoea and vomiting followed. Baby collapsed and died on 38th day. This case shows that the introduction of fat is not without risk.

No. 53.—M., aged 3½ months; weight, 9 lb. 10½ oz. Admitted for vomiting and diarrhoea. Frequent vomiting after admission for three days relieved with bismuth. Normal stools and no sickness on sixth day, weight increasing. Fat introduced 7th day. Vomiting (six vomits) started again after introduction of fat on 9th day, and in spite of this fat increased on 11th day. Diarrhoea started and vomiting increased; weight dropped and stools did not improve and baby became collapsed. After breast milk, stools improved and vomiting ceased by 27th day, but baby died on 34th day. Another case showing the risk of fat in a baby with digestive disturbance.

Criticisms.

(1) *On the Percentages Taken as Representative of Cow's and Human Milk.*—The feeds are based on the assumption that the average composition of human and cow's milk are as follows:—

		Proteins.	Fats.	Sugar.
Human		1.5-1.25 %	3.75-3.5 %	7-6.5 %
Cow's		3.3 %	3.5 %	.5 %

A series of analyses of the certified Grade A milk used in preparing the feeds gave an average as follows: fat, 4.3; protein, 3.5; lactose, 4.9. In some samples there was a difference of over 1 per cent. in fat, a difference which alters the whole of the calculations on which the feeds are prepared.

The percentages of human milk given in text-books approximate closely to the figures given above, but they are taken in most cases from nursing mothers in countries other than our own. I have seen a good many analyses of human milk from British nursing mothers, though perhaps hardly sufficient to form a

working basis, but the percentages were very different from those given above, especially as regards the protein.

(2) *On the Method of Introducing and Increasing Fat, even when the Baby Shows Fat-Intolerance.*—Of the 39 cases, 25 broke down on fat: 16 once, 6 twice, 3 three times, and of those that died 3 out of 5 had diarrhoea or vomiting or both after the introduction of fat, and 3 out of 5 had normal stools before the introduction of fat.

The first question that will naturally be asked is whether the breakdown could not be attributed to causes other than the fat. What proof is there that the fat is responsible in all these 25 cases? The answer is that invariably one or more of three conditions was found—sometimes all—viz., (1) The stools were normal, there was no vomiting, food was taken well, and in some cases weight increased before the introduction of fat, and in the majority of cases no other alteration in diet was made at the time the fat was introduced. (2) The stools lessened in number and improved in consistence and colour when fat was taken out. (3) The same conditions recurred with each fresh introduction of fat or increase in fat. In a few cases the breakdown did not occur till some considerable time after the fat had been put in and increased, but in these cases also the removal of fat effected the cure.

Intolerance of fat is recognised by the advocates of this system, but they argue that if fat be persevered in long enough or a sufficient number of attempts are made to introduce it the baby will stand it in the end. Personally, I think the risk is too great, without a more careful consideration of the baby's symptoms and the weight chart, inasmuch as in a few cases the symptoms produced by the introduction of fat were not relieved when the fat was taken out, and the results show that it is easier to start an intolerance than to effect a cure. The removal of the cause does not always stop a gastro-enteritis.

Again, the fat appears to be introduced or increased without any consideration of the baby's symptoms. It is done because it is part of the system in order to bring the percentages of the elements to the standard of human milk (where the fat is about 3.5 per cent.) and to raise the actual caloric value of the food to that of the baby's theoretical requirements. Four-hourly feeding and no night feeds are the ideals aimed at. Without fat the quantity of "humanised" milk the baby can take for its age at these intervals does not give sufficient calories and the baby is on a "starvation diet" till fat is introduced and increased. For this reason as soon as the baby has settled down to its environment fat is introduced whether the baby is gaining satisfactorily without it or not, and the records do not show that the baby is invariably weighed before any increase is made in fat or food to see that such increase is desirable. It is again increased after a few days, although a warning may be given in the form of relaxed stools or curdy returns that the fat may not be suiting the baby. In a good many cases small amounts of fat were stood well, and probably larger amounts would have been tolerated and a breakdown avoided altogether had a longer interval elapsed between each fresh introduction. It seems particularly foolish to start fat in a baby sent in for vomiting, or in one with curdy relaxed stools, even when these symptoms are temporarily in abeyance. In many cases fat was borne well in babies over 6 months of age, and there seemed to be more difficulty when the protein percentage was low or when the caloric value of the foods was considerably below the baby's theoretical requirements.

Undoubtedly, too, fat was borne better when the food was pancreatised and the change to this at about 6 months of age often brought about a great improvement in the baby and gain in weight, but this tolerance may have been due to the child's age. After the breakdown was over and the condition of the baby as before (except possibly for loss of weight), the amount of fat reintroduced was the smallest amount the baby had started with. This is sound

treatment, but it was disheartening to find that the whole of our previous efforts in working up the fat had been felled at one blow, particularly when after the fat had been raised to 1 $\frac{1}{12}$ oz. the baby left hospital on $\frac{1}{12}$, or $\frac{1}{6}$ oz. only.

(3) *On the General Principles of the System.*—The same adherence to feeding by figures and the lack of scientific appreciation of the child's symptoms are noticed in the fact that an increase in the protein and sugar was never made beyond the human percentages although the baby was obviously crying out for one or the other of them. Nor was the food increased beyond a certain amount, nor the percentage of milk to water raised beyond a 1:1 mixture, although the baby was hungry, constipated, and not gaining in weight. When the percentages of protein and sugar had reached the limit prescribed and the actual caloric value of the food was half as much again as the theoretical, the only thing to raise the food in value was the introduction of fat, and if there was intolerance for this it meant that the baby must suffer from slow starvation. I fail to see why, if it is allowable to diverge from the percentages in fat, it is considered an infringement of their principles to do so in respect of sugar or protein.

No difference in the methods appeared to be made in hot or cold weather; the theoretical caloric requirements were considered to be the same summer or winter, nor was any allowance made for an energetic baby who naturally required a food of a higher caloric value than a lethargic one. Further, normal and abnormal babies are treated on the same principles. I think the failure to recognise that the abnormal baby cannot respond to the same line of treatment as the normal one is serious, particularly with regard to its intolerance for fat. Far more so is the attitude taken by some (possibly over-zealous) advocates of these methods, that all cases must be treated on these lines and no other. To use their own words: "They would die sooner under any other treatment."

Deductions.

1. An abnormal baby has a great intolerance for fat. This is no new doctrine.
2. It is impossible to feed all abnormal babies on a percentage system if the percentages followed are those at present given for human milk.
3. It is unwise to risk the introduction or increase of fat in the food of an abnormal baby unless there has been no digestive disturbance for some considerable time, and not then if the weight curve is rising satisfactorily without it.
4. The caloric value of the food required by a marasmic baby is probably more than half as much again as its theoretical value, or, to put it another way, the same standard of feeding by caloric values cannot be applied when a baby is exceedingly below its average weight for its age, even when half as much again is allowed.
5. It has not been proved that the so-called Truby King methods of percentage feeding is the best and only substitute for breast milk. This is evidenced as follows: (a) That in many of the cases sent out in good health, resort had to be had to breast milk to put them on the right road. (b) That gain in weight and general improvement which was first obtained was lost through breakdowns during the course of the treatment, and the total gain in weight was less than would have been otherwise obtained. (c) That some babies actually suffered in consequence of the treatment.
6. The difficulty of ascertaining a baby's power of absorption. This is a vital point, for it may be found that a baby fed on an artificial food, as cow's milk, needs to be given a higher percentage of some of the food elements because in this form he can assimilate only a certain proportion of the whole, rejecting a great deal which is passed in the stools; whereas in the form the elements are presented in human milk, although in lower percentages, practically the whole may be assimilated.

A CASE OF CEREBRAL ABSCESS COMPLICATING ABSCESS OF LUNG:

OPERATION AND RECOVERY.

BY SEYMOUR BARLING, C.M.G., F.R.C.S. ENG.,
SURGEON TO THE GENERAL HOSPITAL AND TO THE
CHILDREN'S HOSPITAL, BIRMINGHAM.

DISTANT foci of suppuration in any part of the body may occasionally be complicated by cerebral abscess; and it has long been recognised that suppuration in the lung or pleural cavity is especially prone to be so complicated. As early as 1815 Richard Powell¹ records a case of empyema accompanied by an abscess beneath the corpus callosum, though he did not appear to relate the two conditions. Admittedly the complication is rare, yet the total number of cases recorded is not inconsiderable. Thus Schorstein² in 3700 autopsies at Brompton Hospital finds abscess in conjunction with disease of lung or pleura to be the cause of death in 17 cases, and further he finds such abscesses the cause of death in two cases in 10,000 autopsies at the London Hospital. In addition to these 19 cases, of which he gives details, he analyses 50 others taken from literature. His paper appears to include all cases recorded at the time of its publication in 1909. Clayton,³ after recording a case of his own, analyses a series of 58 cases which are on record, some of them having previously been summarised by Schorstein. From both papers it would appear that bronchiectasis occupies an outstanding position as the primary lesion; Schorstein states it is so in 38 of his 69 cases, empyema being second with 15 cases, the 16 remaining cases being due to gangrene or abscess of lung, tubercle, acute pneumonia, or foetid bronchitis.

Localisation and Distribution.

The abscesses are nearly always in the hemisphere, and often near the cortex, but have been found in cerebellum, medulla, or pons. Schorstein points out that in his collected cases the left side of the brain is affected more than twice as frequently as the right; and if the cases of multiple abscesses are excluded and the single abscesses alone considered the predominance of left-sided abscesses is more than 3 to 1. Whilst admitting the pathological obscurity surrounding the association of brain abscess with lung disease (where no other abscess is found in the body) he considers that this predominance of the left-sided abscess is in favour of the embolic origin of the infection, and compares it to a like preponderance of left-sided brain infarcts in valvular disease of the heart. The occasional occurrence of epileptiform convulsions on irrigating the pleura in cases of empyema, as noted by Finlay⁴ and Caley,⁵ is certainly suggestive of this embolic origin, though in no case has the embolus been actually found, although death may occur within a short time of the onset of the convulsions.

The abscesses are sometimes single, sometimes multiple. Metastatic brain abscesses in general appear to be more commonly multiple—according to Gowers⁶ they are so in 61 per cent. of cases—but in the group of pulmonary cases the single abscesses appear to predominate. Of 51 of Schorstein's cases in which accurate information was available 62 per cent. were single and 37 per cent. multiple.

Symptoms and Clinical Course.

The clinical course and symptoms of cerebral abscess arising in association with pulmonary disease do not differ essentially from cerebral abscess arising from local causes such as traumatic and otitic cases, if we remember that the latter are generally single and the pulmonary cases often multiple. Also the sub-normal temperature and slow pulse may be masked by the primary lesion. Signs of rapidly increasing intracranial tension with slow cerebration and great dulling of the mind are most characteristic in many cases, together with localising fits or paresis appropriate to the area involved.

The progress of the abscess is usually rapid, and not a few rupture into the ventricle or on to the surface. In the group recorded by Schorstein death occurred on an average ten days after the onset of the cerebral symptoms, and the duration varied between three and 28 days. Some of the abscesses are encapsuled, most are not; the encapsuled abscesses are probably of some weeks' duration at least, judging by the records of encapsulation of traumatic cerebral abscess in which the date of onset is accurately known. Such encapsuled abscesses may be entirely latent; this, however, is probably rare, and in the majority of cases the course is an acute one.

Treatment.

The only treatment offering the possibility of cure is drainage of the abscess. This has been carried out in a few cases, but I can find no record of a recovery previous to the case given below. In a case of Barnard's the patient lived seven days after evacuation of the abscess. The debilitated condition of the patient, the difficulties of localisation, which are undoubtedly greater than in the case of traumatic or otitic abscess, the multiplicity of the lesion in more than one-third of the cases, and the acute course of the abscess are all against a successful result. At the same time, when the post-mortem findings in a number of these cases are studied, one cannot help feeling that some might have been cured had they been operated on. Such intervention must, in view of the rapid course these cases run, be carried out at the earliest possible moment after the onset of the localising symptoms.

Clinical Record.

A. S., male, aged 48, was admitted to the General Hospital, Birmingham, August, 1923. He stated that on two occasions during the last fortnight he had had attacks of seeing double when at work, and recently had frequently run into people and objects approaching him on the left side. In May, 1918, he had a severe attack of pneumonia and was ill on and off till October of that year; he was treated at home at first but admitted to hospital in July, 1918, with a diagnosis of lung abscess. The diagnosis was not established, however, and he was sent to a convalescent home for a time. He returned to work, but after a short time he contracted influenza in November, 1918, and was again ill for a month. He once more returned to work, but was very weak and ill for the next six months, coughing up a large quantity of offensive sputum daily and suffering from sweats with much loss of weight.

In July, 1919, he was again admitted to hospital with cough, emaciation, and offensive sputum, and in addition he had abdominal distension with vomiting and tenderness in the lower abdomen. Phthisis with tuberculous peritonitis was suspected. No T.B. could be found, and the von Pirquet test was negative. He gradually improved and left hospital. A month later he entered a neighbouring hospital, being then very wasted and anæmic, and complaining of pain in the right chest and right abdomen. His fingers were clubbed, and breath sounds and expansion of the right lower chest were diminished. The sputum was offensive, and varied from 4 to 14 oz. daily. The right lower pleura was explored, but nothing but adhesions found. Shortly after this he had severe abdominal pain with rigidity and vomiting and a temperature of 103° F.; these symptoms abated and he gradually improved. Some months after leaving hospital he returned to work, but continued in indifferent health till seen in 1923. During these three and a half years he expectorated a considerable quantity of offensive sputum daily, stating that he "vomited" it up painlessly two or three times a day. The daily amount was tending to diminish recently. His reason for again seeking advice was the onset of the ocular symptoms a fortnight previously.

Condition on Admission.—He was sallow and anæmic, his sputum was dark reddish-brown and most offensive, and averaged 10 oz. per diem. Elastic fibres were stated to have been found in it on one occasion, but this was not confirmed. The movements of the right lower chest were restricted and the infrascapular area was dull and silent. X rays showed a high immobile right diaphragm, the costophrenic sulcus being clear; the lower lobe was mottled, but there was no evidence of cavitation or abscess. There was weakness of the left hand and arm with a left extensor plantar reflex. Examination of the eyes showed the fundi to be normal with good visual acuity in each eye; left homonymous hemianopsia, with preservation of the macula on each side.

A single lesion in the right occipital lobe would account for the cerebral symptoms, and it appeared probable that it was secondary to the thoracic condition. With regard to the nature of this latter there was some doubt. The X ray picture was considered to point rather to bronchiectasis than to lung abscess, but the physical examination of the chest showed nothing distinctive of either condition. The expectoration of a large quantity of offensive sputum had, however, been present from almost the earliest days of his illness, and this had evidently been considered suggestive of lung abscess, which was the diagnosis on his first admission to hospital two months after the onset of the initial pneumonia. The possibility of a subdiaphragmatic abscess pointing through the diaphragm was considered in view of the history of peritonitic symptoms.

It was decided to operate on the thorax first, in view of the quiescence of the brain condition.

Thoracotomy (August 8th, 1923).—Through an oblique incision across the right infrascapular region 5 inches of the ninth and tenth ribs were removed just external to their angles. The two pleural layers were united by adhesions, and no empyema could be found. The lung was incised freely and a finger introduced in all directions. No cavity was tapped. The lung was cedematous, almost airless, and firmer than normal; a large tube was stitched into one of the tracks passing into the lung substance. The operation was done under gas and oxygen, and the patient was very bad during the short time he was anaesthetised, only being saved from flooding his other lung with the pus he was coughing up by being placed with his head much lower than his body.

Three days after operation the discharge from the lung wound became excessive and very offensive; coincident with this his sputum became less offensive and much diminished in amount. A month later his lung wound was granulating and the sputum consisted of about $\frac{1}{2}$ oz. of inoffensive mucus daily. By this time, however, his cerebral symptoms were much worse. Patient was dull, incontinent, with a low blood pressure and a furred tongue. The temperature was subnormal, pulse about 90, and he had lost weight considerably. The left hemiplegia was more pronounced, and he now had in addition a right extensor plantar reflex. The retinal veins were full but no neuritis was present. His condition was obviously desperate, but it was decided to try and tap the abscess. The patient was trephined below and behind the right parietal eminence. On enlarging the opening the dura was found to be tense, and was incised. On introducing a forceps inwards, forwards, and downwards pus was obtained at about two inches from the surface—about three ounces were evacuated and it smelt of *B. coli*. A tube was introduced through the centre of the flap and the latter replaced, with rubber drains beneath it radiating from the centre drain.

Great improvement in the patient's condition was noticeable in a few hours, and by the next day he was bright, intelligent, and was using his left arm, hand, and leg freely. The pus grew streptococci, staphylococci, and a coliform bacillus. Convalescence was uneventful, but the drainage-tube was not finally removed for a month, by which time the abscess cavity was obliterated and the tube track rapidly healed after the removal of the tube.

On examination of the eyes (Oct. 19th) the fundi were normal, there was a partial left homonymous hemianopsia, the upper part of the field recovering. Visual acuity, left 6/12, right 6/6. The lung wound by this time was healed and the patient's general condition was excellent. He still coughed up a few ounces of non-offensive frothy sputum each day.

Seen some months later the patient had a depressed area at the site of the cranial operation; the right lower chest posteriorly showed restricted movement and air-entry, a little frothy sputum was expectorated, and he was at work in better health than he had been for years.

Commentary.

The question of diagnosis of the exact condition in the lung was not definitely settled; it was almost certainly either a bronchiectasis or a chronic abscess, and the X ray picture was more suggestive of the former condition. The sudden increase of discharge the third day after thoracotomy with cessation of expectoration suggests, however, that a chronic abscess cavity unreached at operation suddenly established communication with the wound. Drainage of a bronchiectatic cavity or series of cavities would be extremely likely to give rise to a bronchial fistula—however, the lung wound healed without undue delay. No cavities were met with in the hurried exploration. Undoubtedly the thoracotomy should have been done under local anaesthesia—the general anaesthesia caused the patient grave risk of death by flooding with the large quantity of sputum coughed up—only the placing

of the patient in the head-down position prevented the swamping of the opposite lung. Attempts to empty the cavity beforehand had not been as successful as was anticipated.

Reviewing the whole case, it would probably have been wiser to have operated on the cerebral abscess before the lung condition, as by the time the patient had recovered from the thoracotomy he was almost in extremis from the intracranial pressure of the abscess. It was thought better at the time to deal with the causative condition first as the brain lesion then appeared quiescent. I was not aware at the time that the majority of such cases run a very rapid course, and although in the published records some of the abscesses must have been of some weeks' standing at least as they were encapsuled, yet Schorstein states that the average length of life from the onset of the cerebral symptoms was only ten days and varied from three to 28 days. The only reasonable hope, therefore, of successful surgical interference is to deal with the cerebral complication first.

References.

1. Powell, R.: Some Cases Illustrative of Pathology of the Brain, Medical Transactions, Royal College of Physicians of London, 1815, vol. v., p. 246.
2. Schorstein, G. I.: Abscess of the Brain in Association with Pulmonary Disease, THE LANCET, 1909, ii., 843.
3. Claytor, T. A.: Multiple Brain Abscess Following Empyema, Philadelphia Medical Journal, 1901, p. 437.
4. Finlay, D. W.: Cerebral Abscess Following on Empyema, THE LANCET, 1886, i., 298.
5. Cayley, W.: A Case of Empyema with Cerebral Abscess, THE LANCET, 1884, i., 707.
6. Gowers, Sir W.: Diseases of Brain.

ABNORMALLY LOW PULSE PRESSURES IN CASES OF NEUROSIS.

BY WILLIAM BAIN, M.D., F.R.C.P. LOND.,

AND

C. W. CURTIS BAIN, M.C., M.B. OXF.,
M.R.C.P. LOND.

THE normal limits of the pulse pressure may be taken to lie between 40 and 55 mm. of mercury. Increase of this pressure is found in several conditions. In senile arterial change the systolic pressure is raised, and the diastolic is lowered, with the result that the pulse pressure is increased. In hypertension, whether renal or not, the pulse pressure is nearly always increased in proportion to the height of the systolic, while in an uncomplicated aortic insufficiency the increase is striking, chiefly owing to the lowness of the diastolic, though elevation of the systolic often contributes. As Harris¹ has noted, increase of this pressure occurs also in Graves's disease associated with tachycardia; but any temporary emotion, such as that caused by examination, may in nervous subjects cause an increase in the pulse pressure by raising the systolic.

Decrease in the pulse pressure is not so common. It occurs in tachycardia, especially paroxysmal, in advanced mitral stenosis, and conditions of circulatory failure. No evidence has yet been forthcoming as to its presence in any other group of cases with normal pulse-rates.

Observations on 2000 General Cases.

Out of 2000 general cases in which the blood pressure has been taken by the auscultatory method on an average of four times each, 230 were found to present pulse pressures of 30 or under on one or more occasions. Cases which showed pulse pressures of between 30 and 40 were rejected as being doubtful. In very few cases was the pulse-rate over 100, nor were any cases of advanced mitral stenosis or of heart failure included. The blood pressure was taken in the sitting posture with the patient's arm resting on the desk.

¹ Harris, I.: Brit. Med. Jour., 1923, i. 630.

Systolic Pressure in Mm. Mercury.

P.P.	85	90	95	100	105	110	115	120	125	130	135	140	N.C.
30		2	1	3	5	21	1	21		10		3	67
27		2		7	12	9	2	5	1	2	1	2	43
25	1		2	14	16	8		6	8	1	1		57
22	1	1	2	6		2	1	4	1	1			19
20		1		8	2	6	1	9	1			1	30
17			3	1	1	1	1						8
15		1		3		2							6
	2	7	8	42	36	49	6	46	11	15	2	6	230

P.P. = Pulse pressures.

N.C. = Numbers of cases.

Systolic and pulse pressures are shown. Diastolic pressures can be obtained by subtracting the pulse pressure from the systolic pressure.

From the chart it can be seen that the total range of the systolic pressures was from 85 to 140, but by far the greater number lay between 100 and 115. Where one case had several pulse pressures under 30 the lowest was taken. The ages of the patients ranged from 25 to 70, the majority being between 35 and 50.

These cases were grouped as follows:—

1. Neurasthenic, numbering 93. This group consisted of neurasthenics of all sorts, from constitutional neurasthenics to cases where dental sepsis or astigmatism contributed to the exhaustion of the nervous system. Apart from palpitation, usually of gastric origin, there were no cardiac symptoms.

2. Nervous, consisting of 64 cases. These cases, while not neurasthenic, were definitely neurotic, including many with marked vaso-motor disturbances. Some had few symptoms, and the neurosis might not have been suspected had the pulse pressure not been noted. One such case, a man of 26, weighing 16 st., said he was in perfect health, and merely wanted his weight reduced. The systolic pressure was 90 and the diastolic 70 (registered in this case by the Pachon). On being questioned he admitted that for the last two years he had suffered from marked depression.

3. Mucous colitis, of which there were 48 cases. Every case showing an abnormal amount of mucus in the stools was put in this group. The nervous phenomena associated with this condition are so well known that it was thought better to do so rather than divide them among the neurasthenics and neurotics.

4. Cases associated with some organic affection totalled 26. Some of these—e.g., rheumatoid arthritis cases, were suffering considerable pain. Three of them were in a state of anxiety about their condition. One man, otherwise normal, was faced with an operation for ureteric calculus. After showing three abnormal pressures he passed the stone into his bladder. Unfortunately, no further readings could be taken, as he was not examined again.

The treatment of cases of the first two groups was in general that of neurasthenia. They improved by general tonic treatment after the removal of any septic foci, the correction of errors of refraction, and the promotion of digestive efficiency. The pulse pressure, however, was a guide to the efficacy of the treatment. Constitutional neurasthenics, whose condition could only be alleviated, tended to show abnormal pulse pressures at the end of the treatment as at the beginning, while those in which it became normal invariably lost their symptoms and usually ended in recovery.

In the following examples the average interval between pulse-pressure readings was five days:—

1. Constitutional neurasthenic. M., aged 60:—

	1st.	2nd.	3rd.	4th.
Syst. ..	114	92	98	90
Diast. ..	90	70	70	65

This patient has been under observation for years. He improves under treatment, but invariably relapses under the stress of work at home.

2. Neurasthenic. F., aged 35:—

	1st.	2nd.	3rd.	4th.
Syst. ..	98	100	122	120
Diast. ..	78	80	92	80

This patient had lost 1½ st. in the previous two years. She gained 5 lb. during this period and lost all her symptoms.

3. Mucous colitis. F., aged 53:—

	1st.	2nd.	3rd.	4th.
Syst. ..	148	118	124	140
Diast. ..	100	90	100	88

The catarrh of the colon cleared up after four douches between the second and third examination, and she then made a rapid recovery.

Discussion.

Neurotic subjects are about equally divided in the matter of their pulse pressures. About half of them will always show high readings. In a few cases of obvious neurosis the pulse pressures are normal. The readings on the first examination always tend to be high through the emotional factor, and should be accepted with reserve. In some it is not until much later that the true pressure is revealed. The following is an example from an apprehensive neurasthenic in which the fourth and succeeding pressures are probably the true ones:—

F., aged 49:—

Syst. ..	138	124	112	100	105	105	124	120
Diast. ..	88	90	90	90	90	90	86	96

On the last occasion she said she felt quite well. There is little doubt that she will relapse at home.

The abnormally high pulse pressures have not been dealt with here, as other conditions have to be excluded before they can be accounted neurotic. No satisfactory means of differentiating between the two classes has yet been found, though the low ones seem in the main to be vagotonics. Acidity with flatulence is common, and cold extremities are not infrequent. As a physical sign a low pulse pressure has the advantage that it occurs in cases where the opposite might be expected. It is sometimes the means of revealing the presence of an otherwise obscure neurosis which the patient may be reluctant to disclose, and it is certainly a useful index of the response to treatment.

The cause of the condition must be related to a diminution in the cardiac output. This could be due either to a primary cardiac asthenia, or to defective filling of the heart. Apart from variable apical systolic murmurs, there was no evidence of any cardiac involvement. Electro-cardiograms in a few test cases showed normal curves. The quantity of blood entering the heart is determined by the effective volume in circulation. It could be influenced either by an alteration in the total volume of the blood, or by stagnation of blood in any of the venous or capillary reservoirs.

M'Dowall² has shown that in the cat in cases of low venous pressure near the heart following hæmorrhage, or the administration of alcohol, or the injection of histamine, section of the vagus will cause a further reduction in arterial pressure. He considers that there is a vago-pressor reflex under these conditions to prevent excessive lowering of the mean pressure. If this reflex is present in man in cases where the systolic is low, the result could be obtained by a raising of the diastolic, thus bringing about a small pulse pressure. This might particularly apply where the vagal influence was already predominating.

The vaso-motor systems of these cases are in a very unstable condition. Their pressures are liable to fluctuate largely from emotional and other causes. It is therefore unlikely that there is any alteration in the total blood volume. We would suggest that the probable explanation is to be found in some deficiency in vascular tone giving rise to inefficient circulation through the capillaries or venous radicles.

We desire to express our thanks to Prof. J. A. MacWilliam, of Aberdeen, for reading the manuscript and for helpful criticism.

Summary.

1. An analysis of 2000 general cases shows that 230 presented pulse pressures of 30 mm. of mercury or under.

2. In 90 per cent. this was associated with nervous phenomena, either neurasthenia or neurosis.

3. Return of the pulse pressure to normal was found to be an indication of improvement in the general condition.

4. It is suggested that lack of vascular tone causing stagnation of blood is the most likely explanation.

ANTI-CONSUMPTIVE THERAPEUSIS.

By R. HERVÉ, M.D.,

DIRECTOR OF THE SANATORIUM DES PINS AND OF THE STATION CLIMATIQUE DES ESCALDES.

SINCE the advent of treatment by artificial pneumothorax we are no longer helpless in the face of pulmonary tuberculosis and we are conscious of being frequently useful to our patients: Why is it, then, that this method, so fruitful in immediate and even definitive results, is yet so often disappointing? In my opinion the reason is, that, relying too much on the relief given to his patients by pneumothorax, the expert is apt to neglect the old rational therapy, which in the midst of more or less specific treatments has held its own for over 50 years—namely, hygiene and dietetics. To conclude from the often remarkable results of compression, as was frequently done, that consumptives with a pneumothorax could continue to live in town and go about their business, while neglecting the essential curative factors of rest and open air, is to disregard the whole character of the illness. At the present time, the doctrine of primary infantile infection being definitely accepted, the clinician when visited by a patient with active tuberculosis of the lungs, cannot lose sight of the fact that the affection revealed by his inspection is of long-standing origin. Long before the morbid manifestation the organism was impregnated with tuberculous poison. With or without local lesions, the subject had reacted, sometimes unawares, against the attacks of the affection. Tuberculosis of the lungs (the most frequent manifestation), tuberculosis of the glands, of the joints, or of the bones, represent merely pitched battles in an ancient war. Can we therefore expect that by temporarily suspending the functions of a lung we may, at a stroke, radically suppress all traces of tuberculosis and restore the normal physiological functions to debilitated organs? To this I can give an answer based on observations in two of my cases which were published in the *Presse Médicale* (No. 75, Sept. 19th, 1923)—cases of which I have since had numerous other examples—of tuberculosis progressing in a collapsed pocket in the lung in spite of an appearance of perfect compression. Secondary manifestations are also liable to occur after the collapsed lung has dried and healed up—namely, meningitis, bacillary nephritis, epididymitis, peritonitis, and so forth.

The fact is that the hygienic-dietetic treatment, combined with a well-ordered rest cure, is an essential and is all the more efficacious after the Forlanini application. By "hygiene" I mean the open-air treatment, which must be carried out without remission day and night. Fresh air, like a benign spectre, must accompany the patient throughout the daily routine indoors or outdoors. By "dietetics" I mean that form of treatment which, in spite of the reduced importance which we now give it, nevertheless plays an important part in establishing a cure. In prescribing it the attention and wisdom of the doctor will be daily put to the test, as much to stimulate and regularise the digestive functions of the patient as to protect him against the dangers of untimely over-feeding. A further important factor in treatment is climate, and the right choice of climate is by no

² M'Dowall, R. J. S.: *Journal of Physiology*, 1924.

means easy for the average practitioner to decide, and yet all specialists know how, on one hand, a well-chosen climate can influence the evolution of the illness and how, on the other hand, to send a patient with congestion or hypertension to the mountains may be disastrous.

To supplement the hygienic-dietetic treatment, I would add heliotherapy, now of proved efficacy, thanks to Rollier's works, in the treatment of tuberculosis of the bones and glands, although its virtues are still questioned in the treatment of pulmonary tuberculosis, in spite of the work¹ which I have been publishing for over ten years, following Malgat in France and preceding the later studies of Oelsnitz, Bernère, Gassul, and Liebe.

Heliotherapy, if applied in due time, confirms and consolidates the results obtained by the open-air treatment. What rest and climate alone cannot always effect—namely, return of the appetite,

cure which, in spite of the official disfavour in which it lies to-day, has still numerous successes to its credit. For long it was usual to rely on hydro-mineral treatment for the treatment of tuberculosis of the bones, and its efficacy was hardly questioned until first the marine cure, then mountain-heliotherapy came into medical favour.

Why do we not associate these various elements of treatment, when Nature offers them to us accumulated in one locality? I saw at Escaldes a patient with coxalgia and multiple fistulas of long standing who was recommended for amputation whilst showing extension and activity of the suppurating foci. A localisation in the lung appeared, and if this advice had been followed the outcome would have been certainly fatal. Yet after eight months' sun and bathing treatment all the fistulas closed. The patient left the establishment on his feet and could walk two miles. Not only may tuberculosis of the bones

be treated by hydrotherapy associated with heliotherapy, but this method promises good results in laryngeal tuberculosis, the prognosis of which ought to be amended as soon as our knowledge becomes a little more definite.³

Finally, even to patients with pulmonary tuberculosis we should not refuse the help which in certain cases may be given them by means of hydro-mineral treatment applied with precaution. Sulphurous waters, whether taken internally or externally, have given appreciable results, and we may recall the results obtained by our forbears from a cure at

Eaux-Bonnes. It is only the indiscriminate recommendation of badly selected patients that has caused this treatment to fall into discredit. Is this a reason for denying the services the springs have rendered? We are taking up this matter again, and it would seem that the sclerosal forms of tuberculosis where the pleura are predominantly affected can be treated advantageously by our Escaldes waters, after a few weeks' climatic treatment.

To sum up, setting aside all treatment by drugs, among which the doctor, nevertheless, will often find helpful tools, I am of the opinion that at the present time all pulmonary tuberculosis cases where suppuration occurs as revealed by the ear or the screen—or even where the disease is in rapid evolution—should have recourse to Forlanini. Pulmonary compression will work wonders, provided that it be properly carried out. To achieve this purpose, and in order to make up for any possible insufficiency of compression, I inaugurated in France as early as 1913, contemporaneously with Jacobæus in Sweden, the method of dividing pleural bands.⁴ I have since published a number of results confirmed by radiograms. The accompanying radiograms show a lung prevented from total collapse by a filiform adhesion and the result of division of this adhesion.

But besides such surgical measures, the simple and fundamental methods of treatment must never be overlooked—namely, rest, open air, and sunshine.

² Thermal and Heliotherapeutic Cures Associated in the Treatment of Tuberculosis (contributed to the Congress for Hydrologics, Bordeaux, 1922).

³ Laryngeal Heliotherapies, Instrumentless Device (Presse Thermale et Climatique, Jan. 15th, 1922, by Legourd).

⁴ Liberation by Cautey of Pleural Adhesions during Treatment by Pneumothorax (Presse Médicale, No. 41, May 24th, 1922).



Radiograms showing a lung prevented from total collapse by a filiform adhesion and the result of division of this adhesion.

suppression of the cough and expectoration—are obtained in a few weeks by progressively conducted heliotherapeutics under Rollier's system. The disappearance of fever under the influence of the sun cure is anything but exceptional, and I have many times witnessed, after a few sun treatments, a drop in temperature which other treatments had been powerless to bring about. Auscultation shows drying-up of the suppuration centres, and even the radiological control, after a few months' treatment, will confirm progress due to the action of the sun, and further, it is very satisfactory to note how heliotherapeutic treatment, by inducing better nutrition, restores to our patients the symmetry and contour of their bodies.

But prudence is necessary. Not everyone can go to the mountains or take the sun cure. All congestive and evolutive patients should be kept in the plains, at least for the time necessary to reduce their temperature; for the same reason it would be more judicious and less risky for pneumothorax treatment to commence in the plains. As soon as the symptoms of tuberculous activity appear to slacken, all pulmonary cases, whether with or without pneumothorax, and especially those where the pleura is chiefly affected, may be taken to higher ground in order to benefit by the heliotherapeutic cure all the year round.

Since 1913 I have treated all my pneumothorax cases in this manner, and, thanks to this method, I have been able to obtain remarkable and definite results with patients who, owing to the bilateral condition of their lesions, seemed to be excluded from any hope of cure. Further, and as a corollary to hygienic treatment, I would add the sulphur water

¹ Pneumothorax and Heliotherapy (contributed to the International Anti-Tuberculosis Conference, Berlin, 1913). Outline of Two New Therapeutic Methods of Pulmonary Tuberculosis, Pneumothorax and Heliotherapeutics (contributed to the Society for Scientific Study of Tuberculosis, Feb. 12th, 1914).

Clinical and Laboratory Notes.

A CASE OF AIR-EMBOLISM OCCURRING DURING URETHROSCOPY.

BY RICHARD S. ROPER, F.R.C.S. EDIN.,
CLINICAL ASSISTANT, UROLOGICAL DEPARTMENT,
KING'S COLLEGE HOSPITAL.

THE possibility of the rare accident described in the following case and its gravity warrant the facts being placed upon record:—

W. A., aged 60, was sent to the Urological Department, King's College Hospital, on Jan. 2nd, 1924, complaining of difficulty in micturition, which had been relieved by passage per urethram of a small solid substance. The patient brought with him in a test-tube some clear urine with a piece of tissue in it which on section subsequently was found to be blood-clot.

Examination of the abdomen revealed nothing abnormal. Clear urine which contained a few shreds was passed easily, though in small stream. I passed a No. 10 coudé catheter, which was held up in the region of the bulb, and although the instrument was used with care, slight bleeding started at once. The urethroscope tube was then passed and the urethra thoroughly dried. A Joly instrument was used and under air inflation a good view was obtained. The walls of the urethra in front of the bulb appeared covered with granulation tissue which no doubt was responsible for the ease with which bleeding occurred. It was also possible that the condition might be epitheliomatous. No actual stricture could be seen beyond the granulation tissue.

As I was removing the urethroscope I noticed some surgical emphysema of the penis, and at once realised that as air had entered the tissues there was a danger of air-embolism. From the appearance of the patient it was apparent that this had already taken place. From the time air was first pumped into the urethra to the time symptoms first occurred about three minutes elapsed. The patient was dazed and restless and constantly moved his head from side to side. He was gradually losing consciousness. He became cyanosed, and the breathing began to be stertorous. The respiration slowed and became sighing in character and eventually ceased. The pulse continued to beat feebly after cessation of respiration, and later could no longer be felt at the wrist. The corneal reflex was never lost. About eight minutes elapsed between the time the symptoms first occurred and the failure of both respiration and circulation. In the meantime injections of strychnine and camphor were given and oxygen sprayed over the face. When respiration ceased artificial respiration was resorted to, but was only maintained a few minutes before the patient began to move his limbs, and normal respiration was restored.

After passing through a stage of great restlessness during which his desire seemed to be to sit up he gradually regained consciousness. It was noticed that during the repeated attempts to sit up the extra exertion called for caused the pulse to become imperceptible at the wrist. He was at once admitted to hospital, recovered completely in a few hours, and was discharged in a few days. A few weeks later this patient was admitted to the hospital under the care of Sir John Thomson-Walker, who excised a simple stricture and performed end-to-end suture of the urethra. I passed a No. 16 bougie two months later with ease.

Discussion.

On looking through the literature of air-embolism following surgical interference for the last 20 years, I find that most cases seem to have occurred in connexion with operations on the lungs and air-passages. A few cases have taken place after injection of the uterus with air or fluids in procuring abortion.¹ No reference in connexion with urology is found until 1913, when three cases were reported after distension of the bladder with air before prostatectomy. All three cases were fatal.^{2 3 4} The only case reported of air-embolism during urethroscopy was that by Mr. Ogier Ward in 1923, which was also fatal.⁵ Mr. Swift Joly tells me that some years ago two cases of sudden death took place during urethroscopy at St. Peter's Hospital which were at the time thought to be due to urethral shock, but that these cases were most likely due to air-embolism. Air-embolism in connexion with urethroscopy is therefore a real

danger and should always be borne in mind, especially in cases where the urethroscope tube fits tightly or when there has been hæmorrhage from the urethra. It is, of course, advisable not to use the urethroscope within 14 days of instrumentation for dilatation of stricture or where hæmorrhage has taken place from the urethra after surgical interference. Even if there has been no instrumentation at all it is quite impossible to be sure that there may not be a small abrasion of the urethral mucous membrane through which air can be forced into the vessels. At the same time, rare accidents of this kind should not deter one from using a valuable instrument with due precaution.

I am indebted to Mr. J. Everidge for permission to publish this case.

References.—1. Australian Medical Gazette, April 20th, 1909; April 20th, 1910; and August, 1912 (quoted by THE LANCET). 2. Nicolich: Journal d'Urologie, iii., 45. 3. Marion: Ibid., iii., 47. 4. Santini: Bull. d. Sc. Med. di Bologna, 1913, 9 S., i., 491. 5. Ward: Proc. Roy. Soc. Med., Sect. Urol., 1923.

AN UNUSUAL CASE OF DISPLACEMENT OF ONE EYEBALL DUE TO A MYXOMA OF THE FRONTAL SINUS.

BY GEORGES KLIONSKY, M.B., B.S. LOND.,
HOUSE SURGEON, LONDON JEWISH HOSPITAL.

DISPLACEMENT of the eyeball due to disease of the frontal sinus is sufficiently uncommon in itself, but when accompanied by the unusual features of the case to be described it becomes worthy of record.

A married woman, aged 60, was admitted to the London Jewish Hospital on Oct. 9th, 1924, complaining of diplopia. The diplopia had been noticed for the last three months, but had occurred on one or two occasions during the preceding six months. There were no other symptoms in the history. The actual displacement of the eyeball was only noticed by the patient's relatives for about two weeks before admission. There was no pain in the eye, no headaches or vomiting, no nasal discharge. The right eye had been swollen three months before (? condition), but this had subsided in a few days under treatment with hot fomentations. There was a history of acute pain in both eyes 15 years ago. Operation was advised and not performed; the condition probably was some form of glaucoma. For the last three or four years the patient had been under treatment for rheumatoid arthritis.

Examination showed the left eye to be normal in every respect. The right eye was displaced forwards, downwards, and outwards, and the movements were limited upwards and inwards. There was no conjunctival injection. The fundus was quite normal. There was no pulsation of the eye, and no deformity or tenderness in the region of the orbit could be made out. Nasal examination revealed no discharge and no apparent abnormality except a slightly deflected septum. The X ray report was "Nothing very definite to account for the condition." The sinuses and antra were clear. The patient showed no pyrexia during her stay at the hospital. The Wassermann reaction of the blood was negative. The general examination revealed no primary focus of any growth.

While the case was being investigated the patient had an attack of acute glaucoma in each eye. This subsided quickly under treatment with eserine.

The provisional diagnosis one was forced to make was that there was present on the upper inner wall of the orbit a new growth of some kind, and it was decided to explore the orbit and deal with the condition found.

Operation.—An incision was made through the upper eyelid. Exploration with the tip of the finger showed a large fairly soft swelling. Nothing further could be determined as to its nature, as it was too far back; and it was not possible to deal with it through the incision made. The eyeball was therefore enucleated and the outer canthus divided. The swelling was found to be semi-fluctuant, occupying nearly half the orbit and apparently extending forwards from the apex on the roof and outer wall of the orbit. It was decided to eviscerate the orbital contents, and with this in view a beginning was made to separate the periosteum from the roof of the orbit. A considerable quantity of thin, jelly-like mucus suddenly exuded from the swelling, and the raspatory used was found to lie in a large cavity with smooth walls. This was explored and found to consist of the frontal sinus extending above the orbit back-

wards and round to the external angle. There was no floor to it, and the swelling had apparently extended through the opening and had separated the periosteum from the bone. No opening into the infundibulum could be found. The whole of the contents of the cyst was evacuated, the lid sutured in place, and a small drainage-tube inserted.

Discussion.

True myxomata are rare tumours, and connective-tissue tumours and inflammatory swellings undergoing myxomatous degeneration look very much like them macroscopically. It is unfortunate that a microscopic slide of the material could not be obtained; but a diagnosis of myxoma is favoured in preference to that of mucocele, because of the absence of inflammatory changes in the sinus and the perfect smoothness of the walls. In the case of a mucocele, thickening of the lining membrane of the sinus might have been expected at least. The absence of an opening of the sinus into the nose doubtlessly led to the increased pressure which gradually caused erosion of the bone of the floor. The former would, of course, also account for absence of nasal symptoms, even assuming that the condition was inflammatory. It might also be pertinent to ask whether a myxoma would be more likely to cause erosion of bone in contact with it than a mucocele.

I should like to express my indebtedness to Mr. A. H. Levy for permitting the publication of these notes.

A USEFUL STAIN FOR BLOOD FILMS.

By A. KNYVETT GORDON, M.B., B.CH. CAMB.

IN the early literature of hæmatology difficulty often arises from the fact that different workers did not always use the same stain, and it is, therefore, not always easy to understand to what type of cell they were referring.

A considerable advance was made by the use of Jenner's, followed by Giemsa's stain, or, as it is commonly called, the panoptic method. This can be standardised, and is, in fact, now used by most hæmatologists. It has the advantage that the various granules characteristic of different types of cell are well brought out, which has not hitherto been possible by any other method. In the diagnosis of pernicious anæmia, for instance, the panoptic method is essential. It unfortunately necessitates the consecutive use of two stains, and if the materials of which either is composed are not accurately prepared, the stain goes wrong. The process also is somewhat lengthy and the technique not always easy. As a result of many experiments I have now found a single process stain which gives results indistinguishable from the panoptic method, and in a much shorter space of time.

The stain is based on Leishman's method, but consists of:—

Eosin-methylene-blue	0.02 g.
Eosin-methylene-violet	0.02 g.
Methyl-alcohol (pure for analysis) ..	25 c.cm.

The film is flooded with the undiluted stain for one minute. An equal part, approximately, of distilled water is then added on the slide and the diluted stain allowed to act for three minutes, followed by distilled water for approximately two minutes. The film is dried and mounted either in neutral Canada balsam, or, preferably, in green euparal, the use of which is conducive to permanence of the specimens and also improves the definition of the granules.

An additional advantage of this method is that a somewhat wide latitude is permissible both in time and dilutions.

The stain is prepared by Messrs. British Drug Houses, Ltd., to whose analyst, Mr. Tusting Cocking, F.I.C., I am indebted for the painstaking way in which he has carried out the experimental work on the technical side.

London, W.C.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section took place on Jan. 9th. Sir ARNOLD LAWSON, the President, occupying the chair.

Susceptibility of Nocturnal Animals to Ultra-Violet Light.

Prof. SIDNEY RUSS and the PRESIDENT communicated to the section results of their observations on this subject. These investigations, said Prof. Russ, were prompted by the question put during the war as to whether the night vision of naval officers and other ratings could be improved, as it was necessary that their vision in the poor light in which they worked should be as acute as possible. For the purpose of ascertaining whether this vision could be artificially assisted, it was suggested that by giving to the eye a certain fractional dose of light its sensitiveness to very dim lights might be increased. The result of the experimentation which was carried out was that if to a comparatively rested eye a small dose of light of the blue and violet region of the spectrum were applied, the eye became somewhat more sensitive in its perception of distant and dimly-lighted objects. By this means the acuity of vision could be increased about 15 per cent., a figure which was practically arrived at by others working independently. The compass charts of the first Zeppelin brought down in this country were found to be illuminated with this variety of light. The further question arose as to how transparent the eye was to light from different regions of the spectrum. In fresh specimens of human eyes available for the purpose, a small window was cut at the back of the retina and a quartz plate cemented on to that; thus for all practical purposes the eye was still there, but radiation could be transmitted through it and analysed, in order to see to what extent radiations were absorbed by the cornea, the humours of the eye, and the lens. The first experiment with the human eye showed that this organ was very absorbent of anything beyond a wave-length of about 3800. The question which arose in his mind was as to whether acuity of vision in a dim light depended upon the transparency of the eye for radiation beyond that wave-length, that is, of shorter wave-length. If so, it should show itself by a study of the same process in nocturnal animals. On eyes of animals obtained from the "Zoo" the same process was gone through, and, as depicted by spectra shown on the screen, there was found to be an extraordinary difference in the degree to which these violet and ultra-violet radiations were transmitted by the whole optical apparatus. Nocturnal animals were found to have, in general, a very marked transparency to radiation which did not seem to be transmitted through the human eye at all. There was a considerable absorption of radiations within the range of normal vision. It might not be so much a matter of the action of the retina as of that of other components of the eye. Nocturnal animals were understood to be those which hunted their prey by night, but in the case of some, such as the tiger, this hunt was partly a matter of scent. The range of radiations transmitted by the tiger's eye, though considerable, was not so great as in the eye of the night owl. Such a range of radiation entering the eye must, Prof. Russ thought, contribute very considerably to vision in a poor light, especially as shorter wave-lengths gave sharper images than did longer wave-lengths.

The PRESIDENT said the actual work in this investigation was done by Prof. Russ, and he (Sir Arnold Lawson) was little more than an interested onlooker. The experiments seemed to throw some

light on the power of nocturnal animals to achieve their purpose in light which would be quite inadequate for diurnal creatures. He considered that there were three possibilities: (1) Extra susceptibility to ultra-violet radiation might increase the consciousness of light in nocturnal animals, so that they could hunt successfully in a light which would be impossible for ourselves; (2) or there might be a greater power of image-formation, the longer visible spectrum giving a keener image; (3) the effect might be in both these directions. He did not know of any differences in the anatomy and physiology of eyes of nocturnal animals to account for their strange power, and Prof. Russ's experiments seemed to him the best basis for further research yet offered on the subject. They suggested a possible explanation of why people with apparently similar emmetropic refraction differed so widely in their power of image-formation. Some people were conscious of much shorter wave-length radiations than were others; was it therefore possible that in the eyes of people with extra keenness of vision there was an extra susceptibility to ultra-violet radiation? Could the gradations in keenness of vision be explained in this way? The problem of night-blindness was also illumined by this research, for people so afflicted might have a lack of ultra-violet appreciation.

Sir JOHN PARSONS asked whether the powers of different parts of the eyes examined were tested. Experiments done on rabbits' eyes by himself, and, later, by Fowler and by E. K. Martin, gave results which did not tally with those done by Prof. Russ, at least in regard to the human eye. One of the great difficulties in finding the absorption to various wave-lengths by the cornea, or by the lens, was that caused by the refractive effect of the tissues themselves. It was very difficult experimentally to make a window in a fresh eye such as was employed by Prof. Russ, and still get a very satisfactory exposure and a good absorption spectrum by that means. Much of the radiation was absorbed by the lens, and much was altered by the production by the lens of fluorescence. The experiment of sensitising the eye by dosing it with light of short wave-lengths was of such value as to demand extension, and he spoke of a very fine piece of work which had recently been done on the subject by Prof. Frank Allen of Winnipeg, who found that stimulation with rays from one end of the spectrum increased sensitivity to sensations derived from stimulation of the eye by other parts of the spectrum. He (Sir John Parsons) did not feel certain that if short wave-length radiations got into the eye they would increase its sensitivity and the acuity of vision. The eye possessed chromatic aberration, and the long and short wave-lengths could not both be accurately focused; usually the focusing was for some intermediate wave-length, which Hartridge found to be the yellow region of the spectrum. Monochromatic illumination was a different matter.

Prof. F. G. HOBDAY said that during the war Australian horses were used in Palestine for night-work because they did not suffer from night-blindness. He thought Prof. Russ's research could be usefully extended on eyes of recently-killed horses in the wild state, as they existed, for instance, on the Pampas.

Reply.

Prof. Russ, in reply, said he omitted to mention that the eyes used were subsequently examined as to the absorptive power of their separate portions. It was found that the lens was the most absorbent, next came the cornea, there being but little difference between the other two humours. With regard to the marked absorption by the lens, an explanation and demonstration of this absorption was furnished by a very marked fluorescence of the lens. Fluorescence argued absorption. He elaborated the point in some detail. The striking difference in the capacity of various animals adequately to function in dim lights was difficult to conceive of except by a great range

in transparency; it must be largely a question, ultimately, of how much energy was getting into the eye.

Mr. F. A. WILLIAMSON-NOBLE read an elaborate contribution, illustrated by means of the epidiascope, on

Inflammatory Pseudo-Tumours of the Orbit.

He dealt with three cases and explained that the term set out in the title had a clinical rather than a pathological significance; it caused proptosis, limitation of movement, increase in bulk of orbital tissues, and perhaps swelling of the lids. There was a slow onset, and none of the usual signs of inflammation. Macroscopically, the orbital contents, if removed, might strongly suggest tumour. Benedict and Knight were inclined to attribute these pseudo-tumours to focal infection elsewhere, which had been overlooked in the absence of symptoms and leucocytosis. But the evidence must be carefully sifted, and this should not be made a sort of scrap-heap for otherwise undiagnosable conditions. Birch-Hirschfeld made three useful groups of this condition. In the first he placed cases in which the recovery was spontaneous, or took place after the use of iodide of potassium, mercury, or quinine. In the second group an operation was performed without finding any tumour. The third group embraced the cases in which the macroscopical appearance of the orbital contents suggested tumour, but the microscope revealed a chronic inflammatory mass.

The first case related might be taken as a good example of the condition. It was that of a man, aged 25, who in July last attended hospital with marked proptosis of the right eye and much conjunctival injection. Movements were full and normal. Rhinological examination was negative. He was treated with mercury and iodide at once, without awaiting a Wassermann test. Three weeks later there was some limitation of movement in the right eye, and the proptosis was more marked. With glasses, vision in both eyes was 6/12. A month later he was taken into hospital, and mercury injections and potassium iodide were continued for a further fortnight, but without reducing the proptosis. Exploration revealed a hard mass of tissue in the orbit and no pus. Exenteration was performed a week or two later. He showed a photograph of the macroscopic appearance; there was a large white mass within the cone of muscles, moulded closely over the posterior surface of the sclerotic and quite surrounding the optic nerve. The nerve itself did not seem to be affected. The vessels showed great thickening, both the intima and the adventitia; in some instances this caused obliteration of the vessels. This was, no doubt, a gumma. In a similar case reported by Hine the Wassermann was negative, and, concerning the value of the Wassermann test, Harrison stated that it was frequent to obtain a negative reaction in cases of syphilis when only a small syphilitic lesion was present, and that help in doubtful cases was sometimes derived from a provocative injection of salvarsan or a derivative. Mr. Williamson-Noble's second case was that of a man, aged about 50, who, following influenza, developed what appeared to be a lymphoma. The condition seemed to have been predisposed to by the lowered resistance due to the influenzal attack. The remaining case of the condition was one in which a mass of young connective tissue formed as a result of irritation induced by the presence of cholesterol crystals. This was inflammatory only in the sense that it represented the reaction of tissue to injury.

The pre-operative diagnosis and treatment of the condition were very difficult. The presence of a lymphocytosis could not always be relied upon, as in two cases reported this was absent. The diagnosis involved a consideration of all the possible causes of proptosis, and he suggested that there should be an examination of the urine, especially for sugar; also a Wassermann test, and if this proved negative, repeated after a provocative dose of salvarsan.

Complement-fixation in regard to tubercle should be done, and a differential blood count, with a blood coagulation time. And there should certainly be a search for focal infections, with radiography of teeth and sinuses. Always the possibility of early Graves's disease must be considered, and an exploration should precede a decision to extirpate the orbital contents.

Mr. LINDSAY REA related a case of similar kind which had been under his care recently. The patient was a young man who was brought to hospital with his left eye proptosed, and the conjunctiva swollen and chemosed, so that the lids did not meet over the cornea. He denied venereal disease. Exploratory puncture with division of the external rectus revealed nothing. Subsequently the Wassermann was found positive. Vision in the eye concerned was reduced to bare perception of light. Three weeks later the other eye began to be proptosed. The man was put upon treatment by novarsenobillon, combined with iodide of potassium and mercury inunction. At the end of the third week the improvement was definite, and in the sixth week the eyes settled down, the lids again met, and vision was 6/6 in each eye. Even if the Wassermann had been negative, he would have persevered with antisymphilitic treatment.

Bi-temporal Hemianopia due to Fracture of Skull.

Mr. EGERTON GRAY showed a man who, in 1911, fell 12 feet and sustained a depressed fracture in the frontal region of the skull. There was severe epistaxis, and on recovering consciousness he complained of defective sight. There had been severe headache, and in certain positions there was double vision. He also lost the sense of smell. Pupils were equal and active, and there were no colour scotomata. There had been no albuminuria or polyuria, and his sugar tolerance was not increased. He had, however, peculiar nystagmoid movements of the head.—Mr. J. H. FISHER regarded the case as a very unusual one. The fracture must, in order to cause the symptoms, have run across the roof of the orbit and involved the cribriform plate and olfactory lobes, as well as implicating the optic chiasma.

Congenital Blindness without Obvious Ocular or Central Cause.

Mr. RAYNER BATTEN showed a sister (aged 6) and brother (aged 3) who were born blind, without obvious cause. The children were otherwise healthy and well formed. There were no evidences of congenital syphilis nor of central nervous disease. Wassermann was negative in both the children and their mother. The boy had about +6 of astigmatism, and the girl had hypermetropia in one eye, and hypermetropic astigmatism in the other. Whether the pupils reacted to light was doubtful. Both had slow nystagmus.—Mr. LESLIE PATON referred to two children in the same category whom he had had under observation for a number of years. These at first had head-nodding and nystagmus. They showed fine macular changes.—Mr. FISHER thought that in Mr. Batten's cases there were pathological changes in the retina and optic nerves. The boy had pallor of the disc, and the girl had thread-like retinal vessels, and in the lower part of her fundus was a definite sheathing with pigment of some of the vessels.—Mr. M. S. MAYOU spoke of a girl, aged 18, who was born blind and whose discs looked very similar to those of Mr. Batten's two cases. Two years after he saw her she died as the result of an accident, and the post-mortem showed she had large cysts occupying the occipital lobes, the cysts comprising a distension of the posterior horns of the lateral ventricles.—Dr. FRANCHESCHETTI (Zurich) thought it probable that these two children had a familial disease, and that it was likely the blindness might be due to colour-blindness. In the latter there was also a fine nystagmus.

Mr. P. G. DOYNE showed a patient with microphthalmia, a retinal cyst, and pedunculated growths along the line of the orbito-nasal fold.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Manchester on Dec. 19th, 1924, Prof. A. DONALD, the President, in the chair, when Dr. KENNETH V. BAILEY read a paper on the

Pathology of Ectopic Müllerianoma (Pelvic Adenomyoma).

Dr. Bailey said that since the work of von Recklinghausen and Cullen towards the end of the nineteenth century—who first aroused full interest in the subject of "adenomyomatous" growths affecting the female pelvic organs—many authors had written on tumours of this class. In recent times, however, the condition had become associated pathologically with the name of Sampson, of Albany, U.S.A., and clinically with that of Donald, of Manchester. Hitherto, no attempt had been made to classify this tumour from a pathological and aetiological standpoint; its aetiology still remained in doubt and its life-history was, as yet, very imperfectly explained. However many instances of tumour formation there might be in the pelvis at the one time, they were all, aetiological, part of the one pathological condition, and must, therefore, be looked upon as part of the one tumour. They were, in fact, all brought about by the periodic or occasional invasion of the various pelvic organs or peritoneal surfaces by either endometrial tissue or Fallopian tubal epithelium.

Dr. Bailey classified the various tumour formations, which together constituted this pathological condition of the pelvis, into two types: (a) endometrial type; (b) Fallopian tube type. These two types differed essentially in their gross pathology and even more definitely in their histological characteristics. Both types, however, might create widespread lesions throughout the pelvis. It was the ovary, however, which exhibited the results of the growth and activity of these tissues to the fullest extent. A relatively insignificant reaction might be the only evidence of this growth in the uterine wall when, in the same case, the ovary had been transformed into a distended sac containing dark, tarry blood, a product of the activity of the invading tissue. It was from the ovary, therefore, that the life-history of this condition could best be studied.

Dr. Bailey said that the chief differences in the gross pathology between the endometrial and Fallopian tube types of this condition were as follows:—

Endometrial Type.—(1) An affected ovary may exhibit any stage from that of possessing small, diffuse hæmorrhagic areas on its surface to advanced excavation and distension transforming it into a distended sac filled with chocolate-coloured fluid blood, and cellular debris. (2) The lesions produced in the ovaries, uterine wall, pelvic ligament, rectum, &c., are obviously of an active local invasive nature. The impression of great activity on the part of the abnormally placed tissue is produced. Excavation may be extensive. (3) The pelvic adhesions are of a very dense character. The ovaries are fastened to the uterine wall or broad ligament by actual new growth in many instances and are often very difficult to detach.

Fallopian Tube Type.—(1) Is evidenced by small scattered hæmorrhages on the ovarian surface, of varying colour from bright red to almost black according to their age; advanced conditions exhibit erosion of the ovarian surface. A small depressed scar may mark the site of an old deposit. (2) This type is characterised by the relatively light nature of the pelvic adhesions, differing markedly from the dense character of those produced by the endometrial type. (3) Blood cavities in the ovary are not produced. (4) Both macroscopically and microscopically there is the appearance of only slight invasiveness on the part of the misplaced tissue, which only penetrates at most to a depth of about 2 mm. below the surface of the organ in which it is growing.

The chief microscopical differences between these two types, Dr. Bailey said, would be evident in a brief description of their life-history.

*Life-history of the Endometrial Type.**(a) As it Affected the Ovary.*

Stage 1.—Not visible to the naked eye. It was seen microscopically to be of the nature of a deposit of typical endometrial tissue on the ovarian surface. Perhaps one or two typical gland spaces situated in fine fibrin network which also contained endometrial stroma cells might be situated on the surface of the ovary or perhaps scattered columnar cells identical with those which line the glands of the endometrium might form this primary deposit.

Stage 2.—Invasion of the ovarian stroma by this abnormally placed endometrium. (a) If the primary endometrial deposit occupied a relatively wide area on the ovarian surface, this stage was visible to the naked eye as a minute hæmorrhagic excavation thereon and microscopically the invading endometrium could be seen to have commenced its penetration of the ovarian cortex. (b) If the primary site were relatively small in area, this stage was marked by the production of a small, somewhat diffuse hæmorrhagic bleb on the surface of the ovary. Microscopically, a pseudo-cyst was formed immediately beneath the ovarian surface (but connected with it) containing the active endometrium and extravasated blood.

Stage 3.—(a) Misplaced endometrium invading over a relatively wide area penetrated the ovarian stroma in a wedge-shaped formation. The actual glandular elements were preceded by masses of stroma cells. This was the stage of intense activity on the part of the invading tissue, both in penetration and proliferation. (b) Endometrium actively invading from a relatively small surface area might do so by a long, apparently quickly formed channel, at the termination of which the most advanced endometrium was situated in one or more actively proliferating clumps.

Stage 4.—Commencing degeneration of the invading elements. At this stage the height of activity of the misplaced tissue was reached or passed. It was visible to the naked eye as a "seam" of chocolate fluid blood which stretched for varying distances into the tissues of the ovary and marked the track of invasion of the penetrating endometrium. The chocolate fluid blood was the long-retained product of the menstrual activity of the endometrium and was composed of blood corpuscles, blood pigment, degenerated epithelial cells, phagocytes, and cellular debris. Microscopically, the invading endometrium was always found in connexion with the deepest part of the "chocolate seam" and was seen to be undergoing degenerative change.

Stage 5.—Commencing cavity formation in the ovary itself. Further extravasations of menstrual blood by endometrium situated in connexion with a "chocolate seam" caused local distension of the seam by liquefaction of the surrounding ovarian stroma and an actual cavity was formed in the substance of the ovary. Microscopically, endometrial tissue of vitality perhaps equal to that found in association with Stage 4 was seen situated in close connexion with this cavity.

Stage 6.—Last stage. Here the ovary was transformed into a distended "sac" the size of a tangerine orange or even larger. The walls of this "sac" were composed of the thinned-out and compressed ovarian stroma itself, deeply and irregularly infiltrated by old blood. The extensively excavated ovary was filled with chocolate fluid blood, the product of the activity of the invading elements. Such an ovary was always densely adherent at the primary site of invasion to neighbouring structures—e.g., uterine body or the base of the broad ligament. Microscopically, the remains of degenerated endometrial tissue might possibly be found in the deepest parts of the large cavity.

The stages in the life-history of the endometrial type of this growth were thus brought about by a process of pure invasion of the affected organ—e.g., ovary—by the misplaced endometrium. Excavation was commenced with consequent cavity formation. The terms "chocolate cyst," "hæmorrhagic cyst" used by other authors were erroneous. A "blood cavity" was produced in the ovary by this process of excavation. There was no cyst wall produced by the activity of the foreign elements. Dr. Bailey believed that the ovary became adherent to neighbouring structures during Stage 2, when slight hæmorrhagic erosion or excavation had taken place on its surface. It might escape adhesion for a time in this stage when a small space was formed immediately beneath the surface, but would sooner or later become adherent as the area of primary deposit of the endometrial tissue became larger. The ovary was, therefore, adherent at a very early stage in the life-history

of the tumour and remained so during the growth of it. There was no "perforation" of the "cyst" as described by Sampson and others. The mouth of the blood cavity was formed at the commencement of the growth inwards of the endometrial tissue, and the site of "perforation" mentioned in literature was the cavity mouth which was always found glued to some neighbouring structure. Dr. Bailey was of the opinion that the tissue found in these blood cavities and excavations was endometrium because (1) it was morphologically identical; (2) its function was the same—viz, menstruation—and this occurred concurrently with menstruation in the uterine endometrium; and (3) aetiologically, as he hoped to prove, the glandular and stromal elements were derived from the uterine cavity itself.

(b) Endometrial Invasion of the Uterine Body from Without.

Stage 1.—Implantation on the uterine surface of a clump of endometrial glands or epithelium and stroma cells. This, if extensive enough, might be visible to the naked eye as a minute hæmorrhagic spot or bleb of a somewhat diffuse nature.

Stage 2.—Active penetration and proliferation on the part of the invading endometrium. The actual glandular elements were preceded by masses of typical stroma cells which pushed their way in between the muscle bundles of the uterine body. Menstrual blood was extravasated into this "stromal bed" which in areas of intense extravasation became transformed into a highly hæmorrhagic, loose, spindle-celled matrix.

Stage 3.—Characterised by microscopical evidence of retrogressive change in the misplaced endometrium. The glands had become widely dilated and lined by cuboidal or low epithelium. They were either empty or contained old blood and were surrounded by a thin bed of stroma cells which did not exhibit any invasive activity.

(c) Endometrial Invasion as it Affects the Fallopian Tube from Without.

Dr. Bailey had seen only one case in which the Fallopian tube was definitely invaded by endometrial tissue deposited on its serous surface from without. In this the fimbrial end of the tube exhibited two small, discrete chocolate-coloured areas on its surface and another diffuse hæmorrhagic area at some little distance from these. Microscopically, the muscular wall of the tube could be seen to be invaded by typical endometrial elements having no connexion whatever with the epithelial elements of the tubal lumen. This, he held, was the only case of the kind as yet reported.

Life-history of the Fallopian Tube Type.

Stage 1.—Like the endometrial type, this stage was not visible to the naked eye. It consisted of a deposition on the ovarian surface of a mass or strip of loose Fallopian epithelial cells, of the same morphological characteristics as those which lined the tubal plicæ. These cells were of a high cylindric variety. Their sides were concave, the middle of the cell body appearing constricted. Their surfaces were relatively broad and were ciliated. Their nuclei were situated nearer the surface than the base. These cells were packed closely together in a somewhat disorderly manner when observed in rows, and a constant feature was that their surfaces presented a "dirty" appearance due to adherent particles of blood debris (fibrin) which had apparently been attracted by, and become entangled in, the cilia attached to them.

Stage 2.—Commencing invasion of the ovarian stroma of these cells. This took the form of a minute indentation in the ovarian surface lined by the invading cells and a very slight rarefaction of the subjacent tissue. There was no evidence of a "stromal bed" as in the endometrial type. This stage, also, was not visible to the naked eye.

Stage 3.—From this point penetration of the ovarian stroma continued until a stage was reached at which one or more definite gland-like spaces were formed at short distances below the ovarian surface. Often only one space was formed, rarely more than three or four together. These spaces were widely dilated, atypical in shape, as compared with endometrial gland spaces, and lined by the high columnar ciliated cell of this type. They always rested directly on the ovarian stroma. They had no "bed" of stroma cells. There was only a relatively slight rarefaction of the surrounding ovarian tissue, brought about in many of the cases by the effect of extravasated blood in the vicinity.

Stage 4.—From this point onwards the abnormally placed Fallopian elements began to degenerate. Very little further penetration took place. The affected ovary was never deeply invaded. There was no excavation. With degeneration of the epithelial cells lining these gland-like spaces and extravasation of the contained blood into the surrounding ovarian stroma, the life-history of Fallopian epithelial invasion of the ovary came to an end. Stages 3 and 4 could be detected in the gross specimen by the presence on the surface of the ovary of minute, discrete, hæmorrhagic spots, varying in colour from bright red to black, according to their age. A depressed scar might mark the site of a very old deposit.

Dr. Bailey held that Fallopian tubal epithelium was unable to invade the musculature of the uterine body. He had found evidence of it, however, in the ovarian ligament and Fallopian tube wall.

Ætiology.

Dr. Bailey believed the primary deposit on the ovarian surface (or any other surface) to be brought about by the "shedding" on to it of endometrial or Fallopian tubal epithelium emanating from the uterine cavity or Fallopian tubal lumen respectively, as the result of a process of retrograde menstruation or back-flow through the tubes, by which elements of this nature were eventually expelled via the abdominal ostium of the Fallopian tube and deposited on the surfaces of the various pelvic organs.

To prove this assertion he had examined the uterine cavity and the lumen of the interstitial, isthmic, ampullary, and fimbrial portions of the Fallopian tube in undamaged specimens of pelvic organs affected by this tumour removed during menstruation. In these he could demonstrate the presence of free blood and epithelial elements, the only possible source of which could be from the uterine cavity itself. That Stage 1 in each type was of the nature of a deposit on the surface of the affected organ he believed on account of the fact that its microscopical appearance could in no way be accounted for by any of the numerous theories hitherto advanced in the search for the ætiology of this condition.

Nomenclature.

Many names had been ascribed to tumours of the female pelvic organs containing aberrant epithelial elements. Some were suggested on ætiological grounds—e.g., "salpingitis isthmica nodosa," "adenomyositis tubæ," and "adenomyo-salpingitis"; others on a pathological basis—e.g., "adenomyoma" as the condition is called to-day, "endometrioma," as Blair Bell named it, or "adenoma" as Sampson latterly called it. Dr. Bailey, however, considered that from its pathology and ætiology, as he had described it, this tumour which was in itself (1) locally malignant, (2) did not tend to the formation of metastases, and (3) originated in whatever organ it was growing "from without," was most comprehensively described as "ectopic Müllerianoma."

The discussion was adjourned.

Specimens and cases were presented and discussed by the PRESIDENT and by Drs. BLAIR BELL, FOTHERGILL, IVENS, FLETCHER SHAW, and DOUGAL.

NURSING HOME FOR MIDDLE CLASSES AT LIVERPOOL.

By the generosity of the late Mr. Robert Davies, shipowner, of Wallasey, and his executors, a committee of the Stanley Hospital, Liverpool, has been able to purchase and equip the beautiful mansion of "Kiln Hey," Sandford Park, West Derby, as a nursing home intended exclusively for the use of middle-class patients of limited means. A sum of £10,000 was presented to the committee and this with other generous donations has enabled the committee to make this pioneer effort to meet the needs of that large section of the public whose case is not served by the hospitals or private nursing home. The "Robert Davies" Nursing Home is managed by a committee distinct from that of the Stanley Hospital, but the chairman is common to both institutions. Thirty beds are available, but there is no resident medical staff, as each patient will be attended by his or her own surgeon or physician, who will conform to the rules of the home. Patients will be charged three guineas a week in addition to professional fees. Maternity patients will be received only by special permission, and no infectious or mental cases will be admitted.

Reviews and Notices of Books.

THE EVOLUTION OF MAN.

Essays by G. ELLIOT SMITH, M.A., M.D., Litt.D., F.R.C.P., F.R.S. London: Humphrey Milford. Oxford University Press. 1924. Pp. 158. 8s. 6d.

THE essential theme of this book, as the author says in his preface, is the development of the view of the importance of the cultivation of vision in the evolution of man's intellect. Such a theme calls for a general review of the course of human evolution, and this is provided in the three main chapters of the work—on the Evolution of Man, Primitive Man, and The Human Brain. A "foreword" on Man's Pedigree leads up to the first chapter. The subject-matters of the chapters are derived from various addresses given at different times before different audiences: they have been brought together to meet the wants of anthropological students who desire information on these more recent views. But for those also who are only amateurs in the science this book will be a fascinating study, for it is the work of an acknowledged master of the subject, dealing lucidly and learnedly with many of the wider problems contained within it. Moreover, there are no sterile references, nor collections of unrelated facts, to annoy and bore such an amateur anthropologist, while the serious student has an authoritative work to which he can refer with confidence. We confess that when we had finished reading this little book we turned back and read it through again, with increasing pleasure and profit. We had hoped at first to come across some discussion of such things as the anatomical details of the Rhodesian skull, or of the reasons for refusing descendant rank to the Neanderthal man with reference to the original owner of the Mauer jaw, or maybe some talk about the dentition of *Propliopithecus* and *Eoanthropus*, for Prof. Elliot Smith's remarks on these and many other such points would be of great interest and importance; but one recognises, of course, that such matters do not really come within the scheme of this book and would be out of place. The fundamental difference of outlook between the "historical" and "evolutionary" schools of ethnological thought are dealt with vigorously by Prof. Elliot Smith, who is a leading exponent of the former school, and does not spare his opponents in his trenchant and reasonable criticism.

The book is not only of great interest, but it is one that will give some idea of the present trend of anthropological thought to those who are not concerned as experts in the formation of it. It has some excellent illustrations and is well produced.

PRACTICAL SURGERY.

By VICTOR PAUCHET. Translated by F. R. B. ATKINSON, M.D., C.M. Edin. With a Preface by Sir CHARLES GORDON-WATSON, C.M.G., F.R.C.S. London: Ernest Benn, Ltd. 1924. Vols. I. and II. Illustrated. Pp. 252 and 293. 18s. 6d. per vol.

THIS is an original type of book in that it is an atlas of drawings made from actual operations, accompanied not simply by a description of procedure, but by remarks on the advisability of employing the different methods in the light of the author's own experience. This is a commendable feature, especially so as the advice tendered is essentially practical and obviously well considered. Of the two volumes, the second is the more valuable. In the first an indifferent and inadequate chapter on surgical technique is followed by descriptions of operations upon hernia, hydrocele, hæmorrhoids, and a few other matters which proceed upon generally accepted lines. An interesting method of operating upon vesico-vaginal fistula is described, by which free access to the site of operation is obtained. The results of it are said to be exceptionally good. The author adopts Sir Arbuthnot Lane's views as to the far-

reaching results of intestinal stasis and consequently recommends colectomy or partial colectomy for their relief. The chapter on gastro-jejunal ulceration gives good advice and shows very well how operations for its relief should be carried out.

In the second volume the author has been assisted in places by Thierry de Martel, J. L. Faure, and H. Ruberis-Duval. The remarks upon the use of radium in carcinoma uteri, carcinoma recti, and fibroids of the uterus are worth close study. Transperitoneal nephrectomy for large malignant tumours is performed through a transverse incision. Perineal prostatectomy is accorded its right place and a practical point in the technique of enucleation suprapubically in two stages is brought out. If there is much delay after the cystostomy the line of separation may have fibrosed up. Pauchet points out that when such difficulty is met, it is right to stop the attempt at removal of the prostate and to wait for some days, when a new line of separation will appear as the result of the inflammatory reaction. We read that the author has performed five complete gastrectomies and that one subject is in excellent health after some years. Gastro-enterostomy, according to Roux's method, is recommended for some purposes and the Murphy button still seems to be used.

There are one or two mistakes in translation, as on p. 3, Vol. II., where the first word on line 18 should obviously be "above" not "below," and on p. 111, Vol. II., where operating upon a prostate in two stages is stated to double the chances of infection. On p. 143, Vol. II., the translator tells us to pass a jejunal loop across an opening in the transverse mesocolon instead of through it, and on p. 140 of the same volume he refers to an "abandoned stitch." The pictures are excellent and show everything that it is essential to see.

NOTABLE BRITISH TRIALS.

Trial of Henry Fauntleroy. Edited by HORACE BLEACKLEY. London and Edinburgh: William Hodge and Company, Ltd. 1924. Pp. 269. 10s. 6d.

THE latest volume in the series of Notable British Trials tells the story of Henry Fauntleroy, to which there are added as appendices the brief biographies of 15 other forgers, who were convicted and hanged between the years 1750 and the accession of Queen Victoria, in the first year of whose reign capital punishment in cases of forgery was abolished.

There is no particular medical interest in the Fauntleroy case, and it is difficult now to realise why it should have created the vast excitement that it did. Fauntleroy, born in middle-class circles, was a man of good extraction and heredity; he was licentious, but the Regency was not strait-laced, and he had no mental aberration of any kind; his large forgeries—for a quarter of a million was a large sum 100 years ago—were committed in order to maintain the bank, of which he was managing partner, in such an apparent position of solidity that he could continue to draw an income which was wholly unjustifiable. No great passion of any sort seems to have influenced his life, and he was probably impelled to a capital crime by nothing more forcible than his vanity, which could not bear the public appearance of failure, or the surrender of a reputation as a *bon viveur*. Fauntleroy was hanged outside Newgate in the presence of the largest crowd which had ever assembled for the loathsome recreation of seeing a hanging, and the stringent precautions in guarding the body after execution led to the circulation of the rumour that the corpse had been resuscitated by a friendly surgeon. The same story had been told previously in connexion with many famous criminals from Jack Sheppard downwards, and in the case of Dr. Dodd, who was hanged for forgery some 40 years before Fauntleroy, such an attempt really was made. At any rate the popular story is that the hangman, whose duty it used to be to complete the dreadful work by pulling down the victim from the knees, arranged to support the body of Dodd from below while it was being taken down; mean-

time the driver of a hearse which was in readiness had been told to go with all speed to an address where a hot bath had been prepared and where the great John Hunter was waiting, or some other celebrated surgeon. It seems to be true that in the case of Dr. Dodd an unsuccessful attempt to resuscitate the hanged man was really made, though we know of no evidence to connect Hunter with the exploit, and indeed at the particular date he was a severe physical sufferer himself.

Mr. Bleackley has edited both the main story and the various appendices with care and skill, and we gather from the book, now here and now there, many vivid pictures of life at the close of the eighteenth and the beginning of the nineteenth centuries.

THE STRUCTURE OF PROTOPLASM.

La matière vivante, organisations et différenciations, origines de la vie, colloïdes et mitochondries. By J. KUNSTLER and F. PRÉVOST. Paris: Masson et Cie. 1924. With 82 figures. Pp. 252. Fr. 18.

SINCE men had microscopes it has been a regularly recurring dream that it was possible to get behind cells and find in the intimate structure of protoplasm some smaller units which should represent the ultimate basis of life. Béchamp had his microzymes, Altmann his bioblasts—which at any rate have the advantage of being easily and plainly stained so that they make pretty microscopic objects—there have been many micellæ and nowadays mitochondria are thought by some to be the same sort of thing. Prof. Kunstler believes that living matter (which he prefers to call "sarcodé" rather than "protoplasm" because the former word was used first and by a Frenchman) is composed of vesicular elements either joined together in stable and compact masses as cells or diffused in the body-fluids and capable of motion and an autonomous life. He is at some pains to point out that he advanced this view before Bütschli put forward his spongy interpretation of protoplasm, and his line of attack may be surmised from his giving in a footnote the curious bit of history that "this German professor during the invasion of 1870-71 had the good taste to date his papers from the various French towns he passed through." He differs from most recent authors in the same field by believing that chemical reactions cannot explain the phenomena of life, and that the curious behaviours of colloids and emulsions have no real analogy with vital activities; there is no continuity between live and dead. The illustrations are mostly bad micro-photographs and Prof. Kunstler's interpretation of them will not carry universal conviction.

UROLOGY.

Urologische Operationslehre. By Prof. Dr. FRITZ VOELCKER and Dr. ERICH WOSSIDLO. Leipzig: Georg Thieme. 1924. With 504 illustrations. Pp. 654. \$8.30.

THIS book on genito-urinary operations is comprehensive and is, moreover, generously supplied with illustrations. In it an account is given not only of the more usual surgical procedures known to the general surgeon, but also of those intravesical operations carried out through cystoscopes and urethroscopes that belong more to the province of the specialist. The ingenuity of the German school of urology in designing and manufacturing cystoscopes and urethroscopes is well known, and it is not surprising, therefore, that this portion of the work is so up to date and complete. In it are included descriptions and illustrations of several new instruments that have not yet appeared in English literature, for example, cystoscopes for the application of radium to the bladder growths and various new forms of operating forceps, scissors, and snares for use in operative cystoscopy. In the chapter on operations on the prostate it is, perhaps, surprising to find that so little attention has been given to per-urethral operations and especially to diathermy.

It is true that Bottini's operation is described, but surely this procedure belongs only to the past and might be allowed to drop out of text-books except as an historical reference.

These points are, however, of minor importance, and the book is probably the most important, comprehensive, and useful work that has appeared since the war on this particular subject in the German language. Both authors and publishers are to be congratulated on the result of their efforts.

PSYCHOLOGY AND THE SCIENCES.

Edited by WILLIAM BROWN, M.D., D.Sc., M.R.C.P. With contributions by J. S. HALDANE, R. R. MARETT, F. C. S. SCHILLER, L. P. JACKS, A. E. J. RAWLINSON, M. W. KEATINGE, WILLIAM BROWN, and T. W. MITCHELL. London: A. and C. Black, 1924. Pp. 184. 7s. 6d.

PSYCHOLOGY, as the author of the third essay in this book points out, seems to be a medley of discrepant and antagonistic schools. Yet its importance to such subjects as ethics, logic, education, and theology is indicated by these essays, which formed the material of eight lectures delivered at Oxford by active workers who speak with authority, each upon his own subject. Written in a scholarly manner, they are sometimes brilliant and always entertaining; never prejudiced in any bad sense of the word, they yet show the influence of his own specialty upon the individual writer. Prof. Haldane, for example, looks forward to the time when, with an adequate physiology of the nervous system, the "confused pseudo-psychology of the unconscious" will disappear—a point of view against which Dr. William Brown is moved to gentle remonstrance. Principal Jacks fears that psychology may undermine the ground on which ethical construction has to rest, whilst, on the other hand, Dr. Schiller hopes to extract from psychology abundant stimulus for a really competent and progressive science of logic. Dr. Keatinge, in contrasting Bain's "Mental and Moral Science" with McDougall's "Outlines of Psychology" brings out clearly the ineffectiveness of the older psychology in its bearing upon life and conduct. Dr. T. W. Mitchell, an ex-president of the Society for Psychical Research, discusses in the final chapter the theories of multiple personality and mediumistic "control," and inclines to the belief that the medium may acquire knowledge by some other channel than the ordinary media of the senses. The book is an interesting summary of the attitude of thoughtful men towards the newer developments of psychology.

BIOCHEMISTRY.

A Laboratory Course for Medical Students. By I. FROST, M.B., B.S. Lond., M.R.C.S. Eng., L.R.C.P. Lond., Biochemist, Medical College, Madras; formerly Assistant Lecturer in Physiology, University of Birmingham. Madras: Government Press. 1924. Pp. 56.

THIS little book covers a multitude of subjects in practical biochemistry. The first experiments are designed to demonstrate the properties of colloidal solutions, and to elucidate various points such as hydrogen-ion concentration. Then follow the usual tests for proteins, fats, carbohydrates, blood, milk, &c. This orthodox section, as one might term it, is very condensed, yet at the same time contains practically all the experiments described in larger books. By far the most interesting part to discuss is the unorthodox section. The author has boldly separated himself from the traditional "advanced" experiments, with rabbits' livers, meat, and bread, and has struck an entirely original note for a small elementary laboratory guide. In place of the usual depressing experiments, he has substituted methods of blood analysis, colorimetric determinate of hydrogen-ion concentration, the estimation of urinary diastase, &c.; methods of preparing buffer solutions, with a complete range of pH are given; the Van der Bergh

reaction is described. Coming upon these descriptions without warning in the middle of the book reacts upon the reader like a sudden breath of fresh air. In his 56 pages the author gives his students a much wider view of the subject than many of the so-called standard works.

The book is obviously meant as a summary, and in places savours very much of the "cram" book. On the whole, however, the author is to be congratulated for his courage in attempting to include some really practical methods, and in his attempt to stimulate the reader to interests outside egg-white, bread, and lard.

THE STORY OF EARLY CHEMISTRY.

By JOHN MAXSON STILLMAN, late Emeritus Professor of Chemistry, Stanford University. London and New York: D. Appleton and Co. 1924. Pp. 566. 18s.

IN writing this book it has been the author's endeavour "to tell the story of the development of chemical knowledge and science, from the earliest times to the close of the eighteenth century, in a connected and systematic way, not as a condensed encyclopædia." The fact that most of the earlier chemists were physicians makes such a book of interest to the student of the historical aspect of medicine, as well as to the student of chemical history; in this connexion we may remind those who are in favour of curtailing the time spent by medical students on chemistry, that so long ago as the sixteenth century Paracelsus was urging physicians of his time to recognise the importance of chemistry in the development of medicine. Some of the disabilities under which the earlier workers laboured are not unknown at the present day. We are told of Paracelsus (1526–41) that although he wrote voluminously, only a few of his more important medical and surgical works were published during his lifetime, since the opposition of the faculties more than once blocked his plans of publication. He often emphasised his conviction "of the necessity of experiment and experience of the physician as against looking for all knowledge to the traditional authorities." In contrast to this we read of Sylvius (1659–74) that his tendency was like that of nearly all the medical chemists of his period, "to accept a plausible analogy instead of waiting for more basis in facts for his conclusions."

The book is written attractively. We regret the death of the author, which occurred before the first proofs were received from the publishers.

OTO-RHINO-LARYNGOLOGY.

La biopsie clinique en oto-rhino-laryngologie. By Dr. ANDRÉ AUBIN, Assistant du Service d'Oto-rhino-laryngologie de l'Hôpital St. Louis. Paris: Vigot Frères. 1924. Pp. 334. Fr. 30.

BIOPSY is defined as "the operation which consists in excising from the patient a fragment of pathological tissue with the view of establishing the histological diagnosis of the disease with which he is affected." But the author has not attempted to give an ordered account of the histology of diseases of the larynx, nose, and ear, and the reader will look in vain for a systematic description of the pathological varieties, for instance, of neoplasms of the larynx or nasopharynx, or for a discussion of the types of bleeding polypus of the septum. The first chapter of this book is occupied by an exposition of the value of biopsy in making or confirming a diagnosis, and the thesis is abundantly proved and supported by reports of cases; but it would hardly seem necessary to labour this point, as though the microscopical examination of a fragment of diseased tissue were not already a routine procedure of everyday practice. An excellent, but too short, description of the histological technique is followed by a too lengthy account of the methods of removing pieces

of tissue from the various regions; this includes a description of direct and indirect laryngoscopy and cesophagoscopy, methods perfectly familiar to all workers in these regions. The final chapter contains results of observations on diseases of the various regions, and is not intended to be in any way a complete account of the pathology of the nose and throat. It contains a description of a number of interesting cases observed by the author, but is of small direct service for reference or as a source of information.

TESTS OF FUNCTIONS.

Funktionsprüfung Innerer Organe. By K. GLASSNER, L. R. GRATE, G. LEPEHNE, E. MAGNUS-ALSLEBIN, O. PLATZ, VAN DER REIS, M. ROSENBERG, and A. WEBER. Berlin: Julius Springer. 1924. Pp. 128. Gold marks 2.40.

THIS small volume is divided into eight chapters, each being written by a separate author. The first chapter deals with methods of investigating the functions of the heart by physical means, the second with electrocardiographic methods. A series of typical tracings are included. In the third chapter the functions of the stomach are treated in such an elementary fashion as to be devoid of interest. There is no account of the fractional method of gastric analysis, and, indeed, this chapter is in most respects out of date. The next chapter dealing with the lower sections of the alimentary canal is interesting in that it contains a fairly detailed account of test-meals and methods for the analysis of fæces. The following chapter, which contains an account of methods of investigating the liver, is without doubt the best in the book. It is quite up to date, and all the recent advances, such as Van den Bergh's reaction, are adequately described. The section upon renal function tests is again old-fashioned, and although a detailed account of Ambard's coefficient is given, the importance of blood analysis is barely mentioned. Tests for pancreatic function are dealt with in a sketchy manner. The authors have mis-read the names of several English workers. Thus the work of Bennett and Dodds is referred to as Parnett and Dodd, and that of Mackenzie Wallis as Wallis and Mackenzie. The final chapter deals in elementary fashion with the investigation of the vegetative nervous system by means of the action of drugs. No reference appears to be made to the work of Goetsch. It is unlikely that this volume, despite the imposing number of contributors to its hundred odd pages, will receive a warm welcome in this country.

THE EDUCATION OF BEHAVIOUR.

Second edition, revised and partly rewritten. By I. B. SAXBY, D.Sc., Senior Assistant in the Women's Education Department of University College, Cardiff. London: University of London Press, Ltd. 1924. Pp. 264. 6s.

THIS book sets out those modern principles of education which, requiring the teacher to study the why and wherefore of the actions of the child, make educational work none the easier but infinitely more interesting. Using the dynamic concept of psychology, the author draws upon W. McDougall and A. F. Shand for an account of the instincts and their development into sentiments and complexes, the use of the latter term indicating that the Freudian point of view is embodied in the general theme. We note incidentally that *impulse* is substituted for the word *instinct* because of the diversity of opinion in regard to the definition of "instinct," but to define impulse as an *inborn* tendency surely clashes with popular usage. After laying these foundations the author considers such matters as the growth of habits, the training of character, and the problems of adolescence. A useful example of the practical application of theory is found on page 234: "To ask a child 'Why do you steal?' 'Why do you lose your temper?' is to invite lies. The only true answer would be, 'I don't know; something in me makes me do it.'

But, if he thinks he ought to have a reason, he will find one, and since such a reason will make the outlet safer for the unconscious complex, he will probably feel convinced that he has found the true one."

The reader who fully understands the principles involved in this quotation has a useful grasp of modern psychology, and the book will aid him to obtain that grasp. Unlike many popular works on psychology, this book is soberly written and is not tendentious; it admirably fulfils its aim of helping not only teachers but all who have to deal with adolescent boys or girls.

WESTMINSTER HOSPITAL.

1. *Westminster Hospital Reports.* Edited by E. ROCK CARLING and HILDRED CARLILL. 1924. Vol. XIX. Pp. 299. 7s. 6d.

2. *Westminster Hospital.* An Outline of its History. By W. G. SPENCER. London: Henry J. Glaisher. 1924. Pp. 120.

OF these two books the latter is a reprint of the first article in the former, and a very good example of what a hospital history should be. Mr. Spencer begins by giving a topographical survey of Westminster from early times until the present day, which is particularly interesting, for few districts in the London area have seen more changes than Westminster. One of the most striking is the conversion of the singularly gloomy-looking Tothill Fields Prison and its site into the annexe of the Army and Navy Stores, the S.W. District Post Office, and Westminster Cathedral. Westminster Hospital took its origin from a meeting held on Jan. 14th, 1715, at St. Dunstan's Coffee House, Fleet-street, attended by Henry Hoare, William Wogan, Robert Witham, and Patrick Cockburn. Hoare was the then head of the well-known banking house; Wogan was a writer on religious subjects, and corresponded at a later date with Whitefield and Wesley. Witham was possibly a brewer, and Cockburn had been one of the assistant curates at St. Dunstan's. The four men founded a Charitable Society, the objects of which were defined in a pamphlet entitled, "A Charitable Proposal for Relieving the Poor and Needy and Other Distressed Persons." By 1716 the society had determined "that our principal care be confined to the sick and needy persons of St. Margaret's, Westminster." The result of this was that by Lady Day, 1720, a house in Petty France was opened as an infirmary, the first patient being admitted on May 11th. The infirmary was moved first to a site opposite the end of the present Caxton-street, then to some houses on the site of what is now Westminster Chapel; this was about 1733. In 1770 the name infirmary was changed to hospital. Here it remained until 1834, when the patients were moved to a new hospital erected on the present site.

Mr. Spencer gives a list with biographical details of the members of the medical and surgical staff from the beginning, together with all sorts of interesting details about the nursing and other domestic affairs of the hospital. These were by no means satisfactory in the early days, mainly owing to the fact that the governors, whose sole idea was economy—i.e., to pay the lowest wages and salaries, naturally got the worst type of service, and all kinds of petty pilfering occurred. Nursing was not really satisfactory until 1873, when the two Misses Merryweather were appointed lady superintendent and matron respectively. The Medical School was started in 1840. In 1923 the hospital was closed for renovation, practically reconstruction, and was reopened on July 15th, 1924. We have been able to give but the merest outline of Mr. Spencer's thorough account, but the whole of it is good reading. The remainder of the report comprises the usual statistical tables and sundry papers upon medical and surgical cases, of which, perhaps, the most interesting are: No. 4, An Analysis of Cases Coming Under the Jurisdiction of H.M. Coroner, &c., by Dr. Braxton Hicks, and No. 10, the Late Results of Gunshot Wounds of the Abdomen, by Mr. G. T. Mullally and Dr. Basil Price.

THE LANCET.

LONDON: SATURDAY, JANUARY 17, 1925.

QUERY DRUNK ?

AMONG the physical conditions investigated in courts of law, where medical evidence is of essential importance in determining the issues involved, two—namely, insanity and drunkenness—have a common feature which distinguishes them from other variations of normal health. To borrow a phrase from Sir JAMES PURVES-STEWART's lucid and valuable address on Acute Drunkenness, delivered before the Society for the Study of Inebriety on Tuesday last and published in THE LANCET this week, neither is "a simple clinical entity like a broken bone or a consolidated lung," as to which medical evidence must almost necessarily be accepted in favour of one side or the other. And as to the existence of insanity or of drunkenness—and they may occur in combination—lay witnesses have their say in most cases involving legal question, and give evidence upon which members of a lay tribunal, magistrates, jurors, or judges, consider themselves fully entitled to form independent and conclusive opinions in the light of their general experience of life. This introduces a difficulty of which medical witnesses should be fully aware, and which at times leads to conclusions which medicine cannot accept as satisfactory. Sir J. PURVES-STEWART's address should be read in conjunction with Dr. R. T. WILLIAMSON's paper on Mortality from Motor Traffic, which we publish also this week, when it will be realised, perhaps more fully than before, that the huge increase of motor-drawn vehicles which has taken place in recent years, and which shows every promise of continuing, has added fresh importance to the diagnosis of drunkenness, while introducing variations of the nature of the evidence required with regard to it. The man arrested a few years ago for being drunk when in charge of a vehicle had to meet an accusation in much less serious circumstances when his wheels were drawn by a horse, upon whose "horse-sense" he, and the public, to some extent relied; the man who now is brought before the court for drunkenness when driving a motor-car or lorry is more than occasionally required to stand a charge of manslaughter. It becomes now a charge of manslaughter if anyone has been killed through the alleged intoxication of a driver; it is potential manslaughter, visualised by the tribunal, if an arrest by the police is believed to have averted the offence of an intoxicated driver.

It is to be noted that the medical aspects and practical tests of acute drunkenness, as considered by Sir J. PURVES-STEWART, appear to divide the cases of drunkenness, presenting themselves for diagnosis through action of the police, into two main classes. In the one class the man charged may be the victim of physical conditions of which the police who arrested him were naturally unaware, conditions of which the symptoms are similar to those of intoxication by alcohol, but which, in fact, are due to entirely different causes. An extraordinarily apposite illustration of this sort of case is given by Sir J. PURVES-STEWART, furnished by a medical colleague. Here the driver of a car was suffering from chronic Eustachian catarrh and frequent labyrinthine vertigo. Having drunk a glass of gin and vermouth, which imparted to his breath the odour suggestive of alcoholic intoxication, he allowed the car which he was driving to mount the

footpath and come into contact with a foot passenger, having been compelled to avoid another foot passenger at a street corner. Conviction was followed by an immediate appeal and a rectification of the miscarriage of justice; and in this case there were full opportunity and means for setting right the excusable error into which the police had fallen. This will usually occur where the accused has a physical excuse to account for an accident. Analysis of the cerebro-spinal fluid, which Sir J. PURVES-STEWART finds the only, or at any rate the most convincing, way of proving the presence and absence of alcoholic intoxication is a drastic proceeding which can never become a popular test. Non-medical evidence for the elimination of alcohol as the cause of the symptoms observed will naturally be called to supplement scientific testimony, but such evidence is not always at the command of the man or woman brought before the magistrate as drunk and disorderly or incapable. In these cases reliance must be placed upon the experience of the police surgeon, who fully realises that the easy course of confirming the police view has often led to injustice. Where the accused can produce any evidence that what have seemed to the police to be the manifestations of intoxication are the results of physical default, we may be certain to-day that careful note will be taken of such a defence, which will be complete if the misleading symptoms persist after the period of alcoholism should have gone by.

The second class of case where careful consideration of the tests for drunkenness is required, and where increasing use of motor vehicles has multiplied the examples, is the accident occurring when the driver is not fully alert. A motor-driver has, to use Dr. WILLIAMSON's phrase, "a terrible weapon to control," and the danger in which he may place his fellow citizens at any time may be less apparent than it should be to his mind if he has consumed alcohol in far smaller quantities than would bring him under the notice of the police as a pedestrian or as the driver of a horse. The driver we are now considering is in normal health and not able to assign the symptoms observed in him to any previously existing condition not caused by alcohol. He is not so intoxicated, we may here also suppose, as to be helpless, disorderly, or quarrelsome. Nevertheless, his conduct as a motor-driver may call for the notice of the police. The customary story of such a case is that the driver vehemently disputes the justice of his arrest, and denies that alcohol has anything to do with the alleged irregularity in his conduct as a driver. He is brought to the police station, and having been seen by the inspector in charge, a police surgeon examines him, and perhaps some other doctor, possibly his usual medical attendant. In the meanwhile his condition in respect of drunkenness may have changed considerably. He may have grown worse than when he was arrested, or he may have shaken off to a great extent the supposed effects of what he has imbibed. He may have been excited and have become worse, or he may have grown calmer. In any case, the medical man who examines him is not likely to find him as he was when first taken into custody, and his condition is not that of a man who has been recently helpless from drink. In these circumstances the foundation of a definite opinion by a medical practitioner may be difficult, and its enunciation is not rendered easier by the attitude of some magistrates, who dislike explanatory phrases, and expect a witness to answer "Yes" or "No" to the question "Was the prisoner drunk?" while neither magistrate nor doctor is agreed upon any definition of drunkenness.

SIR J. PURVES-STEWART makes it plain that it is difficult to supply a definition of drunkenness satisfactory to medical men and at the same time convenient of application before a lay tribunal. Moreover, drunkenness which a magistrate would rightly condemn in the case of the driver of a car or lorry, differs from that which is brought to his notice in other connexions. On the whole, in view of the difficulty of defining and proving, or disproving, drunkenness in its medico-legal aspects, it is well that we can accept the estimate that in nine cases out of ten the policeman's diagnosis is correct—we might even fix the proportion of right decisions by the constable at a higher figure. The matter deserves serious consideration when we find how steadily and how rapidly the number of fatal accidents due to motor vehicles has increased and is increasing. Mistakes may be made and it may, at times, be the function and the privilege of the medical witness to prevent or to correct them by careful diagnosis. At others it will be his duty to see that men who drink intoxicants when they know that they have to drive should have their condition fully explained to the authorities responsible for the public safety. Dr. WILLIAMSON suggests that motor-car drivers should be fined for every fatal accident. We do not endorse this as a practical remedy, nor is it, we think, consistent with the generally accepted view of justice. We are more in accord with his opinion that all drivers should abstain from alcohol during their hours of duty, and should be required to produce a certificate that they are temperate as regards alcohol. That they should be total abstainers strikes us as a counsel of perfection impossible to carry out. The enforcement of sobriety among drivers by all possible means would tend to the protection of the public and would be possible in some degree in a class which is already compelled to be officially licensed. In any case, the prevention of charges of drunkenness is of an importance to the public at least equal to that of the accurate diagnosis of intoxication in the individual accused.

THE PANEL PRACTITIONER'S RIGHT OF APPEAL.

SOME misunderstanding has arisen regarding the scope of the new rules for appeal under the National Health Insurance Acts which came into force at the beginning of the year. The amended form of Rules 1 to 11 of Order LV B of the Supreme Court, printed in THE LANCET of Jan. 3rd, refers only to appeals from ministerial decisions under Section 89 of the National Health Insurance Act, 1924, on questions relating to the liability of employed persons to be insured or to the amount of weekly contributions payable. These Rules do not in any way affect the important question of the panel doctor's right of appeal to the Courts against ministerial decisions affecting him, or the equally important question of his right to require a case to be stated for the consideration of the High Court. The position on these matters still remains as follows. Against the infliction by the Minister of a pecuniary penalty there is no right of appeal and no means of questioning the Minister's decision, provided that the Minister in arriving at his decision has followed the prescribed procedure. It will be recalled that the Minister's unrestricted power in this respect was recently brought into prominence by a case in which the Minister inflicted what was very widely regarded as the excessive penalty of £1000. Against any decision given by the Minister in his judicial capacity on an appeal from a decision by an insurance committee,

there is also no right of appeal, neither can an appeal be lodged against what the Department regard as the administrative act of the Minister in removing a doctor's name from the panel. It is true that the provisions of the Arbitration Act, 1889, are applied to the hearing or inquiry which precedes the latter two classes of ministerial decision, but as regards opening the doctor's approach to the Courts the effect of this is no more than to provide that at any stage of the proceedings the Minister may, or, if directed by the Court or judge, must state as a special case for the opinion of the Court any question of law arising in the course of the proceedings.

From the very inception of the National Health Insurance Act of 1911 the medical profession have considered that the opportunity afforded to the doctor to approach the Courts has been inadequate. Prior to 1913 the view was strongly pressed that the right of final appeal to the Courts against ministerial decisions should be widely recognised. Subsequently this view was somewhat modified. It was recognised that such rights could not be unilateral and would have to be extended to insured persons, approved societies, and insurance committees, with the resultant risks to the doctor of expense and undesirable publicity; it was also felt that the Minister, being specially conversant with the whole subject-matter and alive to the importance of adequate continuity in decisions, might be the most suitable tribunal for deciding the majority of cases. There remained, however, the belief that there should be some further right of appeal against the Minister's decision to remove a doctor's name from the panel, and the recent case to which reference has been made revived the demand for some check upon possibly arbitrary or unjust action by the Minister in the infliction of a pecuniary penalty. The present view of the central representatives of the medical profession on these matters is set out in the draft memorandum of the evidence to be placed before the Royal Commission on National Health Insurance by the British Medical Association. As may be seen from the summary of this memorandum, which we printed last week, the view is that, while the insurance doctor might justly be made liable to penalty for the wilful charging of unauthorised fees and for such general conduct as is held to be detrimental to the interests of the service, and might be subject to serious official action for the making of wilfully false statements in connexion with the records, reports, and certificates which he has undertaken to furnish, general questions of supposed neglect or lack of success or improper behaviour on the part of the doctor should be solved by the exercise of the patient's right to change his doctor at any time, just as cases of unreasonable conduct on the part of the patient should normally be dealt with by the doctor's right to notify that he no longer desires to be responsible for the case.

If these principles are adopted it is thought that the present machinery should not on the whole be inappropriate to meet the majority of cases, if two further safeguards are provided. These are: (a) in cases of infliction of penalty, an appeal to the Courts should be possible, not only on the ground of improper procedure, as at present, but also on the ground that the penalty inflicted is out of proportion to the offence; (b) in cases of proposed removal from the panel the doctor should have the right of appeal to a duly constituted central professional committee, and that not until that committee advises the course should the Minister be able to remove a doctor's name from the panel. The General Medical Council would be the natural tribunal to hear such appeals if to do so came within its statutory scope.

UNCALLED-FOR APPENDECTOMY.

How often has the vermiform appendix suffered the fate of the innocent scapegoat and been cast into the wilderness for the sins of the abdomen? Dr. Henry Wald Bettmann, of Cincinnati, in a paper on Diagnostic Errors Leading to Uncalled-for Appendectomy,¹ places the figure high, and he supports his contention by many quotations from published articles, mainly American, which, if they represent the state of affairs prevalent at the moment in the United States, show the need for a very drastic revision of the diagnostic symptoms of appendicitis. "In 1920 Hugh Cabot stated that in large surgical clinics hardly a day passes on which patients who have had their appendices removed without relief do not present themselves. The following year R. F. O'Neil informed us that about 25 per cent. of the patients in the Massachusetts General Hospital who had ureteral calculi had had operations on their appendices or the abdominal organs before a correct diagnosis was made. In 1922 S. A. Chalfant called attention to what he called a notorious fact that the ultimate results of operations for chronic appendicitis are among the poorest in surgery." The justification for the operation lies, Dr. Bettmann is careful to point out, not in the pathological condition of the appendix as found by the surgeon or pathologist, but in the clinical results obtained by the operation. He sets out clearly the difficulties attaching to the diagnosis of the chronic appendix and particularly refers to the chances of error in diagnosing appendicitis from subjective symptoms alone (right iliac fossa pain) in the absence of previous attacks.

There is, however, a very real distinction to be drawn between difficulty of diagnosis and want of care in examination. Dr. Bettmann's estimate that two-thirds of a series of 170 cases unsuccessfully operated on had never been carefully studied before the operation would seem to point to the latter cause rather than the former; but one cannot help believing, and indeed hoping, that Dr. Bettmann has painted the picture in rather lurid colours to press home his point. To us in this country such a statement is frankly astounding. It may be, however, that there is less risk of inadequate study on this side of the Atlantic, where the patient is rarely operated on by the medical man making the first observation, and indeed in our hospitals patients are most carefully examined by three or four different experts before the diagnosis is decided. Further, we place less reliance upon the X ray diagnosis of the condition. Dr. Bettmann does not mention the confusion which may arise in the differential diagnosis of visceroptosis and appendicitis, and a statement which he makes gives a possible clue to some of the unenviable results he records. He says:—

"In the series of cases which form the basis of this paper, I have accurate records in 127 patients of the right iliac physical findings from one to five years, or, in a few cases, even longer, after the appendectomies had been performed. In 78 cases the incision had been made in the right iliac region; in 49 cases the incision was made in the median line. Of the 127 patients, 55, or 43 per cent., still had definite tenderness at McBurney's point quite as marked as we ordinarily see in unoperated patients. It is astonishing to learn that persisting right iliac tenderness was even more common in the patients with a median incision than in those with a right-sided incision; 24 out of 49, or nearly 50 per cent. in the median cases; 31 out of 78, or 40 per cent., in the other group. A larger series of cases may possibly somewhat modify these proportions, but it is as important as it is interesting to learn that more than 40 per cent. of patients after unsuccessful appendectomy manifest tenderness in the right iliac region. It may be that the removal of the appendix creates a right iliac tenderness which did not formerly exist. Future observations are needed on this point."

It is very probable that in many of these cases the trouble is really visceroptosis, or at any rate ptosis

of the cæcum and not appendicitis at all. It is true that enteroptosis is occasionally, perhaps frequently, associated with abnormal, generally fibrotic, appendix, but the changes in the appendix are secondary, and removal of the appendix can do little, if anything, to cure such a case.

Epigastric pain is the essential fact in so-called appendix dyspepsia, but this very point may lead to another source of error—namely, the diagnosis of appendicitis while overlooking the existence of the real cause in the upper abdomen, whether it be a duodenal or gastric ulcer or a cholecystitis with or without gall-stones. Many surgeons in this country in making the relatively rare diagnosis of appendix dyspepsia open the abdomen above the umbilicus, thus securing a good view of the upper abdominal organs and avoid the risk of overlooking the real cause of the trouble. If the anæsthetic is well given there should be no difficulty in removing the appendix through such an incision. Considering the appendix more from the histopathological point of view than from the clinical, Prof. Oscar Beutner, of Geneva, deals² with the indications for appendectomy in the course of gynæcological laparotomy. His observations are based on a series of 1400 laparotomies which he performed personally between the years 1907 and 1922. His conclusion is that the removal of the appendix during the course of a gynæcological laparotomy should be based on pathological signs in the organ, and that the routine removal of the appendix in every case of laparotomy is not to be recommended. He quotes with approval the words of H. Vulliet: "Let us leave the appendix in peace, even if its size or its form do not please the eye," and adds the pertinent corollary that it is surprising what a lot of rough handling the appendix will stand.

A TENEMENT VENTURE.

An attempt is being made to solve the slum problem in Bath on lines which deserve to be more widely known. The slum problem in Bath is, and has been for years, a particularly serious one. Several of the areas are below flood-level, all contain houses falling to pieces, insanitary, and terribly overcrowded, and there were in 1923, when this venture was started, 400 houses which were actually condemned as unfit for human habitation. The families occupying them had, however, in most cases no alternative to remaining where they were, as there was no other accommodation to be found. Realising the position a small group of Bath citizens conceived the idea of acquiring, near the slums but in a better neighbourhood, a large empty house—part of which had, in fact, been a public house—and of turning it into a number of tenements. For this purpose appeal was made for funds to purchase and reconstruct the property, and most of the needed money was obtained in smaller or larger donations. Just over a year ago the new tenants moved in, nearly all of them families with young children and all of them from badly overcrowded or insanitary dwellings. There are now eight families in the house; the rents vary from 4s. 6d. to 10s. per week according to number and size of rooms, and the venture is regarded as in so sound a financial position that the committee is on the look-out for another house to use in the same way. The aim throughout has been twofold: to relieve some of the congestion in the worst parts of the city and to provide homes of a decent and adequate nature for some of those who have hitherto had to live in the utmost squalor. The annual meeting of the British Medical Association, which is to take place at Bath from July 21st–24th, will have a section of Medical Sociology under the presidency of Dr. C. E. S. Flemming, of Bradford-on-Avon. We commend the Bath tenement venture to the sympathetic attention of this section.

¹ Journal of the American Medical Association, vol. lxxiii., No. 16, p. 1216.

² La Presse Médical, Dec. 3rd, 1924.

Annotations.

"Ne quid nimis."

WEATHER AND MORTALITY.

IN the current registration week respiratory diseases accounted in London for 520 deaths, only 56 of which occurred between the ages of 5 and 55. The age-group 0-5 claimed 325 deaths, and the age-group 55-upwards, 139 deaths. Taking the summer week of six months previous, the corresponding figures were: Total 154, 0-5 group 92, 5-55 group 20, 55-upwards 42. It has long been recognised that weather conditions obtaining in the winter months are accompanied by an increased mortality from respiratory diseases—namely, bronchitis and pneumonia. Thirty years ago the late Dr. James B. Russell, of Glasgow, in his treatise on "The Evolution of the Function of Public Health Administration," wrote a strong condemnation of smoke and its ill-effects, and concluded that a high pulmonary mortality was caused by the combination of fog and low temperature. Proof, however, of the exact part played by the several meteorological factors which might be concerned in a high mortality has only recently been forthcoming, and for this our thanks are due to the statistical method, and in particular to two papers recently issued by the Statistical Department of the National Institute for Medical Research. In the first of these, which appeared in our own columns,¹ Mr. W. T. Russell dealt with the influence of fog on mortality from respiratory diseases among children (0-5 years) and adults (55 years and upwards) in the boroughs of Islington and St. Pancras in each week from October to March for 27 years beginning with 1870; the analysis was confined to these age-groups, as their mortality from respiratory diseases embraces 70 per cent. of the total deaths from these diseases. He found that the trend of deaths among children was altogether different from that among adults. The graph of the former starts from a minimum in October and reaches its maximum in the last week of November, and then falls to what is practically a fixed level for the remaining weeks. On the other hand, the curve for adults like that for children starts at a minimum, but goes on increasing with the exception of a very slight depression in the fourth week of December, and attains its maximum in the first or second week of January. It was observed that the period of maximum fog did not coincide with the maximum of deaths. It remained to investigate if the fog required the conjunction of some other meteorological factor; rainfall had no influence, but it was found that if the prevalence of fog was associated with a low temperature and frost, then the respiratory death-rate was influenced very considerably in adults; this effect was not evident in the case of children. Dr. M. Young's paper² helps us in the case of the children. He deals very fully with the influence of monthly and weekly temperatures (mean and minimum), of monthly and weekly relative humidity, and of monthly and weekly mean rainfall upon the mortality from respiratory diseases in children under 5 years, for a period of from 40 to 50 years in the cities of London, Glasgow, Edinburgh, Aberdeen, and Dundee; he studies also the relationship between the death-rates for these diseases in the registration counties of England and Wales in the decennia 1901-10 and 1891-1900, and their mean annual temperature and mean annual rainfall. Dr. Young finds that the lower the mean temperature the greater the fatality from bronchitis alone or from bronchitis and pneumonia summed together, and also that the mortality is most intimately related to the mean temperature of the preceding week. As suggested by Dr. Leonard Hill, the cold weather probably compels children to remain indoors in stuffy,

over-heated rooms, where infection is intensified and health weakened by heat stagnation, by a lowered metabolism, and by want of sunlight. Rainfall had no influence on the death-rate for respiratory diseases in children, nor had humidity except perhaps in Glasgow. Here there was some suggestion of the existence of a direct association—the moister the atmosphere the higher the death-rate from bronchitis.

COST OF SANATORIUM TREATMENT.

THE Ministry of Health has issued its second annual analysis of the costs of treatment at a large number of sanatoria and other residential institutions for tuberculosis, and thereby does undoubted service to the economical and efficient management of those institutions. The Ministry itself makes no comment on the figures beyond suggesting that in some cases further consideration might be given to the cost of provisions, the proportion of staff to beds for patients, and the advantage of keeping the beds constantly occupied, if need be, by taking patients from other authorities. Most of the factors governing costs are given in such detail that it should be easy for boards of management and medical superintendents to judge if their institutions are being managed economically.

The figures cover the year ended March 31st, 1924, and represent costs per patient per week. Some sanatoria, especially those recently built, are burdened with heavy loan charges, ranging up to 28s. per patient per week. If loan charges, rent, rates, taxes, and insurance are excluded, as being more or less outside the control of the management, more useful comparisons are possible with the remaining costs. Thus, if the 24 larger sanatoria, mainly for adult pulmonary cases in England, are taken, each containing 100 beds or more and each controlled by a local authority, the average cost is 39s. 3d., which is only about 1s. less than the previous year. The extremes are 32s. 9d. and 49s., but only five are below 36s., and two over 43s. 6d., so that on the whole there is a considerable degree of uniformity. Local conditions, such as the planning of the institution or its adaptation from other uses, often determine the standards of staffing and fuel consumption. Other four large institutions which may definitely be classed as hospitals for advanced cases cost on the average 48s. 7d., which is the same figure as last year. It would be an advantage if the Ministry gave cost of food of patients and staff separately. At present it gives the cost of provisions for patients and staff together, divided by the number of patients. Hence, in any comparison the proportion of staff to patients has to be taken into account. The average for the larger sanatoria is 1 nurse to 6½ beds occupied. The wide range, 1 to 5 to 1 to 12, suggests that standards of staffing are far from uniform. On the basis stated, costs of food average 14s. 7d., in few cases being over 16s. or less than 13s. The lowest figure is 10s. 11d., which in a large institution with one nurse for every five patients can scarcely be correct. A figure of 14s. 7d. would correspond approximately with a cost of 11s. 3d. per week for a patient's food alone. In the smaller sanatoria belonging to local authorities, and in sanatoria belonging to voluntary bodies, the average total cost is 5s. or 6s. higher than for the large sanatoria, and in these the range of costs is considerably wider. Cost of food is generally higher, ranging in one institution up to 27s. 7d. in 1923. It is clear that great economy is possible in such a case. In institutions for children the cost of food ranges ordinarily from 8s. to 10s. From the table it is possible also to compare the average salaries paid to the nursing staffs of the different institutions. In several the average ranges between £40 and £50 a year, while at the other end of the scale it rises to £80 to £85, or even in one extreme case—a very small institution—to £100. It is also interesting to find that in few sanatoria do the drugs and medical appliances cost as much as 1s. per patient per week.

¹ THE LANCET, 1924, ii., 335.

² Journal of Hygiene, 1924, xxiii., 151.

Although there are considerable differences between institutions apparently alike in the proportions of early, intermediate, and advanced cases, it is safe to infer from the figures published that many institutions have quite different standards from the others in regard to the classification of these groups of cases. This defect will doubtless improve when the classification put forward by the Ministry becomes more widely employed.

THE POLICY OF THOROUGH IN SANATORIUM TREATMENT.

THE report of the Vejlebjerg Sanatorium for 1923, the year of Prof. Saugman's death, shows that in spite of the loss of its distinguished head it continues as a pioneer institution, testing every new therapeutic measure likely to be beneficial. Of the 103 patients discharged during 1923, after an average residence of 208 days, only 12 belonged to the first stage of the disease, and as many as 72 to the third stage. And yet 74 patients were discharged as improved or "relatively" cured. A clue to these good results is to be found in the extensive use of lung collapse treatment and actinotherapy. As many as 33 patients were selected for artificial pneumothorax treatment, thoracoplasty was performed in 11 cases, thoracoscopy with cauterisation of adhesions in 13, and phrenicotomy in one case. Carbon arc-light baths were given in 27 cases, quartz mercury baths in 10, sun baths in four, and X ray treatment in six cases. Of the 66 patients who were sputum-positive on admission as many as 19 were sputum-negative on discharge. A comparison of a report like this with any typical sanatorium report 15 or 20 years ago cannot fail to show how great is the progress that has been made since the days when sanatorium treatment consisted almost exclusively of rest, graduated exercise, dieting, and exposure to inclement atmospheric conditions.

VACCINATION FOR WHOOPING-COUGH.

WRITING on the Treatment of Whooping-cough in our own columns two years ago Dr. T. Izod Bennett said¹: "Vaccine treatment in whooping-cough, whether prophylactic or curative, is logical and harmless: it is not at present possible to say that it is invariably beneficial." Since then Dr. A. H. Meyer, Dr. M. Kristensen, and Dr. E. Sørensen have carried out extensive investigations with a whooping-cough vaccine in numerous Danish hospitals, and a report on these, as well as the experience of general practitioners in Denmark and the Farøe Islands, has now been rendered available.² The Danish vaccine was prepared from a 48-hour old blood-agar culture of Bordet-Gengou bacilli, of which there were about 10,000 million per cubic centimetre. It was injected subcutaneously, three injections being given at intervals of four days, the doses at each injection being 0.5, 0.7, and 1 c.cm. respectively. At one hospital intramuscular injections were given on five successive days, the doses being 0.1, 0.2, 0.4, 0.8, and 1 c.cm. respectively. The vaccine was given both as a prophylactic and as a therapeutic measure, and the results obtained were classified according as the vaccine was given as a prophylactic or not, and according as it was used in hospital or general practice. Questionnaires were addressed to 109 doctors who had been supplied with this vaccine, and replies were obtained from 69. The verdict was decidedly favourable on the whole, although not unanimous. All the practitioners in the Farøe Islands reported favourably after an experience of about 2100 cases. It was observed that the disease was less severe in children given prophylactic injections than in those who acted as controls. In some cases the vaccine did not prevent the development of the disease, which did, however, seem to run a definitely milder course, thanks to this procedure. When the vaccine was given for the first time early in the disease

it also seemed to have a beneficial effect, but when the disease had fully developed there was a divergence of opinions as to the therapeutic value of the vaccine. Late in the disease it would seem to be practically useless. The authors refer to complement-fixation tests in six children, none of whom had had whooping-cough, and only three of whom had been vaccinated. As was to be expected, the three children who had not been vaccinated gave no complement fixation with whooping-cough bacilli, whereas the three vaccinated children gave complement fixation which reached its maximum eight days after the third injection. Though the authors' report is definitely favourable to this vaccine, notably when it is given as a prophylactic to children exposed to infection with whooping-cough, they admit that there may be much room for improvement in such directions as the preparation of the vaccine, its dosage, and the time of administration. There may be various types of Bordet-Gengou bacilli, and the differences in the results of vaccine treatment may partly depend on our still imperfect knowledge of these still hypothetical types. Another factor which may influence the action of this as of other vaccines is its age. Larger doses at shorter intervals might possibly increase the percentage of successes.

TWO CENTURIES OF GUY'S HOSPITAL.

ALTHOUGH Guy's is far from being the oldest of the London hospitals, it took its place, almost from the beginning and as of right, beside its two ancient and famous predecessors. The doors of this noble foundation, which last week commemorated its two hundredth anniversary, were hardly opened before the whole of its 400 beds were occupied—an unmistakable indication of the extent of the need to the alleviation of which Thomas Guy devoted the bulk of his great fortune. On Jan. 6th, 1725, he lay dead, robbed by a dramatic stroke of fate of the crowning satisfaction of watching the fruition of a great idea. By the standards of longevity of his day he was a venerable old man—for that matter, indeed, the span of life has even now not been lengthened sufficiently for 80 to be thought of as anything but a "good old age." Length of years and abundance of opportunity must needs have had their influence upon the acquisition of the £330,000 which he accumulated, two-thirds of which he set aside for the endowment of his hospital. The bases of his fortune were curiously mixed. Founded upon the sale of Bibles it was reinforced by speculation in sailors' pay-tickets and consolidated by fortunate operations in that South Sea stock which brought ruin to so many who were less prudent or more avaricious. There is no good reason to suppose that Guy was other than an honest and honourable man, and assuredly he did not accumulate money for his personal comfort or the gratification of social ambition. His self-denial was directed in the main to the furtherance of a great act of charity the fruits of which are still with us, to say nothing of the charity which he dispensed in his life-time, and his personal service as Member of Parliament for his mother's native town of Tamworth, still dominated by that grim castle of the Marmions with which he must have been well acquainted.

The most precious faculty of ancient and virile institutions is their power of renewing their youth, of adapting themselves to new needs and novel conditions. The great London general hospitals are remarkable examples of this power and of its successful exercise. For generations past they have been faced by tasks which have steadily grown in magnitude and complexity—tasks, moreover, which have consistently outrun the material means of performing them. At the time it may well have seemed that, in the words of his epitaph, Guy's foundation in its generosity "rivalled the endowment of kings," but as men grow in numbers and knowledge and ever ask more of life, the value of money sinks. In the course of its history Guy's has had other and great

¹ THE LANCET, 1923, i., 198.

² Acta Paediatrica, vol. iv., Fasc. 1, 1924.

benefactors, notably William Hunt, who, a little more than a century after the death of the founder, bequeathed to it a fortune hardly inferior to that amassed by the bookseller's apprentice, yet to-day its expenditure exceeds its assured income by close upon £2000 a week. Much of this great outlay has been necessitated by the determination of the governors that the hospital shall never fail to respond to the demands upon it for the means of cure, and still more for the means of prevention. Very soon Guy's will celebrate another event not less important than the provision of the hospital itself, for this is the centenary year of the medical school which has produced an almost unrivalled series of great physicians and surgeons, has incalculably reduced the sum of human misery, and exercised a decisive influence over the development of medical education. The public is apt to forget, or to lay insufficient stress upon, the vital importance of the functions of teaching and research which the great hospitals have laid upon themselves—functions which ever grow more momentous. It is, therefore, well to emphasise the fact that of the £200,000 which the governors of Guy's Hospital are just now asking the country to provide, £40,000 are accounted for by the debt on the medical school, while £100,000 are mainly represented by the cost of providing such "modernities" as X ray, light, and massage treatment, and better accommodation for nurses. Upon the actual maintenance of the hospital there is a debt of more than £50,000. That Guy's is not in the habit of appealing for great sums is a testimony to the excellence of its management no less than to its good fortune in attracting substantial benefactions. Only once before has it begged on a large scale, chiefly by reason of the lack of income caused by agricultural depression. The £100,000 for which it then asked was obtained, and we cannot doubt that the larger sum that is now urgently necessary will be forthcoming before the close of the bi-centenary year.

A great hospital such as this is not an institution local to London. In many directions its work benefits the entire kingdom—it would, indeed, be no exaggeration to say that those benefits extend, more or less directly, far beyond the bounds of the Empire. This is especially true as regards its always growing activities in the prevention of disease and the discovery of methods of cure. Thus its appeal is as wide as the results of its work. Guy's Hospital has steadfastly renewed its youth in the past, and it is its barest due that it shall not suffer because it has interpreted its duty in so broad a spirit and with so receptive a mind.

DEVELOPMENTS IN PUBLIC HEALTH TEACHING.

WE have referred recently to some interesting developments in research which are being made by the London School of Hygiene and Tropical Medicine at the present time in coöperation with the authorities of Southern Rhodesia, with the Zoological Society in this country, and otherwise. We learn that on the teaching side of the school the question of the practicability of easy developments in the teaching of public health is being thoroughly explored. The tropical division of the school (the Old London School of Tropical Medicine, at Endsleigh Gardens, Euston), which was originally founded by the late Sir Patrick Manson, was taken over by the new body on August 1st, 1924, and the new course in parasitology for the Diploma of Public Health is being given by the heads of some of the departments of this school.

Developments in the general public health teaching undertaken by the school will, it is anticipated, be made so far as is practicable, having regard to the accommodation and financial assistance available pending the erection of the new building. In this connexion an interesting stage has been reached, as five architects—selected by the board of management

in consultation with their assessor, from those architects who have had special experience in laboratory construction—have been invited to submit, in competition, designs for the building which is to occupy the site in Gower-street acquired some time ago for the purpose. It will be remembered that the funds for the provision of the new building and for its equipment are being provided by the International Health Board of the Rockefeller Foundation. We understand that the building and site will cost well over £100,000, and that the accommodation to be provided, apart from the basement, will extend to 100,000 superficial feet of floor space. A special feature of the plans will be the large amount of space devoted to the purposes of the museum. In its construction, and in its equipment, it is anticipated that the new school will realise the high hopes of those who have been concerned in its provision, and prove to be a worthy embodiment of the benefaction of the Rockefeller Foundation. We may add that the present staff of the London School of Hygiene and Tropical Medicine have every confidence in the success of the final scheme under the able directorship of Dr. Andrew Balfour. Since the institution of the new régime there has been no falling off in the number of students attending the course; on the other hand, the size of the classes is rapidly increasing. During the autumn term of 1924 a record number of over 70 post-graduates attended, while the class just assembled is much larger than what is usual at this time of the year.

The standard of knowledge necessary to acquire the D.T.M. is causing some anxiety to the teaching staff, it being necessary at the present moment to condense a large amount of instruction into a three months' course, so that consideration is now being given to the feasibility of extending the duration of the courses in order to keep pace with the rapidly extending field of tropical medicine and hygiene. One of the most important activities of the school lies in the Tropical Diseases Library; this, in conjunction with the Tropical Diseases Bureau, has now developed to a very considerable extent. It is hoped so to equip it that it may constitute the standard library for all workers in tropical medicine and hygiene in the metropolis. The library is now being utilised by a number of outside workers as well as by students attending the course.

THE TEAM SYSTEM IN PHYSICAL TRAINING.

A CIRCULAR on Physical Training (price 1d.), just issued by the Board of Education as a supplement to the Board's Syllabus of Physical Education (1919), marks the steady drift away from the artificiality of the Ling system to the more natural form of exercise in the shape of play with educational value. The lack of emotional content in the Ling system has always been noticeable, and the value of the herd instinct as a means of adjusting the individual to his social surroundings has been demonstrated convincingly by Sir Robert Baden Powell in the Boy Scout movement. A system of physical exercises utilising this instinct must have great educational value. The team system has been developing of recent years in English and New York schools, and has now taken a proper place in the educational curriculum for older boys and girls. The practical advantages of the system are thus summarised in the circular:—

(1) Greater variety in the work can be obtained by giving the teams different exercises (particularly recreative exercises) and games; (2) the children are able to get more practice in the exercises and to take a more active part in the games by working in smaller groups; (3) much time is saved in exercises in which only a few children can take part at once, by setting the teams to work separately; (4) it is often possible to teach some new exercise or game to one or two teams at a time, while the other teams practise what they already know, and in this way to give more attention to the instruction of individuals than is possible when the whole class is taken together; (5) the permanent grouping makes for quickness, order, and efficiency in class formations, and generally for a more flexible and rapid handling of the class; (6) the keen

rivalry that may be encouraged between the teams adds greatly to the interest of the work and stimulates proficiency.

For the egocentric young child it is of little use, as is pointed out in the circular, but with the rapid growth that precedes adolescence its value runs up to a peak. The team system in schools is bound to be of benefit to the future community not only in the physical health produced by bodily exercise, but also in the mental health which is an indirect result of striving after a well-established aim.

THE HONOURS OF A SURGEON.

THE memory of Joseph Lister is being kept green. Two years ago the Canadian Medical Association decided to have an address in his honour at every third annual meeting. The committee appointed for the purpose chose Dr. John Stewart to deliver the first oration, and we have just received a reprint of this admirable address.¹ It was a happy choice, for Dr. Stewart was one of Lister's dressers and also a personal and life-long friend. The oration gives an account of Lister's life and work which may be commended to such, if any there be, who are ignorant of the marvellous change which took place in the theory and practice of surgery owing to Lister's labours and his intuition in grasping the meaning of Pasteur's researches. Lister became a Fellow of the Royal Society in 1860 and was its President from 1895-97. We cannot recollect if there is any living surgeon, except Sir Watson Cheyne, who holds the Fellowship in right of his position as a pioneer in surgery, a fact which suggests the inquiry whether the remarkable qualities which lead to success in a surgeon's career may not sometimes obscure his scientific attainments in the eyes of the Council of the Royal Society. During mid-Victorian days a number of surgeons were Fellows. In Lister's case the scientific recognition long preceded his popular acceptance. We are glad to note that Sir Rickman Godlee's life of Lord Lister has reached a third edition,² even though, as we learn from the preface, there is little difference between this edition and the two former ones. The new matter includes a new portrait and facsimile of an autograph letter, together with a postscript containing a short summary of the present method of treating wounds, including experience gained in the late war. The most noticeable remark concerns catgut ligatures, of which Sir Rickman Godlee says: "We may fairly hope that Lister's prodigious effort to discover a thoroughly satisfactory catgut ligature will ultimately lead, if it has not already led, to the production of an easily obtainable article, properly standardised as regards texture and absorbability, and beyond suspicion on the score of sterilisation." These are little additions, but all such minutiae are welcome in a well-loved portrait.

AMBULANCES AND ACCIDENTS.

AT a recent inquest Dr. Waldo, the coroner for the City and Southwark, once more called attention to the insufficiency of the ambulance service in the County of London. In relation to its size the City is so well supplied with ambulances and stations that a call is responded to, on the average, in less than three minutes; in the area of the County Council the average is seven minutes and a half, but in the case into which Dr. Waldo was inquiring, the delay, owing to the nearest ambulance being already engaged, was 14 minutes. Obviously ten ambulance stations are utterly inadequate to the needs of an area of 115 square miles. It is true that an eleventh will be ready at the end of the present month and that two more will be opened in September, but even 13 stations bear no

reasonable proportion to a need which has grown with startling rapidity. Last year the calls received by the London County Council ambulance service were 15 times as numerous as in 1915, owing to the increase of motor traffic and the perilous congestion of every great thoroughfare. The County Council being solely responsible for providing succour in street accidents, the police are unable to avail themselves of the help of the ambulances and trained officials of the Metropolitan Asylums Board or the St. John Ambulance Association. It would appear that the Asylums Board steps in only in case of sudden illness, while the St. John ambulances are reserved for street processions and special occasions. The whole question was discussed last year at a conference called by the Minister of Health, attended by representatives of the London County Council, the Metropolitan Asylums Board, the Metropolitan Police, and the Home Service Ambulance Committee of the Joint Red Cross Council. It was then decided that all street accident cases within the area should be dealt with by the County Council and the City of London Ambulance Services. The view of the Home Service (Red Cross) Ambulance Committee is, we understand, that they cannot usefully coöperate in this work, though in a matter of urgency any Red Cross ambulance would be available. Whatever may have been the advantages of such a distribution of responsibility when the arrangement was made some years ago, it has clearly become archaic. Coördination is now urgently needed. Four public ambulance authorities with distinct functions and apparently responsible only to themselves are hardly suggestive of comprehensive and business-like organisation. The organisation is, however, defective mainly because of the heavy pressure that has been applied to it with little warning—last year the ten County Council ambulance stations dealt with more than 30,000 calls. The provision of a larger number would, no doubt, be expensive; but nothing is so costly as avoidable suffering and unnecessary loss of life.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. W. F. Ellis is placed on the half pay list on account of ill-health.

The undermentioned Majs. to be Lt.-Cols: Bt. Lt.-Col. H. V. Bagshawe, vice Lt.-Col. W. F. Ellis, to half pay. R. J. Franklin, vice Lt.-Col. H. S. Anderson, to ret. pay.

TERRITORIAL ARMY.

Capt. J. F. Edmiston to be Maj.

Capt. H. A. Lucas resigns his commn. and is granted the rank of Major.

ROYAL AIR FORCE.

Flight Lt. J. Speak (Capt. Dental Surgeon, General List, Army) relinquishes his temporary commission on resigning his commission in the Army.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of Lt.-Col. R. W. Knox to Colonel.

THE LATE DR. DOUGLAS HOLROYDE.—Douglas Holroyde, M.A., M.B., Ch.B. Camb., who was formerly in practice in Barnsley, died on Jan. 3rd at Orrest Foot, Windermere, aged 48, after a long illness. He was the third son of Mr. Alfred Holroyde, of Halifax, and a brother of Dr. Gerald M. C. Holroyde, of Windermere. After his undergraduate career at Cambridge, he became M.A. in 1903, and pursued his medical studies at Cambridge, Leeds, and Dublin, graduating at Cambridge as M.B. in 1908. At Cambridge he was an Exhibitioner of Trinity College. In his younger days he was an ardent rock climber. Up to the time of his illness he was an honorary surgeon at Beckett Hospital, Barnsley, and had previously held the posts of house physician at the Leeds General Infirmary and resident medical officer at the Sanatorium for Consumption, Leeds.

¹ The First Listerian Oration of the Lister Memorial Club of the Canadian Medical Association. By John Stewart, M.D. Edin. Montreal: Canadian Medical Association Journal, 1924. Pp. 33. 50 cents.

² Lord Lister. By Sir Rickman John Godlee, Bt., K.C.V.O., F.R.C.S. Third edition, revised. Oxford: At the Clarendon Press, 1924. Pp. 686. 21s.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CV.—BURNS AND SCALDS.

BURNS and scalds are injuries with which almost every practitioner may have to deal, and which offer him an exceptional opportunity both for the immediate relief of his patient and for the prevention of subsequent disfigurement or deformity. Yet there are few conditions in which opinions are so varied as to the best methods of treatment, perhaps one indication of the immense importance of individual attention in these cases.

In an extensive burn the first consideration is undoubtedly shock, which may be very severe, and depends on the extent of the surface involved rather than upon the depth of the lesions. If one half of the surface of the body is involved the injury will certainly be fatal, but a much smaller burn over the abdomen or thorax may have a similar result. The pain and shock are best combated by a substantial injection of morphia, varying from gr. 1/12 in an infant to gr. ¼ or even gr. ½ in an adult. This has been for many years the routine treatment in my wards, and I consider the idea that morphia should not be given to children under these circumstances to be entirely without foundation. If shock is severe immersion in a warm bath brings great relief, especially in the case of a child; the water should be rendered slightly alkaline by the addition of a handful of sodium carbonate in the form of bath salts or washing soda. No attempt should be made to remove the clothes, which can later on be cut off in the bath. A hot rectal saline infusion containing brandy may be given with great advantage.

Local Applications other than Paraffin Wax.

The essentials of a satisfactory local application are that it should be protective, painless, easily obtained, easily changed, and if possible mildly antiseptic.

Small burns, where the skin is not broken, may be dressed with gauze or other soft material soaked in a 10 per cent. solution of carbonate of soda (washing soda); a compress so made will give considerable relief to the pain, which is often especially severe in those parts which show only an erythema. Where the skin is broken a weaker solution should be used. In a limb Bier's method of passive congestion applied by means of a thin rubber bandage may give great relief, the bandage being applied high up the limb and with only just enough tension to obstruct the veins. Later on an ointment composed of equal parts of zinc ointment and castor oil may be used.

For *larger burns* it may first be necessary to clean up the surface, and this must be done under a general anaesthetic. But even under anaesthesia the procedure must be carried out with the utmost gentleness, and it is far better to leave the surface as it is than by rough handling to increase shock and destroy tissues which might otherwise survive. So far as is possible, the whole surface should be thoroughly cleansed with soap and water and then with 1/1000 perchloride of mercury, which is finally washed off with warm sterile water. The perchloride forms a coagulated layer on the raw surface and to some extent inhibits pain. Carbolic must not be used as it is too readily absorbed. Loose skin should be cut away, but blisters should only be punctured and the cuticle left for protection.

In my opinion, the best permanent dressing for the larger burns is paraffin wax, which will be described later. If this is not available; wet dressings may be used soaked in calamine lotion, or lead lotion to which 30 per cent. of alcohol may be added; or the area may be covered with strips of lint soaked in parolein or covered with the castor oil and zinc ointment already mentioned, a method especially applicable

to burns of the face. Moist dressings should be removed when necessary by immersion.

If the limb, or indeed the patient, can be kept continuously in a *warm alkaline bath*, nothing else can compare with this for comfort and rapidity of healing. It is not very difficult to keep children immersed in a bath, at least during the day, and in extensive burns of the body it is well worth while. As the patient floats in the water the injured surfaces are saved from all contact, perfect drainage is established, local hyperæmia is induced, the body heat is preserved, there are no dressings, and there is no pain. If an air ring of suitable size can be obtained and slipped round the body under the arms it furnishes an excellent means of support.

Picric acid has been very largely used and recommended as a dressing, but the danger of poisoning even with weak solutions is so considerable that we have given up its use. Picric acid in itself possesses only very weak powers as a disinfectant, and a weak solution of iodine would be far more potent if any such action is required. To some individuals picric acid is intensely toxic, its mere application to the uninjured skin producing serious results.

Paraffin Wax.

Of all local dressings paraffin wax, when it can be applied, is by far the best. It must melt at about 50° C., and it may usefully be combined with mild antiseptics. Of the many compounds on the market the original ambrine is as good as any. The following was widely used during the war as No. 7 paraffin: resorcin, 1 part; eucalyptus oil, 2 parts; olive oil, 5 parts; soft paraffin, 25 parts; hard paraffin, 67 parts. This should melt at 48° C. and will be found very satisfactory. It should be melted over a water bath and may be applied with a soft brush or with a spray. The burnt area should first be cleaned and dried, best of all with a stream of warm air. It is then covered with a layer of the wax, over which a very thin film of cotton-wool is applied. This in turn is covered with wax, so that the whole is converted into a thin protective shell, which does not adhere to the raw areas. Any discharge can readily break its way through cracks in the wax envelope. The whole is surrounded by a bulky layer of wool. Simple though it is, the method requires a certain degree of skill, and unless a special appliance is used it is not very easy to apply the wax at just the right temperature. I recently devised the following method which will be found to have several advantages. Strips of ribbon gauze, of narrow bandage, or of thin soft paper about an inch wide and 12 inches long are prepared. Holding a strip by its two ends it is run through the melted wax. The strip is now held for an instant over the area to be covered, until the edges are seen to whiten, when it is at exactly the correct temperature and is immediately applied around the limb or over the area. The strips are applied to the limb in series, exactly as if it were being strapped. They furnish complete protection and afford considerable support. By perforating the strips, or by leaving narrow gaps, room can be allowed for the escape of discharge. The burning of the patient with hot wax is absolutely impossible. One great advantage of a wax dressing is the time for which it may be left undisturbed. In many cases it may be left in place for a week, and at the end of that time it can be changed with great facility, for it will not adhere either to skin or to granulations. If the wound is very dirty, the wax dressing may be changed every day with very little inconvenience to the patient, the exposed surface being cleansed with peroxide of hydrogen and dried before a fresh layer of wax is applied.

Avoidance of Exposure.

Whatever method of dressing is adopted it is most essential that bandages should be applied very loosely. There may be considerable swelling of a burnt limb, and in any case any pressure on a burnt area is intolerable. It has been well said that in these

cases a neat bandage is the sign of a bad surgeon. It is equally important that in extensive burns no attempt should be made to change the whole dressing on one occasion, and the utmost care must be taken to reduce exposure to the absolute minimum in doing what dressing may be necessary. To expose the whole of a large burnt area on the body at one time is not merely bad surgery. It is criminal.

Prevention of Deformity from Contractures.

In certain areas great care is required to prevent subsequent deformity from contractures. This is especially the case in the neck, in the neighbourhood of joints, on the palmar surface of the wrist and hand, and in the calf. Such support must be provided as will keep the burnt area extended, and in some cases it may be better to fix the parts in a plaster case with an opening over the denuded area. When the skin all round the joint has been destroyed the position must be varied from time to time so as to maintain a full range of movement in all directions. Unless these precautions are taken contractures will form which are exceedingly difficult to correct. During the second week sloughs will separate and the area will commence to granulate. In this stage a peroxide spray is invaluable in assisting the separation of sloughs, washing away discharge, and combating sepsis. An occasional boric fomentation may help to clear things up. As the granulations become cleaner a compress of lint soaked in equal parts of red lotion and glycerine will be found to check exuberant granulations and to stimulate epithelial growth. The lint should be cut exactly to fit the granulating area, and it should be covered with a layer of rubber tissue or oiled silk cut a little smaller than itself so as to allow free escape to any discharge. The whole may be covered with a gauze dressing.

Grafts.—As soon as clean granulations have formed they should be covered with Thiersch grafts, as only by the provision of an epithelial covering can contractures be permanently prevented. The grafts will be more certain to take if gentle pressure can be applied to their surface, and for this we have found tinsel dress trimming most effective. It is a very fine elastic wire gauze, sold in large sheets and quite inexpensive. It is wrapped round the limb as a sleeve, which is stitched up along the side of the limb opposite to the grafts. Over it a dressing of gauze soaked in equal parts of red lotion and glycerine may be applied. After ten days the tinsel is removed, bringing with it a layer of dead cuticle, but leaving firm and healthy grafts behind, which will rapidly spread to cover the whole area.

Conclusion.

The successful treatment of a severe burn demands a degree of individual attention and of unremitting vigilance not always realised. In this way alone can severe contractures and terrible disfigurements be avoided, but the fact that they can be so avoided is a full recompense for the labour involved. Much can be done by massage, by ionisation, by very cautious X ray therapy to soften and remove scar tissue, but in preventing or at least limiting the formation of these scars the surgeon who first treats the case has an opportunity which will never recur.

H. S. SOUTTAR, F.R.C.S. Eng.,
Surgeon (with Charge of Out-patients),
London Hospital.

Special Articles.

A VISIT TO CULION LEPROY COLONY, PHILIPPINE ISLANDS.

BY A. R. J. DOUGLAS, M.D., B.S. LOND.,
F.R.C.S. ENG.,
CHIEF MEDICAL OFFICER, BURMA RAILWAYS, RANGOON.

I.

OWING to the formation of the British Empire Leprosy Relief Association with Sir Leonard Rogers as medical secretary, and the prospect of funds being available for a considerable expansion of the present treatment of leprosy in India and Burma, the writer of this article, who has been on the committee of the Rangoon Leprosy Asylum for nearly 20 years, decided to visit the Philippine Islands, where the Government are carrying on by far the largest work on the segregation and treatment of leprosy in the world at a cost of over £100,000 per annum. The following brief account is intended to draw the attention of those interested in leprosy to the very large and valuable scientific work being carried on there. No claim is made to any originality, the writer having endeavoured by making use of articles published and unpublished, freely placed at his disposal, to present the methods being carried out and the views held by the medical staff.

*The Culion Leprosy Colony.*¹

The space at my disposal does not allow me to deal with the questions of segregation and treatment in the way that they require. The Culion Leprosy Colony is an interesting institution, and in many respects unique. For the study of leprosy and its treatment it offers the most unusual opportunities. The largest well-organised leprosarium in the world, it contains in large numbers all types of the disease, and all degrees of advancement, except, of course, the earliest. The inmates are fairly amenable to reason, and little difficulty is experienced in obtaining adequate clinical material for any work desired. In spite of these facts the colony has not in the 17 years of its existence become widely known, and it is seldom referred to when leprosy work is discussed. This is undoubtedly due to the fact that until very recently it has served chiefly as an isolation colony.

With the access of interest in the treatment of this disease resulting from the reports of Rogers and co-workers in India, and, subsequently, those of Hollman and Dean and other Hawaiian workers, the desirability of extending modern treatment to the Culion inmates and of utilising the material for study was brought to the realisation of the authorities, and in 1921 provision was secured for starting such work on a small scale. The very keen and active interest of Governor-General Wood resulted early in 1922, a few months after its inauguration, in the expansion of this work to a more adequate scope. The establishment of a colony for the systematic segregation of lepers was started in 1901, and eventually Culion, on account of its water-supply and other advantages, was selected. Construction work at the site finally selected did not commence until 1905, a delay in part due, it is said, to conflicting opinions as to whether segregation would exterminate the disease. In 1906 about 500 lepers were transferred to the island.

The Present Colony.—A brief statement of the general features is necessary for any understanding of the conditions under which the work is being carried on. Culion Island is very irregular, measuring roughly 11½ miles from north to south, and 19 miles

ROYAL SOCIETY OF ARTS.—Among the meetings of the society to be held between January and March, in John-street, Adelphi, London, W.C., the following should prove of interest to the medical profession: Mr. V. E. Pullen, Director of the Radiological Research Department, Woolwich, will deliver three Cantor Lectures entitled "Radiological Research, a History," on Mondays, Jan. 19th and 26th, and Feb. 2nd, at 8 P.M. Dr. J. A. Owens, Superintendent of the Advisory Committee on Atmospheric Pollution, Air Ministry, will speak on Modern Atmospheric Conditions, on Wednesday, Feb. 18th, at 8 P.M.

¹ H. W. Wade and Jose Avellana Basa: Amer. Jour. Trop. Med., vol. iii., No. 5.

in its longest diameter. It has a total area of 15,059 miles, and lies about 200 miles to the south and west of Manila. The colony is everywhere surrounded by vistas of unusual beauty. The conditions of climate are very much the same as in Rangoon—that is to say, there is a rainfall of about 100 inches during the rains, which last four or five months. The temperature rises up to about 98° F. in the hottest time of the year. The colony is for the most part a nipa-roofed Philippine town of 5000 inhabitants, most orderly and clean, and with its water system, electric light, and ice plants. The institution comprises the non-leper staff headquarters, Balala, and the colony proper, some 600 yards away. The total area covered by the colony proper is estimated to be about 40 acres, and on this there are over 600 houses of lepers, and all of the Government buildings. The

low infectiousness, and compulsory segregation is not used in dealing with other diseases of comparable type. Yet the right of the State to apply this method is maintained. That it is justified in doing so is held in view of the general attitude of the public, which is caused largely by erroneous ideas of its infectiousness, its relative incurability (at least by the older methods), and the peculiarly repulsive nature of the lesions in the advanced stages. It is further justified because segregation is the only known practicable method of control in endemic regions, and because of the probable feasibility of eradicating it entirely by this method.

Method of Segregation.—It is overwhelmingly the opinion that in a country where the disease does not tend to become endemic rigorous segregation is not necessary. Norway's system of segregation, instituted



FIG. 1.—Panorama showing view of part of the leper colony.

administrative centre of the colony is Colony Hall, with the court-house of the chief of the colony and the Government store and colony post-office on the ground floor. The present chief of the colony is Dr. Jose Avellana Basa, who carries on the government of this fair-sized town, in part through and with the aid of the Advisory Board, an elective body of which he is *ex officio* the head.

The staffs of the general kitchen, the Government store, the colony branch of the post-office, the public works department, the sanitary department, the court, the land, and the orchestra are all lepers. Most of the routine nursing and all of the service work of the hospitals and clerics is done by leper employees. The spiritual welfare is largely in the hands of two priests. The Protestant inmates, who are in a minority, are aided by a missionary and his wife. This work is supported largely by the American Mission to Lepers. For the amusement of the inmates some little provision is made. Cinematograph shows are given at intervals; a string orchestra of lepers are paid monthly wages to play in the main plaza once a week; cock-fighting, a national sport, is permitted on Sundays and holidays, and at intervals the lepers stage fairly successful performances which appear to be much appreciated. For the most part the inmates lead very quiet, uneventful lives, finding such entertainment as they may in very little things.

*Segregation.*²

The question of segregation is a most difficult one, and to this day the most diverse and strongest views are held by scientific men who have closely studied the question personally. Leprosy is admittedly of

by Hanson, in which some cases, particularly of the cutaneous type, are kept in asylum, while others, chiefly of the neural type, are allowed to live under specified conditions at home, has apparently proved successful, but to assert that the Norwegian system would be effective in a radically different environment would be an inaccurate assumption. It is very likely that conditions, such as mode of living, personal hygiene and general sanitation, economic status, nutrition, and perhaps even race, and particularly climatic conditions, are determining factors of the activity of the disease in a country. It is open to some doubt whether the Norwegian system would be effective in Hawaii, the Philippines, and many other places. This view is endorsed by Sir L. Rogers.³

For such regions compulsory segregation in special institutions is probably the only practicable method. If there is created an antagonistic feeling among the people, lepers will hide as long as possible and so perpetuate the disease.

Albert⁴ believes that the Culion figures showed compulsory segregation to have failed in the Philippines, but his figures do not warrant the final conclusion drawn. Heiser estimates that before segregation, over a thousand new cases occurred annually, practically twice as many as the average for the past few years; whether the admissions will decline during the next 10 years or not, it is certain the results have been disappointing to those who expected a rapid diminution or total discontinuance of new cases. It was believed that after a district was once freed of known lepers few cases should occur thereafter. It is said that at the outset of the campaign

² An unpublished article on Leper Segregation. By H. W. Wade, M.D., Culion.

³ L. Rogers: Trans. Roy. Soc. Trop. Med. and Hyg., 1923, xvi., 440.

⁴ J. Albert: Jour. P.I. Med. Assoc., 1921, i., 133.

10 years was estimated to be sufficient to suppress the disease, and this statement has now sometimes been quoted as an argument that the system followed has failed. If there is no reservoir of infection other than human cases, it is obvious that thorough segregation will eliminate the disease.

It is 18 years since active work was begun at Culion, and certainly 10 or 12 since all previously existing cases known to the authorities were removed from most districts. It would appear that there has been a sufficient residuum of unsegregated cases to perpetuate the disease. This could hardly be otherwise.

As regards segregation for leprosy, the attitude of the people is usually not complacent, and cases must be numerous to make their isolation be considered impracticable, though in heavily infected countries like India it will undoubtedly be necessary to depend largely on education to limit the disease, as in the case of tuberculosis. Total suppression of the disease by segregation is believed to be possible, though our ideas as to the conditions that will make thorough segregation possible are being modified.

The method of transmission is unknown, but the consensus of opinion is that it is due to intimate personal contact with a leper. The nature of its ravages is a most potent factor in the general attitude. Segregation makes it possible to apply intensive modern treatment, but it is difficult to establish the right of the State to compel people to take prescribed medicines against their wills; even in leper asylums the consent and co-operation of the inmates are necessary. One important justification for segregation, though it does not appeal to the average leper, is the fact that it furnishes the best opportunity for research on the disease and its treatment.

Segregation in the Philippines.—This was one of the things which attracted the writer to visit the Philippines, and he cannot admire enough this gigantic and costly experiment. The position of affairs appears to be very much the same as in Hawaii in its earlier days. Owing to the fear of being sent to Culion there are probably a large number of unsegregated cases in the Philippines. The writer has been told by one recognised authority that he believes the number of lepers in the Philippines to be at least 10,000. Only about 6000 of these are segregated, 5300 at Culion. Recently, with the success of the new treatment, a number of volunteers have appeared, but many only on condition they should not be sent to Culion. A strong attempt is being made by means of statistics to show that segregation at Culion has failed, and to substitute a system of smaller leprosarías about the Archipelago. In support of this is Dr. Wade's view that intensive treatment is better carried out in a treatment station (asylum), where patients can be kept under closer observation than in a colony. It seems too early yet to lay much stress on statistics. Probably the figures do not indicate any definite reduction of leprosy in the Philippines.

As Dr. Wade says in his unpublished paper quoted above:—

"Conditions of segregation must be such as to cause the leper to be willing to undergo it for the chance of being cured. Segregation to be effective must be accomplished by attraction, not by compulsion alone. . . . The antagonists of Culion believe that the principal drawback is that it is in an isolated island, very difficult of access to friends of the inmates, and with inadequate provision for bringing visitors. To the Filipino the attraction of home and the family circle is very strong. On the whole the sorrow of separation is, perhaps, a greater deterrent than fear of the colony. If, therefore, several properly organised colonies were established, so situated that the inmates could be visited by their friends, the difficulties would be very much diminished."

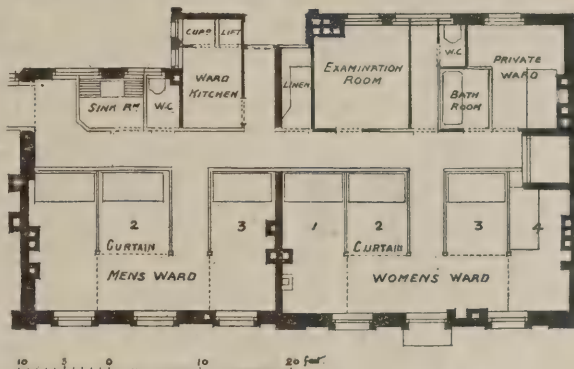
In the sequel the question of treatment at Culion Leper Colony will be dealt with.

Under this heading will be included accounts of (1) the chemical section, (2) the pathological section, and (3) the actual treatment as carried out in the clinics and hospital wards.

NON-PAYING BEDS AT THE RADIUM INSTITUTE.

THE technique of radium therapy has altered considerably since the days when the metal or its salts were first applied externally to new growths in the attempt to destroy them without damage to normal tissue. In order to carry out the modern methods of burying in the growth tubes of radium, in the form of headless nails tethered by aseptic thread, the co-operation of the surgeon must be enlisted. More elaborate technique has brought with it the need also of operating theatres and of beds in establishments where radium therapy is practised.

The Radium Institute at Riding House-street, Portland-place, London, W. 1, has gradually expanded to three times its original size during the 14 years of its existence; for 12 of those years out-patients alone were received, but it became clear a few years ago that beds were needed, and in October, 1922, seven comfortable rooms were set aside for private patients, together with an operating theatre, anaesthetising and sterilising rooms. The patients occupying these rooms pay a nursing-home charge of £1 11s. 6d. a night in addition to the consultation and treatment fee; their stay varies from one or two nights to about a week. These beds did not, however, meet the needs of necessitous patients, and arrangements have now been made to accommodate three men and four women in non-paying wards divided into cubicles. Adjoining these wards are a special operating theatre, a service kitchen and pantry, bathroom and lavatories. The plan (see figure) shows the arrangement whereby



The new beds for necessitous patients. The room designated "examination room" on the plan has been equipped as an operating theatre, and the "private ward" serves as a duty room.

privacy has been secured without the use of screens, but it can hardly convey the pleasant and cheerful outlook in the cubicles as well as in the private rooms.

No charge is to be made to necessitous patients for treatment, operation and nursing, but patients will be expected, when possible, to contribute to the actual cost of their maintenance whilst in the Radium Institute. The regulations laid down by the governing body of the Institute provide that no patient shall be received for treatment except with the knowledge and consent of his or her medical adviser, who is requested to fill in and sign the prescribed form of certificate. The particulars of the patient's case are then considered by the medical staff, and if the case appear to be a suitable one for treatment, a dated admission order is sent to the patient. No patient can be admitted unless these formalities are complied with.

The Radium Institute was founded, equipped, and endowed by the late Sir Ernest Cassel and by Lord Iveagh, who is now its President. The executive committee consists of Sir Anthony A. Bowlby, the Chairman, Lord Rayleigh, F.R.S., Sir Felix Cassel, Mr. Walter Guinness, Sir George Blacker, Sir William H. Bragg, F.R.S., Sir Humphry D. Rolleston, and Sir

Joseph J. Thomson, F.R.S. The honorary consulting staff includes Dr. Herbert French, Dr. Cuthbert Lockyer, Prof. C. A. Pannett, Dr. J. H. Sequeira, Dr. Herbert J. Shirley, Mr. W. T. Holmes Spicer, Mr. Herbert Tilley, and Sir J. W. Thomson-Walker. Mr. W. Lester S. Alton, F.I.C., is director of the chemico-physical laboratory, and Dr. J. C. Mottram of the pathological research laboratory. The Institute possesses 6 g. of radium bromide and the latest form of emanation plant; examination rooms, X ray room (for diagnosis only), photographic studio, chemical, physical, and pathological research laboratories, carpenter's and engineer's shops, are all well equipped, and the rooms in which out-patient treatment is given are as warm and comfortable as the bedrooms. Indeed, throughout the Institute it is obvious that the convenience of the patient is the first consideration. Every patient before treatment is seen by Mr. Hayward Pinch, the medical superintendent, or one of his colleagues, Dr. Philip Gosse and Dr. Oskar Teichman, but this does not entail hours of dreary waiting, since all interviews and all treatments are by appointment. Since patients with operable tumours are strongly urged to consult surgeons, it follows that many of the sufferers from malignant disease who are accepted for treatment are in an advanced stage. Patients afflicted either with cancer or with unsightly if benign lesions, such as keloid, often suffer much from causes only indirectly connected with their pathological condition unless very tactfully handled. In order to secure the most judicious nursing no probationers are employed. The 14 nurses, including four men nurses, are all fully trained, and since a large proportion of the cases treated are gynaecological, a C.M.B. certificate is required of the women nurses. Practitioners who have not had the privilege of going round the Institute may safely reassure any patients who show reluctance to expose themselves to treatment by new persons in a strange place, for the place is home-like and the people are kind as well as skilful. Since the opening of this Institute some 10,200 patients have been treated within its walls, and 4500 have been treated at various hospitals, infirmaries, and nursing homes in all parts of the United Kingdom with emanation apparatus, supplied with the fullest instructions as to technique and exposures, to the surgeons or practitioners in charge of these cases.

We congratulate the Institute on its new enterprise and rejoice that whatever benefits radium can confer in prolongation of life and alleviation of symptoms may now be available for a larger number of patients.

TESTIMONIAL TO PROF. RUTHERFORD MORISON.

WE are glad to announce that a movement has been started among members of the medical profession in the north of England to commemorate the work of Emeritus Professor Rutherford Morison, of Newcastle, one of the most active and original leaders of surgical thought of our time, at present consulting surgeon to the Royal Victoria Hospital in that city. On Dec. 16th a largely attended meeting representative of all branches of the medical profession was held at Newcastle, at which it was unanimously decided to issue an appeal to the profession for subscriptions to present Prof. Morison with his portrait in oils, and, after defraying the cost of the portrait, to devote the balance either to the formation of a medical library fund or the establishment of a scholarship or a fellowship in research, or such other similar objects as Prof. Morison approves.

James Rutherford Morison, a son of John Morison, M.D., was born in Hutton Henry, County Durham, in 1853. He received his early education privately and began his medical studies in Birmingham, later proceeding to Edinburgh and Vienna. In 1874 he became L.R.C.S. Edin. and the following year graduated M.B. at the University. In 1879 he gained

the Edinburgh fellowship of surgery, and in 1890 the F.R.C.S. Eng. He began his professional life as house surgeon at Edinburgh Royal Infirmary and resident surgeon at the Cowgate Dispensary; then returning to England he settled in Newcastle, where he was appointed assistant surgeon to the Newcastle Royal Infirmary. From that auspicious beginning his work as a surgeon has grown. On the academic side he became lecturer on surgery at Durham University, and having filled the professorial chair for many years, now holds the title of emeritus professor. He is also examiner in surgery to the Universities of Liverpool and Birmingham. An hon. staff surgeon to the R.N. Reserve before the late war, he was appointed senior surgeon to the Northumberland War Hospital during hostilities and later senior surgeon to the War Pensions Hospital. His contribution to war surgery, with which his name will always be associated, was the treatment of war wounds by iodoform, bismuth, and paraffin paste—bipp—a method which achieved remarkable success.

Prof. Morison has made many valuable contributions to surgical literature both in standard medical text-books and in the columns of medical journals. His name is a familiar one on THE LANCET files. He published an introduction to surgery in 1910, an extremely suggestive work designed to supplement the standard text-books, and in 1916 appeared in collected form his "Surgical Contributions from 1881 to 1916." In the large number of papers collected into two volumes we find everywhere the same acute recognition of the essential points, the same accurate appreciation of the value of theories and methods which have been recognised in Prof. Morison by all who have had the privilege of knowing him. Prof. Morison has been honoured by his alma mater with the LL.D. Edin., and Durham University has awarded him both an honorary M.A. and the D.C.L.

Formation of a General Committee.

A general committee has been formed to further the projected testimonial, and an executive committee has been appointed also. The latter consists of the following members of the medical profession:—

Prof. H. Brunton Angus (Chairman), Newcastle; Dr. J. Anderson, Blyth; Dr. P. V. Anderson, Bishop Auckland; Dr. J. S. Arkle, Newcastle; Dr. R. A. Bolam, Newcastle; Dr. T. L. Bunting, Newcastle; Dr. J. Charles, Consett; Dr. H. B. Densham, Stockton; Dr. H. Dickie, Morpeth; Mr. W. S. Dickie, Middlesbrough; Dr. R. H. Lix, Sunderland; Dr. J. Don, Newcastle; Dr. W. Fairclough, Hexham; Dr. F. T. T. Hare, Durham; Dr. G. R. Harland, South Shields; Dr. J. Hudson, Newcastle; Dr. W. Mackenzie, Gosforth; Mr. A. M. Martin, Newcastle; Dr. Farquhar Murray, Newcastle; Dr. O. W. Ogden, Newcastle; Dr. H. C. Pearson, Darlington; Dr. Scott Purves, Alnwick; Dr. R. H. Smallwood, Gateshead; Mr. G. Grey Turner, Newcastle; Dr. Eleanor Walkinshaw-Osselton, Newcastle; Dr. J. B. Williamson, North Shields.

The following subscriptions have been received or promised to date. It is hoped to raise a sum of at least £2000.

£52 10s.—Mr. Hamilton Drummond, Newcastle; Mr. G. G. Turner, Newcastle; Mr. R. J. Willan, Newcastle.
 £25.—Mr. A. M. Martin, Newcastle; Prof. H. Brunton Angus, Newcastle; Dr. J. W. Smith, Ryton.
 £21.—Dr. R. A. Bolam, Newcastle; Dr. James Don, Newcastle; Dr. James Hudson, Newcastle; Dr. D. F. Todd, Sunderland.
 £15 15s.—Dr. J. S. McCracken, Newcastle.
 £10 10s.—Dr. Baigent, Northallerton; Dr. R. H. Dix, Sunderland; Dr. Forsyth, Cramlington; Dr. Fox, South Moor; Dr. Giffon, North Shields; Mr. N. Maclay, Newcastle; Dr. W. Mackenzie, Gosforth; Dr. Scott Purves, Alnwick; Dr. H. Smith, Durham.
 £10.—Dr. J. T. Dunlop, Newcastle; Dr. A. Smith, Ryton.
 £5 5s.—Dr. W. Fairclough, Hexham; Dr. H. E. Gamlen, Newcastle; Dr. T. W. Hay, Newcastle; Dr. D. W. Inglis, Hebburn; Dr. J. F. Longbotham, Middlesbrough; Dr. Moyes, Broomhill; Dr. Gavin Muir, Newcastle; Dr. James McDonald, Belford; Dr. Macleod, Alnwick; Dr. Eleanor Walkinshaw-Osselton, Newcastle; Dr. H. Carden Pearson, Darlington; Dr. E. F. Pratt, London; Dr. Stanley Robson, Rowland's Gill; Dr. J. B. Williamson, North Shields; Dr. Stanley Worthington, Newcastle.
 £5.—Dr. H. Dickie, Morpeth; Mr. C. D'O. Grange, Harrogate; Mr. A. S. Percival, Newcastle.
 £3 3s.—Dr. Monica Bell, Humshaugh; Dr. J. Galloway, Low Fell; Dr. G. H. Harbottle, Gosforth; Dr. W. Jaques, Washington; Dr. E. E. Norman, Hebburn; Dr. Z. Ross, Sunderland; Dr. T. L. Wormald, Darlington.
 £2 2s.—Dr. J. Chalmers, Sunderland; Dr. Densham, Stockton; Dr. Hubbersty, Sunderland; Dr. W. Robinson, Sunderland; Dr. W. J. Ruddock, Newcastle; Dr. Ross, Stockton.

£1 ls.—Dr. Bishop, Wylam; Dr. A. Brownlie, Redcar; Dr. J. Brydon, Stockton-on-Tees; Dr. J. Crombie, Castle Douglas; Dr. Devey, Richmond; Dr. Hall, Stockton; Dr. Bruce Low, Sunderland; Dr. S. Lyle, Stockton; Dr. C. V. Miller, Stockton; Dr. A. T. Thompson, Darlington; Dr. L. M. Weeks, Newcastle; Dr. Ethel Williams, Newcastle.

10s. 6d.—Dr. G. Irving, Stockton; Dr. T. Kirk, Stockton; Dr. Manners, Stockton.

INFECTIOUS DISEASES ABROAD.

Encephalitis Lethargica in Europe during 1924.—In view of the high incidence of encephalitis lethargica in England and Wales during 1924—namely, 5017 cases as compared with 1023 in 1923—it is surprising that there was little change in the annual incidence in other European countries. Up to the dates in 1924 for which statistics are available from the 11 European countries in which the disease is notifiable, Italy is the only country where the number of reported cases exceeded those of the previous year. The following statement gives the available figures of cases in those countries during the two years. The figures of deaths are available from only one or two countries so that at present it is not possible to compare fatality rates. In England and Wales 26 per cent. of the cases were fatal as compared with 33 per cent. in 1923.

	1923	1924
	Cases.	Cases.
Norway	10	10 (to Nov. 30th).
Sweden	336	283 (to Nov. 30th).
Finland	83	35 (to Nov. 30th).
Denmark	88	77 (to Oct. 31st).
Belgium	27	20 (to Dec. 10th).
Switzerland ..	203	86 (to Dec. 20th).
Italy	277	591 (to Nov. 30th).
Czecho-Slovakia	366	82 (to Sept. 30th).
Lithuania ..	86	7 (to Nov. 30th).
Latvia	—	3 (to Nov. 30th).
Estonia	12	3 (to Oct. 31st).
Russia	899	810 (to June).

Plague in the Azores.—The Portuguese islands of the Azores, in the mid-Atlantic about 700 miles from the coast of Portugal and about 1500 from Liverpool, lie on the natural highway from Europe to America and on other great trade routes. From time to time since 1910 outbreaks of plague have been reported in four of the nine islands which constitute the group, but, except for approximate numbers of cases and deaths, little or no information about the outbreaks is available. The following statement gives the recorded figures in each of the last five years:—

	1920	1921	1922	1923	1924
	C. D.	C. D.	C. D.	C. D.	C. D.
St. Michael Island ..	140 47	71 30	385 81	200 84	17 13
Pico Island	? 15	—	—	—	—
Fayal Island	—	1 —	? 5	3 —	—

C = Cases.

D = Deaths.

A characteristic feature of the outbreaks has been the predominance of cases of pneumonic type with a high fatality and spreading from person to person by direct contact. This happened with the outbreak in the Island of Pico in 1920, in regard to which it is said that the inhabitants of the island became so alarmed that they segregated the affected families in an area surrounded by a deep trench and sharp-pointed wooden stakes. The present outbreak at or near Ponta-Delgada, the chief town and port of the Island of St. Michael, and in neighbouring parishes, is chiefly of the same type, but there are also cases of bubonic type, particularly in the districts of Arrifes and Ribeira-Grande. It appears to be a recrudescence of a small outbreak of eight fatal cases which occurred in January of last year and in which the first case was described as being of bubonic type with secondary pneumonia.

¹ See THE LANCET, Jan. 3rd, 1925, p. 13.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Trinity College, Dublin.

Regius Prof. John Mallet Purser has made a gift of £10,000 to be administered for the benefit of the School of Physic and the Schools of Experimental and Natural Science by a committee consisting of the heads of three of the scientific departments of the College. The Board of Trinity College, in gratefully accepting his most generous donation, has expressed to Prof. Purser its desire that he should associate himself with the committee in the administration of his gift and Prof. Purser has consented to do so. Prof. Purser's connexion with the teaching staff of Trinity College dates from the year 1874, when he was appointed King's Professor of the Institutes of Medicine (Physiology and Histology) by the Royal College of Physicians. He held this professorship until his resignation in 1902. Probably no man exercised a greater influence over the minds of generations of students in the school than Prof. Purser during these 28 years. He was responsible for the teaching of physiology, and was, it is believed, the first man in Ireland to give formal lectures and conduct practical classes not only in histology, but also in modern pathology. During the years that he held the King's Professorship he acted as physician to Sir Patrick Dun's Hospital. In 1917 Prof. Purser was nominated by the University Council, and appointed by the Board of Trinity College, to the Regius Professorship of Medicine, a position which he still holds. This appointment has given the greatest pleasure and satisfaction to his many former pupils. His numerous friends, not only in Dublin but all over the world, will hope that Prof. Purser for many years to come will continue to hold this high position and preside over the School of Physic in the University to whose service he has devoted his life.

Royal College of Physicians of Ireland.

At their December meeting, the President and Fellows of the Royal College of Physicians of Ireland unanimously elected Sir Humphry D. Rolleston, President of the Royal College of Physicians of London, to the Honorary Fellowship of the College. Sir Humphry Rolleston has arranged to visit Dublin early in February, and the Honorary Fellowship will be conferred on him in the College Hall on Feb. 7th. He will deliver an address on Personal Links Between the Royal Colleges of Physicians of London and of Ireland. In the evening he will be the guest of the President and Fellows at the term dinner of the College.

The Bad Weather and the Poor.

The peasantry of South and South-Western Ireland is suffering considerable hardship as the result of the recent bad weather. It has been impossible to cut and dry peats, and the prospect in consequence for the ill days that are yet to come is bleak. With the object of alleviating distress in the poorest parts of the country, a meeting is being held, under the Lady Dudley Nursing Scheme, in the Engineers' Hall, Dublin, on Friday, Jan. 16th, when it is hoped to outline some helpful plan. Lady Mayo will preside, and the Governor of the Free State and several other well-known speakers will address the meeting.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

What Is a Fresh Egg?

THIS perennial question was again raised last month in the French law-courts, and the prosecution conducted in the Tenth Chambre du Tribunal Correctionnel de la Seine of certain vendors who had passed off preserved eggs as fresh, has clarified the situation. At any rate, grocers in France now know exactly where they stand,

and what risks they run of fine and even imprisonment if they convey to their customers the impression that their eggs are straight from the hen and not straight from cold storage. In the course of this prosecution much ingenuity was shown in the definition of the term "a fresh egg." It was urged, presumably on behalf of the persons prosecuted, that an egg should be regarded as fresh when it showed no changes on transillumination, and when it could be used for all the culinary purposes for which a fresh-laid egg is fitted. This definition was criticised as being altogether too elastic: as leaving the door open to abuses, and as giving a sort of passport to the egg which, after a five or six months' sojourn in cold storage, is susceptible to rapid deterioration on its emergence therefrom. Incidentally, it should be noted that, of the million odd "fresh" eggs consumed daily in Paris, only a negligible 500 or so are laid on the same day or the day before. The definition of a fresh egg formally accepted by the Tenth Chamber was "that which has not been subjected to any process of conservation." Eggs for boiling—*les œufs coque*—must not, according to the ruling of this Court, be more than 15 days old in the summer or more than three weeks to a month in the winter. Fresh eggs—*les œufs frais*—are those which, though somewhat older, are still fit for cooking purposes without having undergone any process of conservation. Preserved eggs—*les œufs de conserve*—are those which, for a shorter or longer period, have been artificially prevented from undergoing spontaneous deterioration by being kept in storage. The persons prosecuted were condemned to 15 days' imprisonment in addition to a fine, and it is to be hoped that these disciplinary measures will prove a most effective mnemonic to traders who are apt to be forgetful of the birthdays of their wares.

The Episcopes.

In my last letter I referred to the use of the cinematograph in demonstrating vivisection experiments to students. Films, of course, can also be taken of surgical operations on the human body, and are instructive, but the new apparatus now in use of the St. Louis Hospital is likely to prove of much greater value. This is the episcopes, a sort of glorified epidiascope, by which the actual operation, at the time when it is being performed, is projected on to a screen in a room adjacent to the operating theatre. The part of the patient on which the surgeon is working is strongly illuminated with beams from electric light projectors, and, immediately above, but placed so as not to interfere with the surgeon, is a lens like that of a camera or magic lantern. The image is picked up, and the beam is deflected at right angles by a prism and passed through a tube to a lantern in an adjoining room where it is thrown on a screen. Students can follow every movement of the instruments guided by the surgeon's hands, and can take notes in comfort without any risk of distracting the doctors and nurses. But what is more important, next door in the operating room all is quietness and not a single unnecessary movement disturbs the air or the surgeon's sang-froid. The value of this apparatus lies in the fact that there can be no possibility of "faking" the picture, and the surgeon's mistakes are recorded along with his successes. Nevertheless, merely to watch the surgeon's manipulations is not enough. An operation theatre is a theatre in more senses than one, for in the actual presence of the living actors in the drama on the operation table there comes to the student a tenseness, a sense of responsibility that no amount of mere visual perception can ever quite replace.

Vivisection.

Reverting to the subject of vivisection, there has been a good deal of public feeling raised during the past year through the instrumentation of certain political journals with regard to animal experimentation in laboratories. In July of last year the Minister of Hygiene drew the attention of the Academy of Medicine to acts which he designated as being of useless cruelty, and he asked if it would not be

possible to limit the number of laboratories and to organise some supervision of the experiments. A commission, which included Prof. Balthazard, was appointed to look into the matter. Prof. Balthazard has now reported to the Academy of Medicine that useless cruelties are never practised in our laboratories. He also points out that vivisection at the present time in no way resembles what was practised under that name in the time of Claude Bernard. Nowadays experiments are conducted in exactly similar fashion to operations on human beings, and, further, we now possess anaesthetics which abolish pain but do not nullify scientific results. On the other hand, he states it is impossible to limit the number of laboratories authorised to carry out vivisection experiments, as such a limitation would be equivalent to granting a monopoly of biological discovery to certain institutions. As regards the control of vivisection, this is already in existence, as the laboratories are under the surveillance of the deans of the medical faculties and the directors of scientific institutions. Also, it would be intolerable to permit lay strangers to be present at and criticise operations. It is to be hoped that the conclusions expressed in this report will assure the Minister and the political press that there is no occasion for misplaced excitement.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

The Treatment of Scabies in Infants and Young Children.

Dr. Zoltán Barabás, director of the Children's Asylum in Gyula, Hungary, has used the following routine treatment in cases of scabies of infants and young children, and has had excellent results with it. The hair and nails are cut short. A warm bath is given in which the patient is immersed for some considerable time, his skin being abundantly soaped and rubbed with a soft brush, in order to remove the superficial pus-vesicles and crusts. It is advisable to add 1 per cent. lysol to the bath-water. After the bath the skin is well dried and one of the following ointments applied: Milk of sulphur, 15 g.; potassii carbonate, 10 g.; green soap, 5 g.; lard ad 100; or sulph. precipit., creta alba, oxide of zinc aa 12 g., vaseline ad 100. With infants under 6 months it is advisable to increase the quantity of the vehicle by one-third, as the ointment is likely to irritate the macerated skin. Inunctions are to be made on three to four successive days, once a day, if possible by daylight, to ensure visually that the whole body is anointed. The inunctions must be made energetically, each manipulation lasting from eight to ten minutes. Special attention must be paid to the head, ears, neck, and in general to all flexures. All pus blisters must be incised, and afterwards dressed with the above ointments.

Diet for Obstinate Constipation.

Dr. Sigmund Serb, lecturer on clinical medicine at the university, prescribes the following diet in cases of spastic constipation. Half an hour before breakfast: one tablespoonful of pure honey with three tablespoonfuls of warm water. At breakfast: besides common sugar, one teaspoonful of milk-sugar, along with plenty of butter, jam, and rye bread. Before noon: Raw and preserved fruits. Lunch: To be avoided are, kohlrabi, cabbage, radish, horse-radish, cucumber, onion, unsieved beans or peas, puddings prepared with yeast, green or over-mature cheeses. Recommended are: Carrots, and green vegetables other than the above, cooked with soup, plenty of vegetables and little meat, much salad and cooked fruits, soft cheese. Tea, as for breakfast. Dinner: Anything excepting the foods to be avoided, as enumerated above for lunch. Meat and eggs must be erased from the dinner bill-of-fare. Recommended are cooked or raw fruits, spinach, carrots, potatoes, asparagus, green beans, green peas, soft cheese, milk, yoghurt, gervais, light puddings, tarts, aspic jelly,

bacon, and as much butter as possible. In general, the keystone of this diet is the consumption of plenty of butter, at least 120-130 g. a day. Before going to bed 10-12 dried plums steamed in about 10 oz. of water to which is added one teaspoonful of milk-sugar, the whole to be passed on a sieve. Instead of white bread rye bread is always to be served. As for mineral waters, there are hundreds which are useful, provided that the carbonic acid is first driven out from them by warming the bottle.

Diathermy in the Treatment of Gonorrhœa of Women.

Dr. John Bársony, professor of obstetrics and gynaecology at the University of Budapest, writing on gonorrhœa of women, touches the question of the usefulness of diathermy in cases of exudates and pelvic cellulitis. He maintains that diathermy is a very useful auxiliary in the treatment of the gonorrhœal inflammations which sometimes defy all usual forms of therapeutics. Such are the cases where the uterus along with the tubes and the ovaries, and, chiefly, the posterior uterine ligaments are getting very tender. Such women are continually complaining of pains in the back and abdomen, and of general malaise; they envy all those who are healthy, and become embittered as to their fate. Particularly acute are these complaints during menstruation. This condition is usually termed post-gonorrhœal, but it is not. These women are still infected with gonococci, which are quiescent and are aroused periodically. In treating this condition diathermy is most effective. The heat applied in the pelvis, though not burning the tissues of the body, kills the gonococci. Improvement and even cure may be effected by a few sittings. Such cases should be sent by the practitioners to the institutions equipped with diathermy apparatus, while inflammatory swelling of the adnexa and exudates may be left under the care of the gynaecologist.

Post-Graduate Course on Dietetics.

The post-graduate courses held last year in Budapest have proved a great success. Foreigners came to attend them in unexpected numbers. The last course was held in December on the theoretical and practical study of X ray work. The first course for this year is now being held and deals with dietetics. The lectures are held in the clinics of Prof. Alexander Korányi. The course comprises theoretical lectures on the dietetics of different internal diseases, metabolism, with practical analyses, and practical exercises in the laboratory on the culinary art. The fees for the course and full board for foreigners in the guest house of the clinic amount to 50 American dollars. While such post-graduate courses are productive of good results, the great inrush of students to the medical faculty of Budapest is raising fears among medical men of the city that the profession will become overcrowded. The territory of Hungary is now only one-third the size it was before the war, yet the number of medical students at present matriculated in Budapest University is 2062. Even in pre-war days this number would have been regarded as excessive.

THE LATE DR. C. D. SHEPHERD.—Charles Dunbar Shepherd, M.R.C.S. Eng., senior consulting surgeon to the Wigan Infirmary, died at an advanced age on Jan. 8th at the house of his son at Ross-on-Wye. Dr. Shepherd for many years was a busy practitioner in the Wigan coalfield district, and was associated with the Royal Albert Edward Infirmary at Wigan ever since the institution was opened by the late King Edward, when Prince of Wales, 52 years ago. Prior to the building of the infirmary, Dr. Shepherd was for a number of years surgeon at the Wigan Dispensary. Forty years ago, owing to ill-health, he found it necessary to resign his position on the medical staff of the infirmary, and retired to Arnside where he resided for many years. On his retirement he was elected honorary consulting surgeon to the Wigan Infirmary, and at his death he was the senior consulting surgeon. Dr. Shepherd qualified in 1862 as M.R.C.S. and L.S.A., having pursued his medical studies at King's College, London, of which he was an Associate.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING was held in the Thompson-Yates Laboratories of the University of Liverpool on Jan. 9th and 10th, Profs. E. E. Glynn and J. M. Beattie presiding.—W. Blair Bell (Liverpool) described the specific action of colloidal lead in causing necrosis of the fetal placenta and consequent abortion; the effective aborting dose is about one half of the fatal dose. Copper may cause abortion due to hæmorrhage and if sufficient is given to produce this result it is generally fatal. Thallium is very little and thorium not at all toxic in reasonable doses.—A. H. Miller (Midhurst) had treated tuberculous guinea-pigs with the esters and salts of some unsaturated fatty acids found useful in leprosy but without any good result. Some of the preparations were definitely poisonous, for example, the very unsaturated Japanese sardine oil.—G. Hadfield (Bristol) narrated a case where a tourniquet was by mistake left on the leg too long; the patient died several days later with symptoms compatible with secondary shock, and post mortem extensive necrosis of the leg muscles was found.—A. F. B. Shaw and R. P. Smith (Newcastle) described five cases of Riedel's chronic thyroiditis which produces singularly hard goitres, generally causing dyspnoea and often mistaken for sarcoma. There is diffuse lymphocyte infiltration with definite lymphoid follicles and much fibrosis; the destruction of the proper parenchyma varies in different cases and in different parts of the same gland. One case had Addison's disease and the suprarenals were found to be destroyed by the same process.—J. S. Dunn and N. A. Jones (Manchester) had studied the excretion of water and urea in experimental oxalate nephritis in relation to the accumulation of urea in the blood. The two largely run parallel, and the induction of polyuria by increasing the water intake raises the excretion of urea and may substantially lower its level in the blood. The same authors, with J. H. Dible and B. A. McSwiney, had failed to find any difference in blood circulation-rate in normal and nephritic kidneys.—F. S. Fowweather (Leeds) described a hypobromite method of determining blood-urea which was good enough for clinical purposes.—G. S. Williamson (London) described the finding of colloid droplets and degenerated cells in the ventricular fluid in encephalitis lethargica, and held that the primary change was an ependymal catarrh; the familiar perivascular cell aggregates are the consequence of the anatomy of the parts.—D. F. Cappell (Glasgow) described a case of liver-cell carcinoma with many secondary deposits in the lungs, heart, brain, &c., and numerous microscopic metastases in the spleen pulp.—M. J. Stewart and A. L. Taylor (Leeds) dealt with adenomyoma of the stomach, of which they had met with five cases, one an accidental autopsy finding and four removed by operation. The thickened plaques, one or two inches across, towards the pyloric end are composed of variable mixtures of Brunner's glands, more or less differentiated, pancreas, and smooth muscle, and the condition is to be regarded as a heterotopic malformation.—J. Davidson (Edinburgh) had produced a malignant tumour with widespread metastases in a rabbit by the subcutaneous inoculation of an ethereal solution of tar; the structure was indeterminate but was apparently sarcomatous.—W. A. Alexander (Edinburgh) described a typical sacrococcygeal chordoma in a man of 61, and specimens of the same tumour were shown by A. Young and R. Muir (Glasgow), and by A. Peyron and M. J. Stewart (Leeds).—W. A. Alexander also showed a sacrococcygeal tumour from an adult female which had the structure of a capillary carcinoma, recalling some papillary kidney tumours and also the choroid plexus; it was suggested that it was either an exceptionally uniform teratoma or came from the neurenteric canal.—H. W. Crowe and W. G. MacDonald (Harrogate), in an extensive series of

observations on the relation of staphylococci of the scalp to rheumatoid arthritis, had found that a special variety of coccus was regularly agglutinated by the serum of patients with that disease and not by normal sera.—C. C. Okell, T. Dalling, and L. Pugh (London) dealt with the frequency of leptospiral jaundice in dogs in England causing a disease known as "yellows" and often confused with distemper, and showed its specific identity with the spirochaetosis icterohæmorrhagica of men, rats, and experimental animals. Considering the widespread diffusion of the organism in rats and dogs the rarity of human infections is remarkable.—W. W. C. Topley, J. Ayrton, and E. R. Lewis (Manchester) had investigated the possible influence of bacteriophage on aertrycke infection in mice. Feeding lytic filtrates to carriers did not stop excretion of the bacilli. Feeding lytic filtrates with bacilli to normal mice did not prevent infection and the induction of the carrier state. Adding large quantities of lytic filtrates to the animals' water-supply made no difference to the progress of mouse epidemics. Feeding or vaccination with bacteriophage gives no protection against subsequent inoculation with bacilli. No evidence was, therefore, obtained that bacteriophage had any protective or curative value.—A. D. Gardner (Oxford) described his studies of the minute details of the mode of multiplication of the branched forms of paratyphoid cholera and other bacteria.—J. W. McLeod and J. Gordon (Leeds) said that bacteria do not produce glutathione, but its reduction by them to the stage, giving a nitro-prusside reaction, was a useful measure of their reducing power which the authors related to the capacity of different kinds to produce hydrogen peroxide.—J. W. McLeod and B. Wheatley (Leeds) described experiments showing that "peptone" contained substances inhibiting bacterial growth.—M. J. Stewart (Leeds) presented an interim report of the Status Lymphaticus Committee showing, as far as the number of cases investigated allowed, that really normal healthy young persons often had large thymuses and that the reality of status lymphaticus as a cause of unexplained deaths was highly problematical.—J. Cruickshank (Aberdeen) found that strongly alkaline emulsions of fæces gave pure cultures of *Streptococcus faecalis*, strongly acid emulsions gave *B. acidophilus*, and other streptococci, coli being in both cases completely suppressed. On subsequent culture the streptococci were not particularly resistant to acid and alkali.—A. E. Boycott and C. Price-Jones (London) had failed to get experimental evidence that muscular fatigue promoted infection of rats with Gaertner's bacillus or with tubercle bacilli; exhaustion is associated with a great fall in body temperature unless the external temperature is high.—A. T. Glenny (London) drew attention to the variability in the individual responses of animals to toxin injections, and urged caution in drawing conclusions from small numbers of experiments.—E. E. Glynn, R. E. Roberts, and P. Bigland (Liverpool), from a careful analysis of several hundred cases from the local venereal diseases clinic, had found that, when treatment by salvarsan and mercury had brought a Wassermann reaction to the negative, the further administration of mercury by the mouth and especially as grey oil by injection encouraged rather than prevented both Wassermann and clinical relapses. In discussing the possible explanations of this unexpected result they considered the production of mercury-resistant strains of the spirochæte and a general lowering of resistance by the mercury as the most likely factors.—E. E. Glynn and R. Jones (Liverpool), in studying the blood groups of 40 medical students by agglutination and absorption, had come across seven cases in which the cells or sera gave anomalous reactions.—In the demonstrations R. P. Smith (Newcastle) showed a large calcified deposit in the brain, probably a tuberculoma; J. M. Beattie (Liverpool) specimens of foot-and-mouth disease in rats, specimens of pneumonic and bubonic plague, and mesenteric gas cysts in a pig; A. H. Miller (Midhurst) a case of lymphosarcoma in a pig; H. Evans (Liverpool) specimens of leontiasis ossea and of hair balls; W. A.

Haig (Cardiff) a streptothrix; and G. S. Williamson and I. H. Pearse (London) the relation of lymphoid tissue to the primary lesion in gastric ulcer.

PEOPLE'S LEAGUE OF HEALTH: WORK OF THE CHILDREN'S COURTS.

A MEETING was recently convened at 12, Stratford-place, London, W., when certain members of the London County Council met unofficially members of the voluntary Advisory Council of the People's League of Health, and the magistrates sitting in the Juvenile Courts, who are advocating reforms in the working of the children's courts in this country. There were present: Mrs. Mathew, J.P., L.C.C., and Miss Adler, J.P., L.C.C., in an unofficial capacity; Dr. A. F. Tredgold, Dr. R. G. Rows, Dr. R. H. Cole, Dr. E. D. Macnamara, of the voluntary Advisory Council of the League; Mr. Clarke Hall, presiding magistrate, Shoreditch Children's Court; and Dr. F. C. Shrubbsall. Dr. Tredgold stated that the after-effects of encephalitis lethargica, accounting for much delinquency, were often not recognised in courts, and stressed the fact that this disease was increasing alarmingly. The speaker raised the question as to whether the L.C.C. should be responsible for setting up a special department for the proper investigation of delinquency in children under 16 years of age. Miss Adler pointed out that if a small number of magistrates were specifically appointed to try children's cases, more even treatment would result. The suggestion was made that provision might be made in the Children's Act for the appointment of such special magistrates. Dr. Macnamara suggested that an itinerant magistrate going from court to court would bring powerful influence to bear on the case being heard; while Dr. Rows instanced the practice in Boston, U.S.A., where a clinic is set up in connexion with these cases, and a visiting staff inspects the home of the children, and the magistrates in court have the benefit of this information. Dr. Shrubbsall stated that the Children's Act in Canada conferred greater powers on the magistrates than in England. The Advisory Council was of opinion (a) that Juvenile Courts should not be regarded as criminal courts, but as courts exercising Chancery jurisdiction, and that no child under 14 years of age should be "convicted," since such conviction involved a stigma upon the child in after life and might prevent his being received in one of the colonies. It was unfair that a child whose bad surroundings made it necessary to send him to an industrial school involved a "conviction." (b) That greater powers were needed by the President of a Children's Court with regard to custody—e.g., in arranging for the custody of children whose parents consented to such adjudication. (c) That a more satisfactory statistical basis was required, both to determine the child's immediate treatment and future work, and this could only be supplied by a physiological and psychological examination of all serious cases of delinquency. (d) That a special home should be established in this country, where medical observation of delinquent children could be systematically and fully made, for this alone would assist the magistrates in court to a complete understanding of the facts of each case before making his recommendation to the court. This was strongly endorsed by Mrs. Mathew. Miss Nethersole, honorary organiser of the League, congratulated those present on the unanimity of opinion that had been reached.

A series of nine lectures will be delivered at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1, on What We Should Eat and Why. The first lecture will be given on Wednesday, Jan. 28th, at 6 P.M., by Dr. Leonard Hill, F.R.S., entitled the Nature and Purpose of Food. Tickets and further information can be obtained from Miss Nethersole, 12, Stratford-place, W. 1.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—At the instance of the Board of Control, a special course in the study of malaria, both from the clinical and laboratory standpoints, is being arranged in February for medical superintendents of mental institutions, for guidance in the treatment of general paralysis of the insane by inoculation of malaria blood.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twelfth meeting of the Commission was held at the Home Office, Whitehall, on Jan. 8th, Lord Lawrence of Kingsgate in the chair. The examination of Mr. Edwin Heather, representing the Independent Order of Oddfellows, Manchester Unity, was continued on the following subjects: Dental benefit, extension of medical benefit, the benefits of married women deposit contributors, exempt persons. Proof copies of the oral evidence given at the meetings of Dec. 11th, 18th, and 19th, 1924, are now on sale at H.M. Stationery Office.

Public Health Services.

THE APPLICATION OF APPROVED SOCIETY SURPLUSES.

In the face of the announcement that the surpluses at the second valuation of approved society funds are likely to reach the very large sum of £30,000,000, it really seems possible for a great advance to be made in the development of the service. At the last valuation there was an overwhelming desire to use the surplus of 17 millions for the main purpose of increasing the cash payments to members in sickness and disablement, but with a surplus of nearly double the amount the anxiety appears to be rather to limit the amount of additional cash benefits, to increase the provision of dental treatment (including dentures), and to extend medical benefit to include specialist and consultant services. It is even suggested that a portion of the surplus might be devoted to research work into the causes of cancer, neurasthenia, and arthritis—all prolific causes of sickness and disability constituting the greatest drain on the funds of the societies. Whatever is decided as to the disposition of the surplus, an attempt should be made on this occasion to establish additional benefits which shall be available to all insured persons, no matter in what society they have membership. While these funds are at present only applicable to certain purposes, the feeling is steadily growing that all the resources of the insurance scheme should be pooled so that a broad scheme of development may be set on foot as soon as the report of the Royal Commission is presented. Our immediate concern should be to convince the public that this development is following the right lines and that the expenditure involved is money well invested. We should be able to guarantee that the return is not only a sound financial investment, but also a much greater gain in the production of a healthy and happy community.

A COUNTY SPECIALIST SERVICE.

The first (and only) report of the Consultative Council on Medical and Allied Services gave as an illustration of a concerted scheme of services the actual example of Gloucestershire, "where the local authorities in the county and its towns, the hospital authorities, and all the doctors have agreed on a plan of services similar to that set forth in this report." We have just received, through Dr. J. Middleton Martin, a report of the Medical Services Committee of the Gloucestershire County Council, dated Dec. 1st, 1924. It seems clear from the figures given therein that the service at present deals mainly with child welfare and the treatment of school-children, though cases of venereal disease and tuberculosis also appear in the tables. The interest of the tables lies in the fact that during the quarter ending June 30th, 1924, specialist services were utilised to the extent of 555 examinations, chiefly for eyes, ears, and throats, and out of these cases 158 were operated on. The cases seen by specialists rose from 488 in the six months ending Dec. 31st, 1922, to 764 for the six months ending June 30th, 1924, while the operations rose from 121 to 220. The cost for these services ranged between £1240 in 1922 and £1697 in 1924 over a six-months' period, the cost in the complete year 1923 being £2842. Unfortunately the service as it is at present is a limited form and is not applicable to insured persons generally, but the fees set out on p. 3 of the report may form some guide to the calculation of the cost of a more inclusive service. At one centre the specialist charges two guineas a visit to the centre to examine eyes or throats, the number of cases treated to be not less than four, and operations were paid for at the rate of £1 2s. 6d. a case, including the anaesthetist. In other cases payments were made to hospitals, 5s. per case for the examination of eyes, and for operation cases not admitted as in-patients, £1 10s. There is clearly a

very well-running machine in Gloucestershire which could be made available at once for any extension of the insurance service.

TUBERCULOSIS.

Notification of Tuberculosis.—The Ministry of Health has issued new regulations, dated Dec. 18th, 1924, which came into operation on the first day of the New Year. According to these regulations, every medical officer of health must furnish at the end of each quarter a statement showing (a) the number of cases of tuberculosis on his register at the commencement of the quarter, (b) the number of cases notified to him under the regulations of 1912 for the first time during the quarter, (c) the number of cases removed from the register during the quarter (giving the name and address of each such case and the reason for such removal), and (d) the number of cases remaining on the register at the end of the quarter. Separate figures must be given in each case for males and females, and for pulmonary and non-pulmonary cases. In a circular dated Dec. 22nd, 1924, the Ministry of Health threatens with prosecution the medical practitioner who is remiss in notifying tuberculosis. He is reminded that a notification of tuberculosis made after the notifying practitioner is aware of the death of the patient is not a notification duly made, and it does not entitle the practitioner to the payment of the prescribed fee. The circular proceeds: "and it appears to the Minister that it may even be desirable to proceed to a prosecution in one or two cases. . . ." The problem to which this circular refers is not simple, and it is one that cannot be solved solely by admonitory injunctions from headquarters. The proportion of cases of tuberculosis not notified till after death varies considerably in different parts of the country, and, as a rule, this post-death-notification-rate may be taken as a rough guide to the degree of co-operation between medical practitioners on the one hand and medical officers of health and tuberculosis officers on the other. Another factor, influencing the post-death-notification-rate, is the amount of help extended in each district to the persons notified: it is obvious that the more a patient is helped consequent on notification, the greater will be the inducement to effect early notification.

Tuberculosis Administration in Lancashire.—The report of the central tuberculosis officer of the Lancashire County Council for 1923 shows that the county death-rate per 1000 in 1923 was 0.70, the lowest yet recorded. This reduction in the tuberculosis death-rate being greater than that for other diseases, it would seem justifiable to conclude that modern anti-tuberculosis measures are eminently rational. Further improvement has been made in reducing the number of omissions to notify tuberculosis, and in the year under review less than 7 per cent. of the deaths from pulmonary tuberculosis were notified after death. In 1918, 18 per cent. of all the notifications were made after death. Further evidence of the improving co-operation between medical practitioners and tuberculosis officers is to be found in the fact that 76.6 per cent. of the new cases (excluding contacts) examined by the tuberculosis officers had been referred to them by practitioners, pensions authorities, school medical officers, and other health officials. On pages 78 to 80 of this report the after-histories of 2228 patients, who completed sanatorium treatment, are compared with the after-histories of 1640 patients in a similar stage of the disease who did not undergo sanatorium treatment. The comparison is in favour of the sanatorium patient. The report is enlivened by the inclusion of photographs of patients at work and rest in the county sanatoriums. The work photographs are supposed to prove that "there are no loafers in the county sanatoria." Could any proof be more convincing?

Tuberculosis Control in Birmingham.—The tuberculosis work in Birmingham is of such a high order that the annual reports by Dr. G. B. Dixon, chief tuberculosis officer, are a source of inspiration. One

of the most admirable features of sanatorium administration in the Birmingham area is the provision of observation beds. Of the patients discharged from all the Birmingham sanatoriums during 1923, no less than 18 per cent. had passed through the observation beds at Yardley-road Sanatorium. In connexion with these beds it is pointed out that "in only a limited percentage of all cases is it possible to arrive at a correct diagnosis of pulmonary tuberculosis in the consulting room after one or two examinations. The provision of an adequate number of observation beds allows of an accurate diagnosis being made in a larger number of what would otherwise remain as doubtful cases." This lesson, that the one-consultation diagnosis is insufficient to act as a pivot on which the whole of the patient's future turns, is one which still requires emphasising.

HOSPITAL NOTES.

ROYAL NORTHERN HOSPITAL.—Thirty-two of the 60 closed beds will shortly be reopened. This has been made possible by the success of an effort to double a benefaction of £20,000 which was offered conditionally upon a similar sum being raised towards the reduction of debt by New Year's Day. There were more than 40,000 subscribers to the second £20,000.

TILBURY HOSPITAL.—Sir P. J. Michelli, secretary of the Seamen's Hospital at Greenwich, points out that the new buildings at the Tilbury Hospital are on the pavilion system and of one story only. They consist of a nurses' home, two wards of 25 beds each, an out-patient department, an operating theatre, and kitchens. Owing to the alluvial nature of the soil reinforced concrete "rafts" are necessary for the foundations. The walls are composed of hollow triangular cement and breeze blocks, two blocks forming a section of the outside wall, with a breeze block in the intervening triangular space. The cost per bed will be only £700. The grounds are being planted in advance of the building, in the hope that there will be well-rooted trees in leaf by the time the new wards are occupied.

POPLAR HOSPITAL FOR ACCIDENTS.—At the sixtieth annual festival dinner the Chairman, Sir Charles McLeod, stated that to meet the constantly increasing demands upon the hospital it had been necessary to enter into a contract for new work amounting to over £25,000. This hospital, which has 103 beds, was rebuilt in 1891 and has since been five times enlarged.

LONDON HOSPITAL'S CATGUT FACTORY.—Last year this factory produced £10,250 worth of catgut. Most of it was sold to other hospitals and to surgeons, and some was sent as far afield as Persia and China; the "London" itself used £550 worth. The profits are sufficient to enable the hospital to treat 1000 out-patients or to maintain three beds.

WEST LONDON HOSPITAL: NEW WING.—The sorely-needed new wing is rapidly approaching completion and will be opened next month by Princess Mary. It contains an accident ward of 16 beds, male and female cancer wards, each containing seven beds, two operating theatres, and 26 beds in private rooms for paying patients. The available beds will now number 220. The wing will be opened free from debt, thanks to the generosity of anonymous donors.

BRITISH HOSPITALS ASSOCIATION.—The annual conference will be held at Manchester on June 25th and 26th. Last year the association met in London and in 1923 at Sheffield.

NEW BIDEFORD AND DISTRICT HOSPITAL.—Lord Glanely has laid the foundation-stone of a new hospital for Bideford and the district, to take the place of an inadequate building erected in 1887. It will stand upon a high and quiet spot and will have 26 beds, with provision for extension; the building, designed by Mr. H. Deighton Pearson, will cost over £15,000. At the celebration dinner Dr. E. J. Toye, the Mayor of Bideford, said that he was the first medical practitioner

in North Devon to own a motor-car. He paid £400 for it; it cost 7s. 6d. per mile to run, and after two years he sold it for £20, less £7 for commission and carriage.

LIVERPOOL INFIRMARY.—The first wing of the new nurses' home of the Royal Infirmary, Liverpool, built at a cost of £40,000, was opened on Dec. 31st by the retiring matron, Miss E. M. Cummins. The completed wing is only one-third of the whole building, which will cost about £120,000. Dr. T. R. Glynn, emeritus professor of medicine of the University, reminded the representative audience that the old nurses' home, built in 1865, was the first institution of the kind in the kingdom. The new home, when completed, would be the largest in the country, accommodating 150 nurses.

MANCHESTER CHILDREN'S SANATORIUM AT ABERGELE.—The Public Health Committee of the Manchester City Council have presented a report on the proposed children's hospital or sanatorium at Abergel. There is a very large number of children in Manchester suffering from pulmonary and non-pulmonary tuberculosis, and the existing accommodation is totally inadequate to meet the demand—both as regards the number of beds and the type of treatment provided. The possibilities for modern treatment by sunlight are very restricted in the existing accommodation. Abergel provides an ideal site for the combination of open-air and sun treatment, as it has an altitude of nearly 500 ft. above sea-level and is only about two miles from the seashore. The site chosen is on the committee's estate and consists of 25 acres. The plans provide for a sanatorium for 546 beds, a school for 100 children, and covered playgrounds. The total cost for the complete scheme is £145,000. The City Council has already decided to provide 210 beds as the first instalment of the complete scheme.

WARD-NAMING AT YORK COUNTY HOSPITAL.—A practice not uncommon in French hospitals was introduced on Dec. 24th last at the County Hospital, when the names of four famous York medical men, two of the eighteenth and two of the nineteenth century, were commemorated by naming wards after them. One ward will be known as the "Burton," part of another ward as the "Drake," the remaining part of the same ward as the "Jalland," and the eye ward as the "Tempest Anderson." Dr. John Burton was the original of Dr. Slop in "Tristram Shandy," who seems to have incurred the enmity of Laurence Sterne through an attack on his uncle the Archdeacon of York. He was a notable obstetric surgeon of his period. Dr. Drake was the author of a history of York as well as a physician of merit.

A SUCCESSFUL HOSPITAL FUND.—During its last financial year the Bradford Hospital and Convalescent Fund, which helps to support the Bradford Infirmary, the Eye and Ear Hospital, the Children's Hospital, St. Catherine's Home, and the Workpeople's Convalescent Home, raised over £22,000. More than half of this sum was subscribed by workers in the mills and factories. Bradford Royal Infirmary, which will observe its centenary this year, has long been inadequate, and for some time past possibilities of reconstruction have been under discussion. Nearly 30 years have elapsed since the last enlargement.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 3RD, 1925.

Notifications.—The following cases of infectious disease were notified during the week—namely, small-pox, 65; scarlet fever, 1835; diphtheria, 1083; enteric fever, 55; pneumonia, 1259; puerperal fever, 43; cerebro-spinal fever, 5; acute poliomyelitis, 7; encephalitis lethargica, 44; dysentery, 7; ophthalmia neonatorum, 99. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, none from small-pox, 13 from scarlet fever, 41 from diphtheria, 62 from measles, and 100 from influenza. In London itself the deaths from diphtheria numbered 8, from whooping-cough 30.

Correspondence.

"Audi alteram partem."

THE PATHOLOGY OF PYORRHOEA.¹

To the Editor of THE LANCET.

SIR,—In an article in your issue of last week summarising Dr. Box's work on pyorrhoea, you paid me the compliment of referring specifically to my view as to the nature of that disease. By inference you made it clear that you would not expect me to endorse all Dr. Box's contentions, and therein you are right. May I ask a short space to outline my reasons? Dr. Box's main thesis seems to be that "traumatic occlusion" induces an internal disease "rarefying pericementitis fibrosa," which opens the way to bacterial infection from the periodontal sulcus. My position is that all the disease subdivisions he enumerates, including "rarefying pericementitis fibrosa," are of the nature of an infection which gains access from the periodontal sulcus—that the beginning is always a marginal gingivitis. I base my opinion on clinical observation.

On the "traumatic occlusion theory" the perfect arch, with perfect occlusion of all 32 teeth, should be practically immune to pyorrhoea. Unfortunately the reverse is the case; the perfect arch is also a perfect breeding ground for pyorrhoea, a point which can be readily apprehended when its capacity for retaining fine-ground sticky food in hidden stagnation areas is appreciated. An exaggeration of this condition is seen in the irregular dental arches so often found in association with "adenoids."

On the other hand, there are people with normally shaped dental arches, but naturally deficient in number of their teeth, and in these people the deficiency in number is often accompanied by spacing of the teeth they do possess. There are also others who have had teeth extracted in early life in such a way as to allow of spacing of the remaining teeth. In both these classes normal occlusion is utterly disorganised and "traumatic occlusion" must be rampant, yet the clinical fact is that they are markedly less liable to pyorrhoea because, in a word, drainage is easier. A very striking illustration of this may sometimes be seen in cases where unilateral extraction has been practised in early life; the extracted side will be found free from pyorrhoea, decay, or tartar, while all these conditions are all well developed on the other. Further, "traumatic occlusion" might be supposed, at first at least, to give rise to a physiological response and so to require time to do its evil work; in fact, marginal gingivitis and pyorrhoea are common from childhood onwards, giving scant time for the antecedent "traumatic occlusion" and "pericementitis fibrosa."

Again, clinical observation of the results of treatment leads me to expect far better results in the case of isolated teeth, whatever their occlusion, than in the case of teeth supported by their neighbours. Cleaning of the last millimetre of the exposed tooth-neck is then possible, and this cleaning is the most efficacious conservative treatment I have yet found.

Turning to another point, I think Dr. Box tends to minimise the dangers of pyorrhoea when he insists that after a primary ulceration of the angle of the periodontal sulcus re-epithelialisation of the ulcerated area takes place, and that this progressively follows the deepening pocket. I have cut many sections and my experience is that there are always ulcerated areas to be found, and though there is often abundant epithelial proliferation it never forms a complete covering to the tooth-ward side of the gum-flap.

¹ Copies of Bulletin No 7 containing Dr. Box's Studies in Periodontal Pathology may be obtained from the Secretary, Canadian Dental Research Foundation, 240, College-street, Toronto (price \$1). A limited number of Bulletins covering Dr. Box's previous work on the Dental Cemental Junction and Normal and Pathological Histology of the Dental Pulp will be supplied upon application by the Foundation.

May I ask one line more of space—to congratulate Dr. Box most heartily on his work.

I am, Sir, yours faithfully,

London, Jan. 11th, 1925.

J. G. TURNER.

ALASTRIM, PARA-SMALLPOX, AND VARIOLA.

To the Editor of THE LANCET.

SIR,—In the correspondence on the subject of alastrim as against small-pox in your issue of Jan. 10th and in the various other articles which have been published from time to time on the same subject, frequent reference is made to the Willesden outbreak of small-pox which occurred last summer. As all the cases, ten in number, which occurred in that outbreak were under my care, perhaps an account of the more salient features in connexion with them may help to clear up the question as to whether alastrim and small-pox are one and the same disease or two separate diseases.

To begin with, the original source of this outbreak is unknown. It was suggested, however, possibly because there were three fatal cases and the type of small-pox prevalent in this country was benign, that the source of infection was imported from abroad, but nothing definitely in that direction was proved. A much more likely source of the trouble, to my mind, was that a mild and undetected case of small-pox was possibly at large in the district, and the possibility of this is not at all unlikely if one remembers that large numbers of people from the Midlands, where small-pox is rife, were passing through Willesden on their way to Wembley, and that en route some of them resided temporarily in the district. Referring now to the first case of the outbreak (E. W.), a child of 3 years, who first developed symptoms on June 9th, the subsequent cases developing some 12 days after, the attack that this primary case suffered from was of the mildest. Perhaps if I say the premonitory symptoms were of the usual nature associated with that type of small-pox but sufficient to keep him to his bed for three days, and if I enumerate the number of lesions on the various areas of the skin surface, a better idea of the exact nature of the case may be gained than by any written description. The following list gives the number of lesions and the sites on which they were situated:—

Face	6	Legs and feet .. .	33
Forehead .. .	2	Upper back .. .	4
Upper chest and chest ..	4	Lower back .. .	20
Lower chest and abdomen ..	7	Upper arms .. .	21
Thighs .. .	25	Forearms and hands ..	18

Of the total of ten cases which constituted the outbreak, six suffered from attacks of the mildest nature, and of these three were in unvaccinated children, whilst the remaining four developed attacks of the severest type, two patients being unvaccinated. Of these four severe cases three died from hæmorrhagic small-pox (purpura variolosa) in its worst forms, the fourth case, an unvaccinated man, recovering after a moderately severe confluent attack.

In the instructive and very interesting articles on alastrim by Prof. R. Jorge, lately appearing in THE LANCET, and in the descriptions of this disease appearing elsewhere, the writers have so clearly mapped out their idea of alastrim that no vestige of doubt is left in the minds of readers as to the exact appearance that alastrim assumes. Having therefore a clear conception of the clinical aspect of the disease, I have no doubt in my mind that the six mild cases in the recent outbreak here met in every detail that I could see the requirements of alastrim as set out by its protagonists, and I would at the same time submit, and I base the statement on a fair experience of small-pox during the last 30 years, that these six cases in no way varied from mild cases of small-pox such as were to be seen in London in the epidemics of 1893 and 1902, and such as are to be found in every outbreak of small-pox of any size in a large proportion of cases. With regard to the remaining four cases, all of them

severe, three of which were fatal, there will be no dispute, least of all by the supporters of alastrim, that these were other than small-pox.

As I read the case for alastrim it is contended that this disease differs from small-pox inasmuch as it does not seem to be so infectious, in this country at any rate, as small-pox; it is said to be mild, is rarely fatal, and furthermore, that the date of appearance of the rash and subsequent vesiculation, pustulation, and non-scarring of the skin is said to be quite out of keeping with what occurs in that disease. Taking these points in sequence.

First as regards infectiousness. Although the outbreak in Willesden only affected one house, every member of the household was attacked, but, on the other hand, it remains a fact that one case, a man of 40 years, spent the afternoon of the day on which he developed the eruption on a 'bus ride to Wembley. Yet no further cases developed in consequence. One single instance of this kind proves nothing, but had there been no fatalities amongst the ten cases, no doubt the outbreak would have been labelled alastrim, and the fact that such a circumstance led to no further cases would have been duly laid stress upon. Again, with regard to the date of appearance of the rash. Alastrim is said to develop its rash at a more variable and later date than small-pox, which seems to suggest that the eruption in small-pox is always to be found on one particular day of the disease, but to anyone conversant with small-pox that is known not to be the case. With regard to the statement that the eruption in alastrim appears at a later date than small-pox, and before accepting it, especially as regards alastrim in this country, I should like to be convinced that the dates on which the eruption is said to appear are the outcome of the personal observation of the medical officer in charge and not based on the mere statement of the patient. Everyone knows that the day on which the patient notices the rash is not necessarily the day on which the rash actually appears, yet there is good reason to believe that data on this particular point are based on information supplied by the patient himself. However, I do not wish to labour the point. With regard to the date on which the ten cases in this district developed their rashes the following are the figures. In two cases the eruption appeared on the third day of illness, in six cases on the fourth day, and in one case on the fifth day, whilst in the tenth case the patient died before the specific eruption appeared.

Referring now to the subsequent development of the eruption in these cases, the most remarkable feature was the way in which the phases of papulation, vesiculation, and pustulation were epitomised, and this was as marked in the unvaccinated as in the vaccinated cases. Moreover, in no case, not even in the confluent case, could complete pustulation be said to be present. This phase was always ill-defined and this feature was remarked upon by all who saw the cases. The vaccinated cases in this respect showed no difference when compared with the unvaccinated. At the height of such suppuration as took place the pustules were dome-shaped, but never pronounced in size or definitely suppurating throughout. They remained a clear yellow serum with opaque streaks, and might well be called amber-coloured, a term used aptly enough by Dr. Garrow in a paper on para-smallpox recently read by him to the Fever Section of the M.O.H. Society in London, when describing the colour characteristics peculiar to the pustules in that disease. In none of the cases did the pustules burst in the orthodox way, an inspissation of the contents of the pustule gradually transformed it into a dry scab which readily separated, leaving nothing but the most superficial of scars on the skin, such as might be expected in a case of varicella.

The Willesden outbreak is therefore definitely in favour of the unicist. There could be no possibility of a double source of infection. The primary infecting case was very definitely a mild attack in an unvaccinated member of the family in which the outbreak occurred, and to which and the other occupants of

the house the outbreak was limited. It gave rise to nine cases, four of which were indisputably small-pox; the remaining six (including the primary case), in the opinion of those who saw them, being ordinary mild small-pox, but which at the same time conformed in every clinical detail with the requirements of alastrim.—I am, Sir, yours faithfully,

W. J. J. STEWART,

Medical Superintendent, Willesden Fever Hospital, London, N.W.

Jan. 10th, 1925.

SMALL-POX OR PARA-SMALLPOX.

To the Editor of THE LANCET.

SIR,—I have read Prof. Ricardo Jorge's memoir, appearing in THE LANCET of Dec. 20th and 27th, with much interest. Undoubtedly, it is a valuable contribution to the literature of the subject, but his conclusions are too important to pass unchallenged. It is indisputable that the non-virulent strain of small-pox which has been occurring in this country during the past few years and which, as Prof. Jorge shows, has frequently been experienced in other parts of the world, presents a very different administrative problem from the so-called "classical" small-pox. As you, Sir, have pointed out in your leading article on the subject (THE LANCET, Jan. 3rd), attempts to treat outbreaks of the present non-virulent strain of small-pox just as if it were a virulent strain only tend to bring administrative action into contempt and disrepute.

Some distinction in terminology is, I think, called for, but not such as to imply that we are dealing with a separate and distinct disease. From the administrative point of view there is certainly something to be said in favour of Dr. Garrow's suggestion of the term "para-smallpox," but from the scientific standpoint such a term can only be justified when—as in the analogous case of para-typhoid—we have succeeded in demonstrating a definite and distinctive causative organism. In the meantime, however, the thesis of the "dualists" that alastrim or para-smallpox is a distinct pathological entity does not appear to me to have been made out. It is merely a surmise based upon a difference in virulence and not supported by any specific clinical differences at all adequate in view of the great importance of the issue.

We have to remember that differences in the virulence of small-pox have ever been a characteristic of the disease. In pre-vaccination times the fatality of different epidemics at different periods varied enormously, though we can easily understand that the more fatal and disastrous epidemics were the ones chiefly recorded in the pages of literature. Only on the hypothesis that much of the small-pox of pre-vaccination times was very mild can we account for the fact that the disease, which almost everyone contracted at some period of his life, did not depopulate the country. Moreover, since the vaccination controversy arose there has been a tendency in text-books to unduly emphasise the heavy fatality of small-pox before the days of vaccination and to rather over-paint the picture.

In this connexion the experience of Leicester is of special interest because, to a larger extent than elsewhere, we have been dealing (since 1885) with the behaviour of small-pox in a comparatively unvaccinated population. In 1872 there was an epidemic of severe small-pox and 346 deaths occurred. The case-mortality is unknown, but undoubtedly it was high. In 1892-93, in the next epidemic, there were 355 cases with 21 deaths, a case-mortality of only 5.9 per cent. In the epidemic of 1902-03, 394 cases occurred also with 21 deaths, a case-mortality of 5.3 per cent. In the epidemic of 1903-04, 321 cases occurred with only four deaths, a case-mortality of only 1.2 per cent. Clinically the cases in this epidemic were indistinguishable from those I saw at Gloucester in 1923, though the average severity was slightly higher.

Naturally, with the experience of this epidemic in my mind, I was less disposed to marvel at the mildness

of the Gloucester epidemic than were some of those who had been taught to believe that small-pox in the unvaccinated is almost invariably a terrible and fatal disease. If we were to have another epidemic in Leicester to-day it is not unreasonable to think that the fatality would be still lower.

But here is the difficulty: So-called alastrim or para-smallpox occasionally causes deaths, as Prof. Jorge admits. Even at Gloucester there was at least one genuine death from small-pox. Then, where are we to draw the line between small-pox and para-smallpox? Was the Leicester epidemic of 1903-04, with a case-mortality of only 1.2 per cent., small-pox or was it para-smallpox? And if the latter, what was the nature of the epidemic of the previous year with a case-mortality of 5.3? What are the criteria on which we are to decide? Frankly, after reading Prof. Jorge's memoir carefully, and also the writings of Dr. Garrow, the chief "dualist" in this country, I fail to find any essential difference, clinical or otherwise, between small-pox and para-smallpox except that of virulence. Such apparent differences as there may be are not specific and can easily be explained as being due to differences in virulence. They do not justify us in postulating a distinct disease, still less do they enable us to make a differential diagnosis.

We have a very analogous case in scarlet fever. If a medical Rip van Winkle were to return to practice after an absence, say, of 50 years, he might make out just as good a case for the proposition that the mild non-fatal "scarlatina" which he found filling the fever wards of our isolation hospitals to-day was a different and distinct disease from the dreaded scarlet fever which he remembered, and which not infrequently carried off several members of the same family. He could point to the comparative absence of constitutional disturbance, of angina, "strawberry" tongue, and other "classical" symptoms, and the freedom from the numerous dreaded complications and sequelae. But we should rightly object to his calling it para-scarlet fever!

To return to small-pox; I think that there is much more to be said in favour of Dr. R. W. Jameson's suggestion in his article in this week's LANCET (Jan. 10th). This article is so refreshingly original, and is so full of sound common-sense, that I commend it to all who are interested in small-pox and its administrative control. Dr. Jameson suggests that we should call the present non-virulent small-pox "variola minor," using the term "variola major" for the classical form. Such a terminology has certain obvious administrative advantages, whilst avoiding the confusion introduced by the term "mild small-pox" at present in use. Also it does not commit us to the theory, as yet, I submit, unjustified, that we have to deal with a distinct disease—or even a definite variety—though it does not shut the door on those who prefer to hold this theory.

I am, Sir, yours faithfully,

Leicester, Jan. 12th, 1925. C. KILLICK MILLARD.

FATE OF THE BULBUS CORDIS.

To the Editor of THE LANCET.

SIR,—I had the privilege of hearing Sir Arthur Keith's lecture on the Fate of the Bulbus Cordis in the Human Heart at the London Hospital, which appeared in your issue of Dec. 20th, 1924. Illuminating in demonstration and charming in delivery, like most essays of this author, as the lecture was, there are one or two points on which, with your permission, I should like to make a short comment.

While there are probably a few cases of valvular adhesion in foetal life, which may still be attributed to intra-uterine endocarditis, there can be no doubt that the vast majority of congenitally abnormal hearts are malformations—that is, failures or arrests in development. Sir Arthur Keith's papers published in the *Journal of Anatomy and Physiology* in 1904-5, and in

THE LANCET in 1909, sufficiently proved this thesis, and now that he has so fully and lucidly stated the point again, the clinician will not be able, in my opinion, to avoid endorsing his contention.

The points dealt with are interesting clinically as well as anatomically. The early obstruction of the bulbar avenue and pulmonary outlet forces the blood-stream towards the left heart through abnormal or temporary channels in the ventricular or auricular septum, a diversion which may, under some conditions, be compatible with considerable length of life. One such case in a man of 72, in which the right ventricle was underdeveloped and the pulmonary arterial valve all but obliterated, but the foramen ovale very large and patent, I published in the *Journal of Anatomy and Physiology* in 1917-18. In a paper on the Musculature of the Aorta and of the Cardiac Valves, Anatomically, Physiologically, and Clinically Considered (*Edin. Med. Jour.*, September, 1923), I dealt with a point discussed by Sir Arthur Keith—namely, the persistence of the elasmobranch or shark type in the condition of the conus arteriosus in man. On the possible function of the bulbus in the fish, he makes an interesting comment. He is inclined to regard it as protective of the circulation through the gills. Longitudinal sections, as anyone may satisfy himself, of the heart, bulbus, and aorta, in elasmobranchian and teleostean fishes, show that in the former the bulbus—that is, the heart muscle—extends up the wall holding the ladder of multiple valves, just to the point which secures effective embracement of the whole series of cusps, and in teleosteans, to a point embracing the single set of cusps, beyond which lies the large non-contractile bulbus, which is really the strong base of the aorta.

Sir Arthur Keith suggests that the bulbus cordis in these cases serves to protect the delicate gill circulation from the powerful impulse of the single ventricle. It appears to me, however, that driving the blood through the systemic arteries of the fish is probably an easier matter than maintaining the circulation through the gills, which are exposed to heavy hydraulic pressure, and the deeper the fish lies, the heavier the pressure. As we know, the gill arteries are more directly exposed to this pressure than the gill veins. The contractile bulbus of the cartilaginous elasmobranch and the fibrous non-contractile bulbus of the bony teleostean both thus appear to serve the purpose of enforcing ventricular push and guarding against bulbo-gill variations of pressure. The steady maintenance of pressure in the pulmonary circuit in man is important. The retentive power of inspiration on the circulation and the projective influence of expiration are equalised by the contraction of the conus, which can be shown to precede left ventricular systole, as Sir Arthur Keith suggests in his lecture, and as I indicated in the paper to which I have referred.

On one more point, which I regard as both interesting and important, I would remark. The lecturer stated (*loc. cit.*, p. 1271) that the musculature of the internal or aortic cusp of the mitral valve is the only remains of "the lesser curvature of the bulbo-ventricular tube of the primitive heart" on the left side. In the paper to which I have referred I showed that this important remnant was not only in organic continuity with the general auricular muscle, but that it was also an integral part of a distinct sphincter of the auricular orifice, and a powerful aid in securing mitral valvular competency. It is an interesting structure not only anatomically but also clinically, for its weakening in auricular fibrillation and under some other circumstances, permits that mitral reflux which is no longer the negligible condition it was so loudly proclaimed to be not long ago. The character of this sphincter as a bulbo-ventricular remnant supports the view I expressed (*loc. cit.*) that its contraction persists during ventricular systole—that is, when the rest of the auricle is in a condition of receptive relaxation. It is the last auricular act, and manifestly could not be otherwise.—I am, Sir, yours faithfully,

ALEXANDER BLACKHALL-MORISON.

London, Jan. 3rd, 1925.

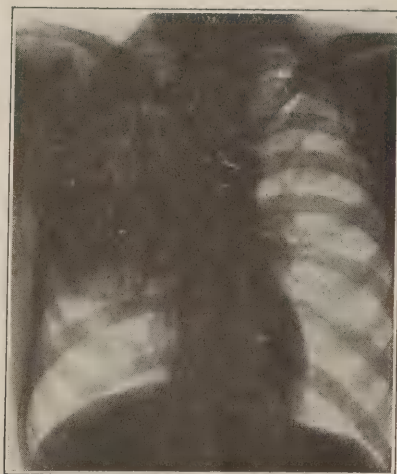
BRONCHO-PULMONARY SPIROCHÆTOSIS.

To the Editor of THE LANCET.

SIR,—We were much interested in Dr. Y. Schwarz's account of broncho-pulmonary spirochætosis in THE LANCET of Dec. 27th, 1924, inasmuch as there is at present in this sanatorium a similar case, the history being as follows:—

Man, aged 40, eight years ago suddenly spat up a lot of foul-smelling chocolate-coloured material; this went on for some days, gradually becoming paler in colour, greenish, and finally yellow, and disappearing in a few weeks. The patient then kept perfectly well with no cough or sputum until three years ago, when exactly the same thing happened again. He once more recovered and had no trouble until his present attack, which commenced five months ago with the same train of symptoms. This attack, however, has been more severe than the previous ones, and the sputum is not disappearing as it did before. It went through the same stages—that is to say, chocolate-coloured and foul-smelling, gradually becoming paler,

FIG. 1.



Radiogram: light in front.

green, and then yellow. It is now, and has been for some weeks, at the yellow stage. The patient has lost 1 st. 11 lb. in weight, but is not toxæmic at present. The pulse is slow and good, there is as a rule no fever, and the appetite and general condition are satisfactory. There have been also some small attacks of hæmoptysis. The patient has lived for the last 15 years in Singapore, and he recovered from the first two attacks without leaving Singapore. However, owing to the prolonged nature of the present attack, he was sent to Switzerland, and finally was admitted into the Palace Hotel Sanatorium, Montana, on Dec. 17th, 1924.

This patient is at present being treated by regulated sun baths, and by injections every five days of neosalvarsan. We shall watch with great interest the progress of the case, and if the conditions have not cleared up we shall in all probability attempt to close up the lesion by inducing an artificial pneumothorax. Unlike the cases described by Dr. Schwarz, the X ray signs, as is seen in the accompanying radiograms, were quite definite and not unlike those of an interlobar empyema. The sputum has been examined frequently since the patient was admitted to the sanatorium, and the organisms of Vincent's angina—both spirochæte and fusiform bacilli—have constantly been found in the dark-ground illuminator, in silver stain, Giemsa, and ordinary stains.

In connexion with the suggestion contained in Dr. Schwarz's article, that the fusiform bacillus may be another form of the spirochæte, it is interesting to note that when the sputum was examined by Prof. Galli-Valerio, of Lausanne University, on Dec. 11th, 1924, this fusiform bacillus was present in large numbers, but no spirochætes were then found.

We are, Sir, yours faithfully,

BERNARD HUDSON.

A. J. MORLAND.

E. ZIMMERLI.

Montana, Switzerland, Dec. 31st, 1924.

INDIVIDUAL RESISTANCE IN THE CURE OF MALARIA.

To the Editor of THE LANCET.

SIR,—In the Critical Consideration of the Treatment of Malaria by Colonel Clayton Lane in the November number of the *Tropical Diseases Bulletin*, one reference

only is made to the resistance of the individual as being of importance in the cure of malaria, while your leading article of Jan. 3rd appears to take the line that the one and only factor of importance in the treatment of malaria and the prevention of relapses is the giving of quinine and to have in mind only that the essential idea should be to find out the best dosage, the most potent preparation, and the appropriate period for the administration of the drug.

Failure to realise and allow for the factor of the resistance of the individual

seems to me to explain much of the difficulty associated with the cure of malaria. I have only occasionally, among very many cases, come across the difficulties that were met with in war-time patients, but then my practice, even during the years of the war, has been confined to malarial patients who were living under peace conditions, and when difficulties did occur they were found to be due to some associated disease which caused a detrimental interference with the resistance of the individual.

It is, of course, elementary that the severity of a disease varies with the relation of the dosage of the infection to the resistance of the individual. Resistance can be lowered in many ways, but one of the most potent must have been the conditions of war service under which, in addition to numerous physical hardships, the ever-present expectation, almost amounting to certainty, of wounds and death can hardly have been other than a cause of depressed resistance.

The treatment of peace-time malaria is easy and commonly successful. Failure may be due to faulty quinine administration or to concomitant infections which will require to be dealt with if the patient is to recover quickly and satisfactorily.

I am, Sir, yours faithfully,

London, W., Jan. 9th, 1925.

V. S. HODSON.

FIG. 2.



Radiogram: light behind.

GLUT OF WOMEN DOCTORS.

To the Editor of THE LANCET.

SIR,—As showing the glut of women doctors the following figures may be of interest. To-day there were 78 applicants for the post of junior resident medical officer (female) at the Children's Hospital, Sunderland, salary £100 a year. Thirty-three held English qualifications; 33 Scottish, and 12 Irish. Of the English qualifications ten were London graduates, four Durham, two Birmingham, one Sheffield, seven Manchester, and six London Conjoint Colleges. Of the 33 Scottish qualifications three were of St. Andrews, nine of Edinburgh, 13 of Glasgow, and eight of Aberdeen. Of the 12 Irish qualifications seven were of Belfast, three of Dublin University, and two of Irish Conjoint Colleges. Forty-five out of the 78 had held previous public appointments, and many of them had held several.

I am, Sir, yours faithfully,

Sunderland, Jan. 13th, 1925.

WM. ROBINSON.

ERASURE FROM THE MEDICAL REGISTER.

To the Editor and Proprietors of THE LANCET.

DEAR SIRs,—In THE LANCET's report of proceedings at the General Medical Council's winter session, which opened on Nov. 25th, there appears a reference to my case, considered by the Council, which in more than one respect is likely to create a serious misunderstanding, on the part of readers, that may be damaging to me.

It is incorrect to report that "Dr. Haydn Brown attended in answer to his notice and explained that he had really no answer to make to the charge, but that he was ready to reply to any questions put to him." My reply was that I had little to say "beyond what was contained in my written replies to the charge as sent to the Registrar and to the solicitor of the Council respectively."

The members of the Council were each supplied with a copy of the double reply, which consisted of no less than 18 quarto typewritten pages.

I must therefore ask you to be kind enough to correct the injurious impression by publishing this letter in a prominent position in an early issue of THE LANCET, as well as the 18 quarto pages referred to—which I enclose.—Yours faithfully,

HAYDN BROWN.

Cavendish-square, W., Jan. 8th, 1925.

*** Dr. Haydn Brown gives his opening words correctly. Our report might have added that certain written replies had been sent, but it could not include these documents of which the contents were not made public.—ED. L.

REX v. BATEMAN.

IN view of an Appeal which we understand is pending in this case we are unable to publish the letters which we have received this week.

MANCHESTER STREETS AND THE TOLL OF THE MOTOR.—During 1924 the Chief Constable of Manchester reports that there was a much larger number of street traffic accidents in the city than in 1923. The number of fatal accidents was 68; in 1923 there were 48. The following classification shows the details—the numbers in brackets indicate the corresponding numbers in 1923. Horse-drawn vehicles 9 (6), mechanically-propelled vehicles—motor-cars, omnibuses, &c.—40 (36), tramcars 9 (5), pedal cycles 1 (2). There were 1655 non-fatal accidents compared with 1386 in 1923, an increase of 269, classified as follows: Horse-drawn vehicles 93 (64), mechanically-propelled vehicles 1055 (964), tramcars 280 (197), pedal cycles 227 (161). Motor vehicles were concerned in most of the accidents, and many occur at tram stops. The corporation has tried repeatedly to obtain powers from Parliament to regulate traffic at the tram stops, so as to reduce the danger to a minimum. Last year a clause in a Corporation Bill which would have compelled motor vehicles to pull up at the compulsory tram stops when cars are standing there was rejected by the House of Lords on the ground that the subject was one for general rather than local by-law.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council of the College on Jan. 8th, Sir John Bland-Sutton, President, in the chair, Mr. Herbert S. Pendlebury was introduced, and having made the declaration in the terms of the oath prescribed by the Charter of 1800, was readmitted a member of the Court of Examiners.—Mr. Richard Higgins Burne, M.A. was awarded the honorary gold medal of the College in recognition of his valuable services to the College as Curator of the Physiological Department of the Museum and his important contributions to biological science.—The John Hunter Medal, with the Triennial Prize, was awarded to Mr. W. E. Le Gros Clark for his researches in anatomy.—Mr. Percy Sargent was appointed a member of the Court of the University of Bristol.—A letter from the Secretary to the Anatomical Committee of London stating that the licensed teachers of anatomy in London regret to report that the number of bodies available for teaching anatomy and operative surgery had diminished appreciably during the past year, and that they accordingly beg the Council to reconsider the question of requiring candidates for the M.R.C.S. examinations to produce evidence of having performed operations on the dead body until an improvement in the supply of material can be reported, was referred to a committee to consider and report thereon.—The President reported the retirement of Mr. John Murray from the Court of Examiners on Feb. 12th and stated that the vacancy thus occasioned would be filled up at the ordinary meeting of the Council on that day.

The under-mentioned diplomas were conferred, conjointly with the Royal College of Physicians of London, upon the following candidates:—

DIPLOMA IN PUBLIC HEALTH.

Dora M. Berry, J. Bevan-Jones, Hilda A. Bond, and N. Briggs, Univ. Coll.; W. H. Brodie, Aberdeen; E. B. Brooke, St. Bart.'s; Ellinor M. Burnett, Univ. Coll.; E. H. Cluver, Oxford and Johannesburg; E. A. Coldrey, St. Bart.'s; A. Y. Dabholkar, Bombay and Roy. Inst. Public Health; A. A. Denham, Edinburgh, Cambridge, and Roy. Inst. Public Health; Evelyn B. G. Ewen, Edinburgh and Univ. Coll.; C. Glen, Glasgow; Gertrude E. Harre and Eva M. Johnson, Univ. Coll.; J. Kapoor, Punjab and Univ. Coll.; Margherita M. Lilley, St. Andrews and Univ. Coll.; A. Mitchell, King's Coll.; W. E. M. Mitchell, St. Bart.'s; R. A. Olphert, St. George's and Univ. Coll.; I. M. Rattray, Cambridge, St. George's, and King's Coll.; G. C. E. Refell, Durham and Roy. Inst. Public Health; L. R. Shore, St. Bart.'s; H. K. Snell, King's Coll.; Eleanor C. E. Stone, St. Mary's and Univ. Coll.; Eileen M. Turner, Univ. Coll.; and R. G. R. West, St. Bart.'s.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

T. N. Banerjee, K. S. Captain, R. P. Cormack, D. M. de Silva, W. H. Dye, D. H. C. Given, H. P. Hacker, R. J. Harley-Mason, D. Hynd, Honoria S. Keer, R. N. Khosla, G. Louw, Una F. M. Morton, S. L. Navaratnam, D. It. Nayar, J. A. O'Flynn, H. C. E. Quin, C. F. Shelton, P. N. Suri, E. W. Wade, and H. O. Watkins-Pitchford.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

A. H. G. Burton, C. H. Comerford, E. H. Connell, G. W. T. Fleming, F. McLagan, W. G. Masfield, G. Somerville, and M. L. Sutcliffe.

DIPLOMA IN LARYNGOLOGY AND OTOLGY.

N. S. Carruthers, B. Friedman, F. B. Gillespy, W. G. R. Hore, G. W. Robinson, and D. A. Thomson.

UNIVERSITY OF OXFORD: RADCLIFFE TRAVELLING FELLOWSHIP, 1925.—An examination for a Fellowship of the annual value of £300, and tenable for two years, will be held in Hilary Term, 1925, beginning on Tuesday, Feb. 17th, at 10 A.M. Candidates must have passed all the examinations required by the University for the degree of Bachelor of Arts and for the degree of Bachelor of Medicine. They must not have exceeded four years from the time of passing the last examination required for the degree of Bachelor of Medicine. The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Any candidate desiring to offer in addition a special branch of either medicine or surgery must send notice of this to the Regius Professor of Medicine on or before Feb. 4th. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the Fellowship to the study of medical science and to travel abroad with a view to that study. The Fellowship will be vacated ipso facto by a Fellow who spends more than nine months of the tenure within the United Kingdom. The Regius Professor of Medicine and the examiners present

a yearly report on the work done by each Fellow to the electors, who may, if they think the report unsatisfactory, declare the Fellowship forfeited. Intending candidates should send their names, addresses, qualifications, &c., to the Regius Professor of Medicine, at the Dean's Office, Department of Medicine, University Museum, Oxford, on or before Wednesday, Feb. 4th.

The degree days in the coming term are as follows: Thursday, Jan. 22nd, Saturday, Feb. 14th, and Saturday, March 28th, at 2.30 P.M. respectively.

UNIVERSITY OF LONDON.—A course of eight lectures on Carbohydrate Metabolism will be given by Mr. J. A. Hewitt, Ph.D., D.Sc., lecturer in biochemistry in the University, at King's College, Strand, W.C., at 5 P.M. on Mondays, Jan. 19th and 26th, Feb. 2nd, 9th, 16th, and 23rd, and March 2nd and 9th; also a course of 12 lectures on the Physiology of Muscle and Nerve will be given by Prof. A. V. Hill, F.R.S., Jodrell Professor of Physiology in the University, at University College, at 11 A.M. on Fridays, Jan. 23rd and 30th, Feb. 6th, 13th, 20th, and 27th, March 6th, 13th, 20th, and 27th, and April 3rd and 10th. Attendance at either of these courses is recognised in connexion with the B.Sc. (Honours) Degree in Physiology.—A course of three lectures on the Anatomy and Physiology of the Sympathetic Innervation of the Striated Muscle prepared by the late Prof. John Irvine Hunter, M.D. (of the University of Sydney), will be given by Dr. G. Elliot Smith, professor of anatomy in the University, at University College, Gower-street, W.C., at 5 P.M. on Mondays, Jan. 19th, 26th, and Feb. 2nd.—A course of six lectures on the Physiology of Reproduction will be given by Dr. A. S. Parkes, at University College, at 5 P.M. on Thursdays, Jan. 22nd and 29th, and Feb. 5th, 12th, 19th, and 26th.—A course of four lectures on the Physiology of Plain Muscle will be given by Prof. C. Lovatt Evans at St. Bartholomew's Hospital Medical College (Physiology Department, 6, Giltspur-street, E.C.), at 5 P.M. on Wednesdays, Jan. 14th, 21st, and 28th, and Feb. 4th. Admission to all the above courses of lectures is free.

MEDICO-LEGAL SOCIETY.—A meeting will be held at 11, Chandos-street, Cavendish-square, W., on Tuesday, Jan. 20th, at 8.30 P.M., when a paper will be read by Mr. F. Llewellyn Jones, H.M. Coroner for Flintshire, on Laws of Nations and the Health of Nations: A Survey of International Health Activities Before and After the Great War. This will be followed by a discussion.

ST. MARY'S MEDICAL WOMEN'S ASSOCIATION.—At a meeting of St. Mary's women, past and present, held on Nov. 27th, 1924, it was decided to form an association, to be known as the St. Mary's Medical Women's Association. Its objects are those of a social club and a mutual aid society. Any woman educated at St. Mary's Hospital, Paddington, who, by an oversight, may not have received notice of the formation of this association, is asked to communicate with the Hon. Secretary, Mrs. Bolton, East Weald, Bishop's-avenue, London, N. 2.

ROYAL MICROSCOPICAL SOCIETY.—The annual meeting of this society will be held in the Lecture Hall, 20, Hanover-square, London, W. 1, on Wednesday, Jan. 21st, at 8 P.M., when Mr. A. Chaston Chapman, F.R.S., will deliver the presidential address on the Yeasts: A Chapter in Microscopical Science. The Industrial Applications Section will meet in the Lecture Hall on Wednesday, Jan. 28th, at 7 for 7.30 P.M., when a number of communications dealing with the Use of the Microscope in the Dairying Industry will be read and discussed. Prof. R. Stenhouse Williams will preside.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—A meeting of the general council of this Fund was held on Jan. 13th at the offices of the Fund, 7, Walbrook, London, E.C. There were present Lord Stuart of Wortley (in the chair), Major-General Sir Cecil Lowther (hon. secretary), Dame Louisa Aldrich-Blake, Sir Cooper Perry, Mr. Leonard L. Cohen (hon. secretary), Mr. W. J. H. Whittall. The order of appointment, signed by the President, of the members of the general council, members of committees, and officers, respectively, for the year 1925 was read. The resolutions providing for the work of the Fund for 1925, which were approved at the meeting of the President and general council held at St. James's Palace on Dec. 16th, 1924, were formally adopted.

ELIZABETH GARRETT ANDERSON HOSPITAL.—In aid of the extension appeal fund of this hospital a concert was held under the auspices of the National Sunday League in the Palladium, Oxford-street, London, W., on Sunday, Jan. 11th. The concert was organised by Miss Marie Tempest, assisted by Miss Miriam Warner, and an excellent programme

of songs, instrumental music, and amusing parodies was rendered by well-known artistes, including Mr. T. Durac Minogue, Miss Grace Ivell and Miss Vivian Worth, Miss Elizabeth Pollock, the "Kansas City" Syncopated Band, Mr. Hubert Eisdell, Mr. Morland Hay, Miss Marion Browne, Mr. Ernest H. Mills, Messrs. Layton and Johnstone, Mr. Ivor Walters, Miss Clara Serena, the Gresham Singers, and Mr. Laurence Anderson. Dame May Whitty said a few words on the work done by the hospital and its present needs. The site of the proposed extension had been acquired through the generosity of an American lady, the late Mrs. Lorillard, who left a legacy of £10,000 to the hospital; £75,000 were now required to construct the necessary buildings. During the concert a collection was taken, which, as Miss Marie Tempest announced at the close of the entertainment, amounted to £300. The promoters of the concert and all who assisted in providing such an enjoyable Sunday afternoon are to be congratulated on the success of their efforts.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Jan. 19th.

SOCIAL EVENING:

At 8.30 P.M. Fellows, Members of Sections, and their friends will be received by the President, Sir StClair Thomson. At 9.30 P.M. Miss Lena Ashwell will give an Address in the Robert Barnes Hall on the Drama as a Necessity of Civilised Life. Sir T. M. Legge will give an exhibition of fifteenth century stained glass in the West Hall. The Library will be open, and various objects of interest will be exhibited. Music, light refreshments, and cigarettes.

Tuesday, Jan. 20th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

PATHOLOGY: at 8.30 P.M.

R. A. O'Brien and Miss B. F. Runge: The Testing of Anti-dysentery (Shiga) Serum.
J. A. Murray: Tar-carcinomata in Rabbit and Rat.
A. T. Glenny and C. G. Pope: Explanation of the Toxicity of Frozen Diphtheria Toxin-antitoxin Mixtures.
C. C. Okell and H. J. Parish: Results of some Further Dick (scarlet fever) Tests.

Wednesday, Jan. 21st.

HISTORY OF MEDICINE: at 5 P.M., at the Wellcome Historical Medical Museum, 54A, Wigmore-street, W.

Papers:

Mr. C. J. S. Thompson: Anatomical Manikins.
Mr. Alban Doran: Ancient Bed Bottles and Uroscopy.

Exhibits:

Mr. C. J. S. Thompson: Drawings and Specimens of Uroscopic Glasses.

Thursday, Jan. 22nd.

EPIDEMIOLOGY AND STATE MEDICINE: at 5.30 P.M.

Paper:

Dr. F. E. Wynne: Overcrowding and Epidemic Disease.

Friday, Jan. 23rd.

STUDY OF DISEASE IN CHILDREN: at 8.30 P.M.

Discussion:

On Pneumococcal Peritonitis, to be opened by the President, Dr. H. C. Cameron.
The following will also speak: Mr. George E. Waugh, Mr. John Fraser, and Dr. David Nabarro.

THE HUNTERIAN SOCIETY.

MONDAY, Jan. 19th.—9 P.M. (at the London Mansion House).
Mr. G. Grey Turner: Perforation of Gastric and Duodenal Ulcers and After (Hunterian Lecture).
To be followed by a Discussion.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY, Jan. 20th.—8.30 P.M. Mr. F. Ll. Jones (H.M. Coroner for Flintshire): Laws of Nations and the Health of Nations: A Survey of International Health Activities Before and After the Great War. To be followed by a Discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Jan. 23rd.—at 8.30 P.M. President's Address: The Value of the Scientific Outlook to the Worker in Venereal Diseases.

Papers will be read by Dr. Panton and Dr. Arnold Renshaw on the Vaccine Therapy of Gonococcal Infections. A Discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Jan. 19th.—5 P.M., Sir Arthur Keith: Recent Discoveries of Fossil Man. (Hunterian Lectures.)

WEDNESDAY.—5 P.M., Lecture II.

FRIDAY.—5 P.M., Lecture III.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 19th, to SATURDAY, Jan. 24th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street. Lecture arranged by the Fellowship of Medicine, and open to all members of the profession. At 5.30 P.M. Tuesday, Jan. 20th, Sir Arbuthnot Lane, Bt.: The Treatment of Fractures.—WEST END HOSPITAL FOR NERVOUS DISEASE, 73, Welbeck-street, W. Intensive course in the Diagnosis and Treatment of Common Diseases of the Nervous System. Daily, at 5 P.M., Lectures, including clinical demonstrations upon selected cases.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Tuesday and Saturday, at 11 A.M., Lecture-Demonstrations by Dr. Porter Phillips and Dr. Thomas Beaton.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 19th.—12 noon, Mr. Simmonds: Applied Anatomy and Fractures. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Sir Henry Simson: Gynecological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, Jan. 20th.—4.30 P.M., Dr. J. Metcalfe: The X-Ray Examination of Chest Diseases (lantern).

FRIDAY.—4.30 P.M., Mr. H. W. Carson: Prostatectomy: Its Indications and Contra-indications.

Daily, In-patient and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Jan. 22nd.—4 P.M., Dr. Frew: Tonsils and Adenoids.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Jan. 20th.—5 P.M., Dr. H. W. Barber: The Erythrodermas.

THURSDAY.—5 P.M., Dr. Knowsley Sibley: Lupus Erythematosus.

ROYAL DENTAL HOSPITAL OF LONDON POST-GRADUATE LECTURES.

FRIDAY, Jan. 23rd.—5 P.M., Mr. J. G. Turner: Fundamental Facts of Dead Teeth and Methods Employed in Treatment.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

MONDAY, Jan. 19th.—(At the Shaw-street Hospital.) Dr. Leith Murray: Diagnosis and Treatment of Salpingitis.

TUESDAY.—(At the Maternity Hospital.) Prof. Blair Bell: Uterine Inertia.

THURSDAY.—(At the St. George's Hospital.) Dr. Barendt: Skin Cases.

FRIDAY.—(At the Eye and Ear Infirmary.) Dr. C. A. Hughes: The "Red" Eye.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).

FRIDAY, Jan. 23rd.—4.30 P.M., Dr. C. Paget Lapage: Pyloric Stenosis and Pyloric Spasm in Infants.

CLINICAL SOCIETY, Manchester.

WEDNESDAY, Jan. 21st.—4.30 P.M. (in the Medical Society's Reading Room), Mr. James Sherren: Acute Haematemesis and Melena.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Jan. 20th.—4 P.M., Dr. Maitland Ramsay: The Eye and the Kidney. Discussion to be opened by Dr. A. MacGillivray and Dr. A. Sinclair.

THURSDAY.—(At the Royal Infirmary, Dundee), 4 P.M., Prof. Charteris: Demonstration of Kidney Cases.

Appointments.

BOWIE, E. ORMOND, L.A.H., D.P.H. Dub., has been appointed Medical Superintendent of Stretton House, Church Stretton, Shropshire.

DOUBLEDAY, F. N., L.R.C.P. Lond., M.R.C.S., L.D.S. Eng., External Examiner in Dental Subjects to the University of Bristol.

FAIRBANK, Sir WILLIAM, K.C.V.O., O.B.E., has been appointed Honorary Surgeon Apothecary to the King's Household at Windsor Castle.

SAWDAY, A. E., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., Hon. Surgeon, Derbyshire Hospital for Sick Children.

STURRIDGE, F. R., M.R.C.S., L.R.C.P. Lond., a Member of the Honorary Medical Staff of the Willesden General Hospital.

King's College Hospital: DAY, HAROLD B., M.D. Lond., F.R.C.P. Lond., Lecturer in Forensic Medicine and Toxicology; LIVINGSTONE, J. L., M.B., B.S., Medical Sambrooke Registrar and Out-patient Medical Officer; EDWARDS, H. C., M.B., B.S., Surgical Sambrooke Registrar and Out-patient Surgical Officer; BICKERTON, J. M., M.B., F.R.C.S., Ophthalmic Registrar and House Surgeon to Ophthalmic Department; WALKER, V. D., D.S.O., L.D.S., Dental Registrar; COLLIS, W. R. F., M.R.C.S., L.R.C.P. Lond., CORY, J. W. E., M.R.C.S., L.R.C.P. Lond., CONNAN, P., M.R.C.S., L.R.C.P. Lond., KOHNSTAM, G. L. S., M.R.C.S., L.R.C.P. Lond., BROWN, W., M.D., D.Sc., M.R.C.P., HOPE, BARBARA M., M.R.C.S., JOHNSON, JOCELYN, M.R.C.S., LIGHTWOOD, R. C., M.D., ORNSTEIN, HELEN E., M.R.C.S., L.R.C.P. Lond., OSBORN, MURIEL M., M.R.C.S., REES, DOROTHY M., M.R.C.S., L.R.C.P. Lond., TURNBULL, MARY M., M.B., B.S., THOMSON, M. S., M.D., M.R.C.P., KENNEDY, D. A. D., M.B., Ch.B., DYER, R. H. M.R.C.S., ROPER, R. S., F.R.C.S. Edin., HYPER, L. I., M.R.C.S., L.R.C.P. Lond., WHITTINGTON, L. H., M.D., D.O.M.S., HICKLEY, A. H., M.R.C.S., L.R.C.P., GIBSON, J. MCCOY, M.B., D.O.M.S., BEEDHAM, H. W., M.B., D.O.M.S., BICKERTON, J. M., M.B., B.Ch., F.R.C.S., ANDREW, KATHARINE M., M.B., B.S., APPLETON, CONSTANCE E., M.R.C.S., L.R.C.P. Lond., D.P.H., McILRAITH, C. H., M.D., WILSON, W. M.B., B.Ch., ADLINGTON, B., M.R.C.S., L.R.C.P. Lond., DAGGETT, W. L., M.R.C.S., L.R.C.P. Lond., SWINBURNE, S. C., M.R.C.S., L.R.C.P. Lond., WILES, MARY A., M.R.C.S., L.R.C.P. Lond., ROBINSON, G. W., L.M.S.S.A., MOODY, C. A., L.D.S., BRONSON, EILEEN M., M.R.C.S., L.R.C.P. Lond., MACDONALD, C. M.B., B.S., MISS MCLEOD, BELL, A. W., L.D.S., BENTLEY, A., L.D.S., BOBTINS, F. R., L.D.S., CASELEY, ROSAMUND, L.D.S., DOWNING, F. J., L.D.S., SMITH, F. ELLIOTT, M.R.C.S., L.D.S., HOFMEYER, R., L.D.S., JACKSON, H., M.R.C.S., L.D.S., MARSH, L. R., L.D.S., RYLOTT, B. A., L.D.S., SCOTT, KEITH, L.D.S., WATSON, KATHLEEN M., L.D.S., Clinical Assistants: PERKINS, A. C. T., M.B., B.S., Senior Casualty Officer; READ, T. S., M.R.C.S., L.R.C.P. Lond., Second Casualty Officer; TOWNSEND, H. S., M.R.C.S., L.R.C.P., House Anaesthetist; LANE, C. R., B.M., B.Ch., Resident Asst. Clinical Pathologist; DUBUISSON, HELEN M., M.R.C.S., L.R.C.P. Lond., D.P.H., Resident Radiologist; WILKINSON, F. B., M.R.C.S., L.R.C.P. Lond., and STRAUSS, E. B., B.M., B.Ch., House Physicians; COVE-SMITH, R., M.R.C.S., L.R.C.P. Lond., ROBERTSON, L. D., M.B., B.S., B.Sc., HAMILTON, G. E. R., M.R.C.S., L.R.C.P. Lond., EDMUNDS, WINIFRED P., M.R.C.S., L.R.C.P. Lond., NEWMAN, C. E., M.B., B.Ch. Lond., and DULAKE, L. M.B., B.S., House Surgeons; STRANGE, F. O. T., M.R.C.S., L.R.C.P. Lond., Obstetric House Surgeon; CUFFEY, D. M., M.B., B.Ch., House Surgeon Aural and Throat Depts.; ASPLEY, P. R., L.D.S., Dental House Surgeon.

St. Mary's Hospital: PHILLIPS, L. PENHALL, M.R.C.S., L.R.C.P. Lond., Medical Superintendent; HARRE, GERTRUDE E., M.B., B.S. Lond., D.P.H., Medical Registrar.

Vacancies.

For further information refer to the advertisement columns.

Blackburn County Borough.—M.O.H. and Sch. M.O. £1000. Brethwood, Essex, High Wood Hospital for Children.—Jun. Asst. M.O. £500.

Bristol, Royal Hospital for Sick Children and Women.—Hon. P. City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. at rate of £125.

Derbyshire Education Committee, Derby.—Asst. Sch. M.O. £600. Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Asst. Path. £150. Also Asst. Anaesth.

Eccleina Hospital for Children, Southwark, S.E.—H.P. £120. Also P.

Exeter, Royal Devon and Exeter Hospital.—M.O. in charge of Venereal Clinic. £400.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Election of the Medical and Surgical Staff. Hospital for Sick Children, Great Ormond-street, W.C.—Cas. O. £400.

Hull Infectious Diseases Hospitals.—Res. M.O. £400 plus bonus. Hull Royal Infirmary.—H.P. £200.

London Hospital, Whitechapel, E.—Gynecological Reg. and Obstet Tutor. £400.

London Temperance Hospital, Hampstead-road, N.W.—Med. Reg. 40 guineas.

Manchester, Baguley Sanatorium.—Two Asst. M.O.'s. Each £350.

Manchester, St. Mary's Hospitals.—H.S. at rate of £50.

Metropolitan Asylums Board.—Director Pathological Services. £1100. Also Director Diphtheria Antitoxin Establishment. £900.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—H.S. £150.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Radiologist. 150 guineas.
National Hospital for the Paralyzed and Epileptic, Queen-square W.C.—Hon. Anesthetist.
Nottingham General Hospital.—H.S. at rate of £150.
Royal Free Hospital, Venereal Diseases Dept., Gray's Inn-road, W.C.—M.O. First Asst. £550. And Second Asst. 5 guineas weekly.
St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. P.
St. Mary's Hospital, W.—Asst. Pathologist. £500.
Scamen's Hospital Soc., Dreadnought Hospital, Greenwich.—P.
Sheffield, Jessop Hospital for Women.—Surg. Reg.
Staffordshire Education Committee.—Asst. Sch. Med. Insp. £600.
Wakefield, Clayton Hospital.—Second H.S. at rate £175.
Wakefield, Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst M.O. £500.
West London Hospital, Hammersmith-road, W.—Hon. Med. Registrar. £100. Also Hon. Obstet. Reg.
The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Patterdale, Westmorland; and Great Wakering, Essex.

Births, Marriages, and Deaths.

BIRTHS.

ASKHAM.—On Jan. 3rd, at Laughern House, Pershore, Worcs., the wife of Hugh Lowrie Askham, M.R.C.S., L.R.C.P., of a son.
HUGHES.—On Jan. 6th, at London-road, Northfleet, the wife of Dr. F. M. Hughes, of Walmoe, of a daughter.
PARRY.—On Jan. 4th, the wife of Dr. Parry, "Brindisi," East Sheen, of a son.
WHITTINGTON.—On Jan. 2nd, the wife of Theodore H. Whittington, M.D., "Oakfield," Carshalton-road, Sutton, of a son.

MARRIAGES.

BEVAN BROWN—YOUNG.—On Jan. 3rd, at All Saints Church, Foots Cray, Charles Maurice Bevan Brown, M.D., M.A. Camb., to Elsie Muriel, elder daughter of Mr. and Mrs. J. W. Young, of "Dunelm," Sidcup, Kent, and granddaughter of the late William Davidson, B.A., of Morpeth, Northumberland.
WEBBER—RYDER.—On Dec. 23rd, at the Church of St. Simon Stock, Putney, Harold Norris Webber to Madeleine Mary Ryder.

DEATHS.

COLLINS.—On Jan. 4th, in a nursing home, at Montreux, Switzerland, Edward Walfenden Collins, M.A., M.D., F.R.C.S., aged 79.
DIACK.—On Jan. 5th, at 43, Gloucester-gardens, Hyde Park, W., Patrick W. Diack, M.A., M.B., C.M.
MCNETT.—On Jan. 9th, at Montague House, Bridlington, Duncan McNeill, M.B., C.M.
SWABEY.—On Jan. 10th, at Belgrave-road, Bath, Lieut.-Colonel Louis William Swabey, R.A.M.C. (ret'd.), aged 68.
N.B.—A fee of 1s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	..	..	..	£2	2	0
	Six Months	..	..	..	1	1	0
	Three Months	..	..	..	0	10	6
ABROAD	One Year	..	..	..	2	10	0
	Six Months	..	..	..	1	5	0
	Three Months	..	..	..	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "Westminster Bank, Ltd., Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET OFFICES, 423, Strand, London, W.C. 2.

SMALL ADVERTISEMENT RATES.

Appointments (Public) Vacant	..	..	Four lines and under, 6s.
Asylums and Homes	..	..	
Hotels, Boarding Houses, and Baths	..	..	
Books and Publications	..	..	
Houses and Estates Wanted and for Sale	..	..	Each additional line, 1s. 6d.
Schools, Medical and Preparatory	..	..	
Nursing Institutes	..	..	
Financial, Official, and other Announcements	..	..	
Tutors and Tutorships	..	..	
Trade and Miscellaneous	..	..	
Practices and Partnerships	..	..	
Situations Vacant and Wanted	..	..	

For complete scale of advertisement charges apply to the Manager.

Notes, Comments, and Abstracts.

MORTALITY FROM MOTOR-TRAFFIC: ITS CAUSES AND PREVENTION.

BY R. T. WILLIAMSON, M.D., F.R.C.P. LOND.,
CONSULTING PHYSICIAN, MANCHESTER ROYAL INFIRMARY.

THE mortality caused by motor vehicles now forms an important chapter in forensic and State medicine, and deserves much greater attention than it has hitherto received. In England and Wales the deaths caused by motor vehicles have greatly increased in number during the last 12 years. In the reports of the Registrar-General we find that the total number of accidental deaths from (1) "railways," (2) "other vehicles mechanically propelled," and (3) "horse-drawn vehicles and horses" has increased from 2140 in 1911 to 3224 in 1923. Whilst the deaths in Groups 1 and 3 have diminished in number, those caused by "vehicles mechanically propelled" (Group 2) have increased from 741 in 1911 to 2151 in 1923, and are now three times more numerous than those in Groups 1 and 3 combined. The "vehicles mechanically propelled" are chiefly motor-cars, motor-vans, motor-cabs, motor-omnibuses, motor-cycles, and electric tramcars. Considered in detail, the following table of figures, taken from the Registrar-General's reports, shows the number of fatal accidents caused by various forms of motor vehicles in the three years 1911, 1912, and 1913, and in the three years 1921, 1922, 1923 (in England and Wales).

Table showing Number of Fatal Accidents Caused by Various Forms of Motor Vehicles.

Year ..	1911	1912	1913	1921	1922	1923
Motor-car ..	286	377	455	695	751	834
Motor-van and lorry ..	69	81	132	499	551	563
Electric tramcar ..	52	39	41	55	77	80
Motor-cab ..	95	74	73	85	51	50
Motor-omnibus ..	121	192	220	133	166	219
Motor char-a-banc, coach, &c. ..				38	23	44
Motor-cycles ..	31	66	101	226	214	296
Motor collisions ..				130	118	162

The fatal accidents from bicycles and tricycles have not increased in the periods mentioned.

Thus the statistics show that the increase in the number of fatal accidents has been caused chiefly by motor-cars, motor-vans and lorries, and motor-cycles. In comparing the years 1911 and 1923 we see that in the latter year the fatal accidents caused by motor-cars were nearly three times more numerous, those caused by motor-vans eight times more numerous, and those caused by motor-cycles over nine times more numerous than in 1911. In addition, there are accidents (very much more numerous) from motor traffic which are not directly fatal. Even if it should be possible to prevent any further increase of this mortality (which is not likely), the total number of fatal accidents from motor traffic during the next ten years will be over 21,000 in England and Wales. And yet if from the upper windows of a high building in any large town we watch the motor traffic at a place where several streets or roads meet, we are apt to wonder, not that accidents often occur, but that they are not 100 times more common.

I.—Some Causes of Motor Accidents.

While some motor accidents are practically unavoidable, as the price we must pay—or make others pay—for the advantage or pleasure of travelling at a very high speed, there are many which ought not to occur. Some of such accidents are due to physical failings of the motor-driver. Of these, we need mention only a few; for example, marked defects of sight and hearing, liability to sudden attacks of illness of various kinds—cardiac failure, from aortic regurgitation or cardiac muscle disease, major and minor epileptic attacks, angina pectoris, rupture of an aneurysm, and internal hæmorrhage of various kinds. Motor vehicles are dangerous weapons; and those who handle them should not be suffering from ailments which might suddenly cause loss of control of the motor vehicle.

In a letter to THE LANCET about a year ago (1923, ii., 1377) I mentioned the case of a taxi-driver who consulted me, and admitted that it was no longer safe for him to drive a motor vehicle on account of the condition of his nervous system. He had a definite history of syphilis, and after careful examination I came to the conclusion that he was suffering from general paralysis of the insane at an early stage. His list of collisions with pedestrians was a long one, and some he had injured very seriously. I urged him to discontinue his occupation at once, but he was still driving a taxi-cab some months later.

Two recent examples may be given of the risk to pedestrians through the sudden illness of motor-drivers: (1) Whilst driving in a busy street the driver of a taxi-cab suddenly collapses through illness. The taxi-cab crashes over the footpath into a shop window, knocking down and seriously injuring a pedestrian on the footpath. The taxi-driver is taken to the nearest hospital, but dies before the hospital is reached.

(2) The conductor of a motor-omnibus finds that the driver fails to stop when he rings the bell. He then discovers that the driver has fallen off (through illness) and that the bus is dashing along unguided. With difficulty the bus is stopped, and the driver is afterwards found unconscious on the road.

Reckless Driving.

Accidents are occasionally due to the mental attitude of some motor-drivers, who appear to think that if pedestrians are not on the footpath, the driver is not responsible if an accident should occur. But in England pedestrians have still the right to use the road as well as the footpath.

It was formerly my lot to use taxi-cabs and hired motor-cars extensively. Many of the drivers thereof were gentlemen in the truest sense of the term. I have been greatly indebted to their services in remote parts of the country and often at late hours of the night; and the majority were careful and excellent drivers. But I had to cease to employ a few on account of what appeared to me to be reckless driving. Some drivers are incompetent on account of their temper or excitability, or because they fail to realise what a terrible weapon they have to control. Having never killed anyone, in course of time the fear of accidents becomes less and less, and an unjustifiable self-confidence may develop. The risks from taking alcohol are now fully recognised and the sequelæ are demonstrated daily in our newspapers.

Many motor-cars are almost noiseless in their approach, and fatal accidents may occur because the driver fails to sound his horn or hooter. Other causes of accident are very narrow streets or footpaths, lack of warning notices at dangerous parts of the road, the playing of children in the streets, dazzling headlights at night, and so forth.

II.—Prevention of Fatal Accidents.

After this brief survey of some of the causes of fatal accidents we are faced with the question—What can be done to diminish this mortality? Better mechanical construction may in the future very slightly diminish the number of fatal accidents; but so long as motor vehicles dash along at the high speeds which are now so common many accidents are unavoidable, since it is often impossible to check the speed suddenly. Those who will be responsible for the future regulation of motor traffic will have to consider if it is desirable to diminish the speed limit with the object of possibly saving some of the 2400 who are now being sacrificed yearly; or if the sacrifice of these lives is a fair price for the advantages or pleasures of very rapid transit. The maximum speed limit of motor-bicycles appears to be deserving of special attention, and pillion-riding should be forbidden. In view of the rapid increase of the number of motor vehicles, it will soon be necessary either to restrict their number or to construct special roads for them in our largest towns.

Medical Examination of Motor-Drivers.

The question which especially deserves the attention of the medical profession at present is the medical examination of drivers of motor vehicles. Is it not most desirable that they should be required to present a medical certificate that their sight and hearing are not too defective, and that they are not suffering from any ailment which might render them suddenly unable to control their vehicles? Medical examinations are required for the army, the teaching profession, and numerous occupations, for various reasons; and surely it is desirable for those who have to control such a dangerous weapon as a motor vehicle—when sudden loss of control thereof may mean the death of a human being. Most motor-drivers would be quite willing to take all risks as regards their own lives; but it is not fair that the lives of pedestrians, and of those who travel in motor vehicles should be endangered. Medical examinations would, of course, have to be repeated periodically. If such examinations should ever be made compulsory, it is to be hoped that the payment for the certificate would, in the first place, be required from the motor-driver and not from the employer. This would increase the value of the examination as a means of impressing caution. Motor-drivers should abstain from alcohol during their hours of duty, and should be required to produce a certificate that they are temperate as regards alcohol (if not total abstainers).

The Sense of Responsibility.

In the newspapers we read of another "fatal motor accident"; but we read nothing of the prolonged mental anguish, of the distress and sorrow, caused to the relatives

of those killed. We read nothing of the mental distress suffered by the driver of the motor vehicle which has caused the fatal accident, or of the anguish of the owner of the vehicle. But these cases are very numerous and the writer has met with many distressing instances. Some motor-drivers consider such questions. Some do not. Too often they are considered first after a fatal accident has occurred. Something is needed to increase the sense of responsibility—some psychological stimulus. A fine might do this. It usually takes two to make an accident when a pedestrian is killed by a motor vehicle; and it is often impossible to say how much blame should be attached to the pedestrian and how much to the motor-driver. Often neither is quite blameless. But frequently all the blame is attached to the pedestrian and none to the motor-driver. The pedestrian pays for his (?) failing with his life and the motor-driver is very often exonerated from all blame. If motor-drivers were fined for every fatal accident, whether blame could be attached to them or to those killed, this would, of course, be regarded as an unjust rule by many; but it would tend to diminish fatal accidents, and to increase the sense of responsibility. Such fines might be handed over as contributions to the needy hospitals which have to treat so many victims of motor accidents free of charge.

The Sins of the Pedestrian.

Unquestionably, in some cases the pedestrian is chiefly at fault. It is astonishing to meet, in the centre of London, men who are quite blind and alone—men who daily traverse some of the busiest streets and have to be led across the streets by kind passers-by. Many accidents happen to pedestrians because they are absent-minded, or absorbed in thought, and sometimes pedestrians are definitely reckless. Pedestrians should use the same caution in stepping off the footpath as they would use in crossing a railway line. Those who have marked defects of sight or hearing, those who are partially paralysed or ataxic, those who are liable to sudden attacks of illness (minor or major epilepsy, cardiac failure, &c.), and the aged and feeble should not walk alone in roads or streets through which motor vehicles frequently pass. With the steady increase of motor traffic, it may soon become necessary, in the busy parts of large towns, to permit pedestrians to cross the streets only at definite points, controlled by the police. Newspapers might give much assistance by publishing fuller details of motor accidents. To many it will appear that, in the past, coroners and magistrates have often failed in their duty to the public with respect to motor accidents.

The preceding remarks may be considered by some readers as suggestions for meddlesome and unnecessary interference with motor traffic; but if such readers should later have the misfortune to kill a pedestrian by their motor vehicles, they will then probably think otherwise, even if they themselves should be blameless as regards the accident.

HEALTH CONDITIONS IN BARBADOS.

A REPORT prepared by Mr. W. E. Jackson, C.M.G., Acting Governor, and dated Sept. 10th, 1924, has been received at the Colonial Office and presented to Parliament. It states that the population on Dec. 31st, 1923, was estimated to be 158,146, but as this estimate depends on emigration and immigration figures, which experience has shown to be often seriously inaccurate, not much reliance can be placed upon it. According to the census of 1921 the number of whites was 10,249, mixed 34,216, and blacks 111,677. Owing to emigration the population has declined steadily during the last two decades, though its numbers are still considerable for so small an area—940 to the square mile. Since the opening of the Panama Canal the habit of emigration has taken firm hold among the younger and more enterprising sections of the people, though it has never again reached the proportions of the Panama Canal construction period. Emigration to the United States has in recent times been the most popular, and during 1923 showed a steadily increasing tendency, over 2000 persons having left for New York. The effect of the constant withdrawal of so large a number of the younger and more vigorous members of the community, especially the younger men, is beginning to make itself felt. The birth-rate during the year was 37.44 per 1000 and the death-rate 37.11. The percentage of illegitimate births was 70.1. Up to the present there has been no registration of the causes of death in this colony, so that it is impossible to form a confident opinion as to the true causes of the unfortunately high death-rate. Ages are, however, recorded in burial certificates, and indicate that the largest factor is the deplorably high rate of infant mortality. The number of infant deaths per 1000 births during the last five years has been: 1919, 352; 1920, 220; 1921, 401; 1922, 187; 1923, 371. The causes of this high mortality are a subject of controversy, but it is generally admitted that improper and inadequate feeding is very largely responsible.

According to the census of 1921, the disproportion between males and females of the fertile ages was very great, the number of males between 15 and 50 years of age being 26,864 and the number of females 49,531. So grave a disproportion can scarcely fail to have marked social effects, and it seems probable that it must be a factor contributory towards the high rate of infant mortality. In the absence of accurate mortality statistics, however, it is impossible to speak with confidence. It is satisfactory to be able to report that an Act providing for the registration of causes of death has now been placed on the Statute Book, and will shortly be put into effect.

Epidemic Disease.

It is a fact that Barbados enjoys natural and climatic advantages from a health standpoint, such as can scarcely be found in any other tropical place. Malaria is unknown, there are no extremes of heat or cold, the soil is well drained, and the water-supply unexceptionable; it is, moreover, constantly swept by the trade winds. In these circumstances it is an unusually healthy place of residence for all who are able to secure for themselves reasonable freedom from insanitary surroundings. The diseases of insanitation, however—viz., enteric fever and dysentery—are unfortunately common. The number of cases of enteric fever notified during the last five years has been: 1919, 508; 1920, 1012; 1921, 3070; 1922, 1084; 1923, 735. The serious epidemic of 1921 fortunately subsided to some extent during 1922, but the conditions favouring the spread of the disease still remain. The ordinary type of enteric fever encountered is of a mild character. Proposals for a comprehensive review of the system of public health organisation have been placed before the legislature. The question is one which is full of more than usual difficulty, owing to the density of population and existence of vested rights, but the high and fluctuating death-rate, combined with the undue prevalence of enteric fever, indicates unmistakably that improved sanitary methods are an urgent need. Apart from the conditions above referred to, the island is exceptionally healthy and remarkably free from epidemic disease. A venereal disease clinic established at the General Hospital in 1922 has been attended by steadily increasing numbers. Subsidiary clinics in other parts of the island are much needed. The treatment of inmates of the Leper Asylum with ethyl esters of chaulmoogra oil has been continued with very hopeful results in a number of less advanced cases. It is anticipated that it may be possible to discharge some of the inmates so treated during the current year. The colony is, on the whole, well provided with curative and remedial institutions.

Climate.

Barbados is by its natural and climatic conditions the healthiest of all the West Indian Islands, and is much patronised by residents in neighbouring colonies as a health resort. The anopheles mosquito is not found in the island. This is a somewhat curious fact, since it is certain that they must be imported not infrequently in vessels which, in many cases, lie in the "carenage" or inner harbour for considerable periods on arrival from places where they are prevalent. The conditions, however, are evidently unfavourable to their breeding ashore. The hot and rainy season lasts from the beginning of June to the beginning of November. The island gets the full benefit of the north-east trade winds, and between November and May the night temperature sometimes falls as low as 64° F. For the greater part of the year the temperature is delightfully equable, and the heat is seldom oppressive. Few places, indeed, enjoy a more pleasant climate. The winter months are regarded as the tourist season.

ARGENTINE LEGISLATION WITH REGARD TO ABORTION.

Dr. Jose C. Belbey, director of the practical work of legal psychiatry at Buenos Aires, draws attention in *La Semana Médica* of Oct. 2nd, 1924, to what he holds to be certain defects and contradictions in the Argentine code. (1) The penalties for abortion are greater than those for infanticide, a manifest injustice. (2) The law permits abortion in the case of a lunatic or idiot with the consent of the legal representative of the woman but not in the case of a sane woman who has been violated; he considers that this should be recognised as legal. (3) He approves of the provision which makes a mere attempt by the woman not a legal crime on the ground that society does not suffer and that harm may be done by making a scandal public. (4) Owing to the provision in law that, if a crime is impossible it cannot be punished, it is very difficult in some cases to convict any abortionist, because unless the woman who gives the information is pregnant, the case falls to the ground. He gives an actual instance where the police were baffled by this provision of the criminal code.

That the penalties for practising abortion are lighter in the Argentine than in this country is shown by the fact that the author quotes with approval the provision which disqualifies from practice for a time double that of the imprisonment inflicted, all doctors, midwives, or pharmacists who are convicted of the crime, the previous code had disqualified them only for a term equal to that of their imprisonment. In this country the removal of the name from the Register permanently, though not enacted by statute, is carried out by the General Medical Council as a matter of course after conviction.

THE WORLD'S GREATEST NAMES.

We have received from Fort Dunlop, because "it is thought that this item of news may interest the readers of your journal," a note to the effect that the following names—Luther Burbank, Thomas A. Edison, and John Burroughs—are to be engraved on the façade of the offices and laboratories in Dearborn. The idea of Mr. Henry Ford, to whom the premises belong, has been to commemorate on his buildings the world's greatest people, and we learn that the first attempt to ascertain their identity resulted in the following list of 18 names in addition to those selected: Darwin, Devinci (sic), Fulton, Bell, Wright, Diesel, Curie, Newton, Pasteur, Ampere, Franklin, Whitney, Marconi, Kirby, Faraday, Otto, Dunlop, and Galileo. The buildings are Mr. Ford's and he can decorate them as he likes, but if he can make the educated world believe that—say—Galileo, Newton, Pasteur, Darwin, and Marconi ought to give place to a couple of field-naturalists and the inventor of the megaphone, he will be a very persuasive person. Probably he is.

THE ANTISEPTIC VALUE OF TOOTH PASTES.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 13th, 1924, p. 1266, you reviewed a paper by Mr. A. E. Parkes and Mr. A. A. Maddy, which appeared in the *Pharmaceutical Journal*, Nov. 8th, p. 563. In the course of your review it is stated: "The pastes were investigated for their antiseptic properties and the results were to show that in practically all cases the claims made by the makers are grossly exaggerated." This is surely not in accordance with the facts. Actually, in the original paper, the authors state: "With respect to the samples examined, an inspection of the literature and advertisements revealed the fact that in only one instance was any mention made of the antiseptic strength of the paste, and this was found to be substantially correct." The italics are ours, and we feel that you will wish to correct a statement which is as unjust in its condemnations as it is incorrect in fact.

In the absence of definite reference to any particular makers scathing criticism such as that in your review reflects alike on all manufacturers, and we would ask your permission to state in these columns that for some years past we have claimed a definite phenol coefficient for the tooth paste of our manufacture. Each batch of Euthymol Tooth Paste is required to show a *minimum* phenol efficiency of 0.14 when tested on the *B. typhosus*, which coefficient is not materially reduced by the presence of saliva and organic matter such as is normally present in the mouth. Moreover, independent bacteriologists have found that a 20 per cent. dilution of this paste is fatal to the *B. acidophilus odontolyticus* and the *Bacillus mesentericus*, within the space of thirty seconds—a fact which is in striking contrast to the statement in your review that "As tooth paste remains in contact with the teeth for a few seconds only, it seems clear that the paste even in an undiluted state can have little, if any, effect upon the germs of the mouth."

We are, Sir, yours faithfully,

London, W. 1, Jan. 8th, 1925.

PARKE, DAVIS & CO.

*** The number of different makes of tooth paste on the market probably runs into four figures; the authors of the paper reported on 12 only. Their findings fully justify the general conclusion that the claims made by makers are exaggerated, but the condemnation obviously does not apply—nor does our abstract suggest that it does—to the few cases in which reasonable claims are made. None of the pastes examined was identified by name, and the only evidence that the paste to which attention is now drawn by the makers of it was examined was in the authors' preliminary remarks to the effect that they selected the most popular. Admittedly this product passes the test of popularity—and deservedly so.—ED. L.

Mrs. F. G.—It is not, we believe, the practice of physicians here to send their neurotic patients to British Columbia with the assurance that they will there get the necessary rest for their nerves.

An Address

ON

ACUTE HÆMATEMESIS AND MELÆNA.

*Delivered at the Manchester Clinical Society on
Jan. 21st, 1925,*

By JAMES SHERREN, C.B.E., F.R.C.S. ENG.,
SURGEON TO THE LONDON HOSPITAL, ETC.

As this is a clinical society I have not hesitated to use two symptoms as the title for my address and to review them in the light of my own personal experience, only supplementing this by hospital records in a few instances. I am using the terms in their generally accepted meanings, hæmatemesis—the vomiting of blood, and melæna—the passage of altered blood per rectum. This use of the latter is modern, but its employment in this way is now sanctioned by usage, and it is forgotten that it formerly designated a disease characterised by evacuation from the bowel and vomiting of dark bloody matter. Comparatively recently it implied the ejection of black matter from either stomach, bowel, or both. The term acute is used to signify the sudden onset of severe hæmorrhage, and I am dealing only with those cases in which hæmorrhage is the symptom for which aid is sought. I am not considering those in which streaks of blood in small amounts are vomited, occult blood discovered in the fæces, or large quantities of unaltered blood passed from a simple or malignant growth of the colon or rectum.

A CONDITION AMENABLE TO CLINICAL STUDY.

Bleeding from the gastro-intestinal tract is an eminently suitable subject for clinical study. It owns many causes, some of which are directly amenable to surgical treatment and are curable. In some recovery is usual without operative interference and with very little risk to life; in others the outlook is grave unless operation is carried out at the earliest opportune time. The operative treatment required may be as diverse as partial gastrectomy or omentopexy, and it therefore opens up a survey of almost the whole range of abdominal surgery. The question of immediate treatment is one that we have frequently to face. Nothing is more alarming to patient and friends than a visible loss of blood. Our medical colleagues, knowing that the control of hæmorrhage is the province of the surgeon, call us in, and we need to have reasoned answers for our delay or for our plea for operation.

Recently considerable interest has been aroused in this condition, and, as you may remember, there has been a joint discussion on the subject at the Royal Society of Medicine,¹ a lecture there by Gustave Monod² on hæmatemesis “without lesions,” and a short paper on its surgical treatment by my friend and colleague, Mr. A. J. Walton.³ I was unable to attend the discussion, but views differing so much from my own appear to have been expressed at that meeting and given in the papers that I started to review my clinical evidence. I am fortunate in having an almost complete record of the after-history of the patients upon whom I have carried out abdominal operations, as, from the very first, I have had a regular follow-through system and thus am able to find out results in a very short time. In point of individual experience as opposed to collected statistics, judging from other figures, I have had an exceptional number of cases; they are certainly sufficient to enable a definite opinion to be given.

Hæmorrhage presupposes a breach of surface; I am not convinced that oozing of blood from a mucous membrane can be the cause of serious bleeding. In the early days of gastric surgery I operated upon patients during the stage of acute hæmorrhage, and in a certain group was unable to discover any lesion. In all, however, that then came to post-mortem examination and in all that have occurred later definite gastric erosions or acute ulcers were found. I am aware that there are those who believe in this possibility. Your President,⁴ Mr. A. H. Burgess, in his contribution to the joint discussion previously mentioned, has recorded two cases in which at post-mortem examination no gross lesion could be found to account for the hæmorrhage. Monod mentioned three recent cases in his paper, in whom no lesion was discovered at operation, from which all recovered. But as it is manifestly impossible exhaustively to examine the mucous membrane of the stomach through any safe ante-mortem incision these are not convincing. It has sometimes only been possible to find the lesion after death by stretching the stomach and holding it up to a strong light.

The matter is not of mere academic interest, as I believe that many of these patients may develop chronic ulcers in later life. I dealt with the subject of hæmatemesis from acute ulceration of the stomach very fully in a paper published last year⁵ based on 63 cases treated by operation.

TWO CLINICAL GROUPS OF CASES.

The cases I wish to consider now fall into two clinical groups—(1) in which the patient has been in perfect health and has had no previous digestive trouble requiring medical aid, and (2) those with a preceding history of digestive disturbance.

1. This is the most difficult to deal with both from the point of view of diagnosis and of treatment. There are two classes of case, the typical “gastric ulcer” of my student days much less common than formerly, the anæmic woman of 18 to 25, and the adult of either sex who without warning vomits a large quantity of blood or has a fainting attack and passes it altered per rectum. Both are of extreme importance, but in the latter the problem is one to which the answer is urgently necessary in view of the serious risk of overlooking a lesion of grave import, for carcinoma of the stomach may herald its presence by this means and certain cases of chronic ulcer of the stomach or duodenum.

2. In the second group the hæmorrhage is a complication, usually a very grave one, which follows months or years of abdominal ill-health and needs much less discussion from the point of view of diagnosis and treatment. I have been surprised to read that hæmorrhage from a chronic ulcer was not looked upon as a particularly dangerous complication, and that both surgeons and physicians of wide experience had never seen a death from hæmorrhage from this cause. In considering the risk of delay in the surgical treatment of these cases it is useless to argue from figures in which both acute and chronic ulcers are taken together, as the death-rate in the former is very low under efficient medical treatment, I have always considered it as a very grave complication, and have had patients die of hæmorrhage while awaiting operation, or because it was not undertaken at the most opportune time. In addition four patients of mine who had had hæmatemesis died as the result of perforation while awaiting operation. The last occurred just before Christmas.

A patient, male, aged 42, was under my care at the London Hospital 18 months previously with a chronic gastric ulcer. He had a very septic mouth and refused treatment, both dental and abdominal, and left hospital. He remained in good digestive health till two days before admission, when he had slight epigastric pain followed in 36 hours by profuse hæmatemesis for which he was sent

¹ Trans. Roy. Soc. of Med., 1924, xvii. (Sects. Surg., Med., Ther.), pp. 1–33, and THE LANCET, 1924, i., 543–6.

² Trans. Roy. Soc. of Med., 1924, xvii., Med. Sect., p. 3.

³ THE LANCET, 1924, i., 351.

⁴ Trans. Roy. Soc. of Med., 1924 (Joint Discussion), p. 12.

⁵ THE LANCET, 1924, i., 477.

up by his medical man. His condition was extremely bad, but I considered that the risk of delay was less than the risk of operating, as his mouth was in a condition only to be described as appalling. However, after being in bed for 13 days and six days after all hæmorrhage had ceased, he suddenly perforated at 4 A.M. and died in spite of immediate operation.

It is cases such as these that makes me consider hæmatemesis from a chronic ulcer very seriously.

I have been under the impression as the result of my personal experience that hæmatemesis is much less common than formerly and that the age and sex incidence have changed. To test this I asked my first assistant, Mr. G. P. B. Huddy, to take two years separated by an interval of ten and ascertain the admissions both to medical and surgical wards of all cases of acute hæmatemesis. In the year 1913, 81 cases were admitted to hospital for this cause; 45 were female. In 1923, 48 cases, only 16 female. This, although the total admissions of patients with gastric and duodenal ulcers had risen from 224 in the former year with 59 women to 348 in the latter with 74 women. The age-incidence has also changed. In 1913 more than half the cases (41) were under the age of 35, and 14 between 20-25. In 1923 only four occurred in this quinquennium, and 14 before 35. I believe this diminution to be due to two causes. In the first group to better care of the mouth and nasopharynx and the better treatment of abdominal infections, in the second to earlier operation on chronic ulcer preventing the later onset of hæmorrhage. They show that preventive surgery is as important to the individual as preventive medicine.

CASES WITHOUT PREVIOUS DIGESTIVE TROUBLE.

The type in the first group was formerly the young anæmic woman, but this sex-incidence is becoming much less common, and it is now just as frequently met with in the young male. Acute hæmatemesis of this nature is accompanied by much collapse, and the immediate treatment is an adequate dose of morphia and warmth. The less that is done beyond this the better. I have never seen the advantage of withholding water by the mouth; it can have no effect on the bleeding, and thirst is more easily controlled and with less exposure than by rectal infusion. Ice to suck and an ice-bag applied to the epigastrium are practices that have nothing whatever to recommend them. In this type of case I believe that operation is never indicated. The possibility of the bleeding coming from an ulcer that can be recognised, or if recognised adequately dealt with, is very small indeed. The risk of exploration is much greater than that of efficient non-operative treatment.

Acute Ulcer.

Gastro-jejunostomy is still advocated in certain of these cases, when the bleeding is severe and the patient in a condition of the gravest danger.⁶ If the bleeding is the result of acute ulceration with a recent infection of the stomach, this operation only involves additional risks, and if the hæmorrhage is coming from an eroded artery I fail to see how it is to be stopped by a gastro-jejunostomy, which must of necessity be performed without any reference to the site of the lesion. Your President and myself, among others, have both recorded cases in which hæmorrhage continued unchecked by gastro-jejunostomy and lead to the death of the patient. In my opinion, under no circumstances should operation be carried out at the time of the hæmatemesis. If the bleeding recurs it is good treatment to wash out the stomach gently with warm water to which one drachm of soda bicarbonate to the pint has been added, with the possible addition of adrenalin. I think there is too much tendency to keep these patients for an undue length of time without food. So soon as desire returns a start should be made with albumin water and then some such unirritating diet as Benger's food. It

must be but seldom that blood transfusion is called for in cases of this type. This is the immediate treatment of the patient.

So soon as possible a working diagnosis of the cause of the bleeding must be found. What are the possibilities? By far the commonest is acute ulceration of the stomach due to infection; such causes as the vomiting of blood swallowed from epistaxis need not detain us, but we must be on the alert for rarer conditions, such as simple tumours of the stomach and disease of the spleen, and very exceptionally indeed, blood diseases. I have been called to two cases of hæmatemesis in which abdominal examination revealed an enlarged spleen and to one in which operation later discovered the cause to be an adenomatous polypus.

The whole patient must be examined, search being made for possible source of infection, particular attention being paid to oral cavity, including teeth, tonsils, naso-pharynx and ears, and lungs. Acute hæmatemesis may be a complication of early pulmonary tuberculosis, and I have been struck with the frequency with which this disease has been found in association with chronic gastric ulcer. Blood examination, not only to determine the grade of anæmia, but the presence of any of the rare blood diseases known to be associated with this condition, and to group the blood in view of possible transfusion. It is well for purposes of record and for comparison with later investigations to have test and barium meals given which may provide corroborative evidence of importance, and in the latent cases of chronic ulcer may show the lesion, and so indicate the necessity for treatment without delay.

If infective foci are found, these must be treated, the bowels regulated, and the patient kept under observation with the warning that further hæmorrhage should lead to abdominal exploration. If the investigations in any way point to abdominal disease, operation should be carried out. In those cases in which every investigation as to cause brings a negative result I am strongly of the opinion that it is safer to explore the abdomen. I believe that it is often possible to prevent further hæmorrhage and the occurrence of chronic ulceration of the stomach or the development of gall-stones later.

In the paper previously mentioned I drew attention to this matter, and lay stress on the importance of recognising these cases of acute hæmatemesis as usually due to acute ulcers, not only from the point of view of the prevention of further acute ulcers but of chronic ulcers and their later complication, carcinoma. The findings in the 63 cases explored were as follows: in 29 definite disease of the appendix was found, in 15 cholecystitis. I have been able to follow up the majority of these and proved them to be well. Since that paper was written I have operated on a further six; in one that I shall mention presently an acute ulcer was later discovered post mortem, in three the appendix was at fault, in two the gall-bladder; in these last two, as in four previously reported, a pure culture of colon bacillus was obtained from the bile.

I have had many instances of patients with chronic gastric ulcer in whom there was a very definite history of painless hæmatemesis several years before. When these cases of acute hæmatemesis were operated on at once the death-rate was high—even if nothing was done and we usually failed to find the ulcer or ulcers. Recently I was led to this procedure in the belief that a chronic ulcer was present; nothing was found on exploration, the bleeding continued, the patient died, and autopsy revealed an acute ulcer. He was a man of 39, who eight months previously had had pain after food not accompanied by vomiting. He then got quite well and remained so until four weeks before admission to hospital, when he had a similar attack which culminated in a profuse hæmatemesis on June 24th, 1924, when he was admitted to hospital. Three days later he had another hæmatemesis, and as he was not recovering I was asked to see him.

⁶ Walton, A. J.: THE LANCET, 1924, i., 477.

He was pale with a pulse of 120. In few of the past history I operated; all abdominal gans appeared normal. Stomach and duodenum were normal, gall-bladder and spleen normal. I removed his appendix, which to the naked eye was normal, and this was confirmed on microscopic examination. As is my usual practice, I returned to the examination of the stomach and duodenum after exploring the whole abdomen. I have found that in this way ulcers can be discovered which otherwise might easily be missed. The exposure of the viscus leads to a definite change in the peritoneum around the ulcer, the area being surrounded by a red stippling, which I described many years ago.⁷ At the post-mortem no thickening of peritoneum or any other external abnormality of the stomach was found. On opening the stomach a shallow circular ulcer was present, 1.5 cm. in diameter on the lesser curvature, 9.5 cm. from the pylorus, with a perforation leading directly into a branch of the coronary artery.

Acute ulcers may become chronic under certain conditions, but in women, particularly those with gastric ptosis, there may be recurrent acute ulcers with repeated attacks of hæmatemesis. This is the type of case that frequently develops an hour-glass stomach, and in many, at the time of operation, the ulcers which produced it have healed. I have had the opportunity of following cases from the acute ulcer stage to that of hour-glass stomach on the one hand, and to chronic gastric ulcer and carcinoma on the other.

Causes other than Acute Ulcer.

As I have said previously, the usual cause for a painless acute hæmatemesis is an acute ulcer, but in addition to the causes I have mentioned, it may be the first prominent symptom in cirrhosis of the liver.

Hepatic Cirrhosis.—I have seen it stated that cirrhosis of liver is one of the commonest and most important causes of acute hæmatemesis.⁸ This has not been my experience; I look on it as one of the rare causes. I have had experience of three cases, one of which came under my care last year. In order to see if this was borne out by the general hospital figures, I again asked the help of my first assistant. In the two selected years there was no admission for hæmatemesis diagnosed as due to this cause or in which the diagnosis was arrived at later. On investigating the P.M. reports it was discovered that in a patient who was admitted with hæmatemesis and died almost immediately, marked cirrhosis of liver was present with acute gastric ulcers and acute endocarditis. It is possible that the acute ulcers were due to infection, and the hæmatemesis to this and not to the cirrhosis. I believe omentopexy is indicated in the hæmatemesis due to cirrhosis of the liver.

Gastric Carcinoma.—I need say little about the treatment of acute hæmatemesis due to carcinoma of the stomach. The knowledge that such a condition may be the cause in adults is enough.

Splenic Enlargement.—Acute painless hæmatemesis is by no means an infrequent complication in certain cases of enlarged spleen and does not necessarily indicate concomitant cirrhosis of the liver. I have removed the spleen in eight cases on account of an acute hæmatemesis that first brought the patient under observation, and three of these patients I was asked to see as "gastric ulcer." One of them had been in hospital three times previously with hæmatemesis.

The following are my figures supplementing those I gave in 1918⁹: I have carried out splenectomy in 25 cases of splenic anæmia (I am using this term to include Banti's disease); among these, 8 were undertaken for hæmatemesis; the liver was cirrhotic to naked-eye examination in 4 only; in the whole series it was cirrhotic in 10. There was only one death among the 25, a boy of 14, in whom there was doubt

of the diagnosis and which was probably primary liver cirrhosis. I have recorded it elsewhere.⁹ Of the eight cases operated upon because of their hæmatemesis all those in whom the liver was normal at the time of operation are quite well and have had no further hæmatemesis—11 years, 8 years 9 months, 5 years 3 months, and 18 months later. Of the 16 cases in which there was no hæmorrhage previously to operation all those without cirrhosis of liver have had no hæmorrhage and are quite well. Of those with cirrhosis one has had melæna on one occasion, but is now well. Among the four cases operated on for hæmorrhage in whom cirrhosis of liver was present two died, one 18 months later from a further hæmorrhage, and one, with very advanced cirrhosis, of exhaustion after being tapped many times. The following are brief notes of these cases.

A woman of 21, who had had an enlarged spleen for 14 years, and in the year before I operated had had three profuse hæmorrhages. She had ascites and had been tapped on one occasion, 17 pints being withdrawn. After operation she regained and remained in perfect health for 18 months, when she died after a very profuse hæmorrhage. A man of 35, who noticed swelling of his abdomen and seven months later vomited blood. He was admitted to hospital; 14 pints of fluid were withdrawn by tapping, and four days later 15 pints. I was asked to see him. I operated, the liver was large and cirrhotic, and I removed a spleen which weighed 2 lb. 5 oz. He stood the operation well, but had to be tapped three weeks later and then at 14 daily intervals. He died of exhaustion two months after operation.

Duncan Wood¹⁰ has recorded two cases with full post-mortem reports in which the origin of the fatal hæmatemesis was from rupture of an œsophageal varix in one case, an enlarged vasa brevia in another. In both cirrhosis of liver was present at the time of the splenectomy, but even when this is marked patients remain well over long periods of time. For example, in 1914 I operated on a boy of 12 who had typical Banti's disease with ascites, and removed his spleen. The liver was large and cirrhotic. He has remained in perfect health, and I last saw him in December, 1924. I look on removal of the spleen in these conditions as a most satisfactory operation. If undertaken before the onset of cirrhosis of liver the word cure can justifiably be used. Even after the onset of cirrhosis the majority of patients remain well, but hæmorrhage may recur and prove fatal.

Melæna.

Melæna may similarly be the first symptom which brings the patient to the medical man. It may appear in the midst of perfect health and in this type is found almost exclusively in men. The immediate treatment is the same as in acute hæmatemesis. Melæna occurs much more often in the early hours of the morning than does hæmatemesis; a very common history is that the patient gets up about 2 A.M., goes to the lavatory and faints. While acute ulcers of the duodenum do undoubtedly occur they are much more rare than acute gastric ulcers and, on the other hand, a chronic duodenal ulcer more frequently, but still very rarely, remains latent, and does not give rise to symptoms until bleeding occurs.

Immediate treatment should be followed by thorough investigation, and, just as in hæmatemesis, exploration undertaken if no external cause is found with a view to treating the lesion, if it can be demonstrated, and removing its cause. All of us must have known of patients operated upon for painless melæna and gastro-jejunostomy carried out, no lesion having been discovered, and the attacks have recurred as before. I should like again to say that I consider gastro-jejunostomy should never be performed in the absence of a demonstrable lesion. I say this knowing full well that I have operated and been unable to discover an ulcer, only to find it years later and to have it found later by others.

In thus separating melæna and hæmatemesis I do not want it to be understood that hæmatemesis does

⁷ Annals of Surgery, March, 1915, p. 380.

⁸ Index of Differential Diagnosis, p. 272.

⁹ Annals of Surgery, October, 1918, lxxviii., 379.

¹⁰ British Journal of Surgery, January, 1924, p. 587.

not occur with duodenal ulcer; it does, and very profusely, but as a rule melæna is the more marked. Similarly in chronic gastric ulcer it is very rarely indeed that melæna is present without hæmatemesis; when this happens it is usually in cases with hour-glass stomach.

CASES WITH PREVIOUS HISTORY OF INDIGESTION.

To turn now to those cases of hæmatemesis and melæna in which a chronic ulcer is diagnosed on a preceding history of long-continued attacks of indigestion. Here operation should be carried out as soon as the condition of the patient will admit. I am not an advocate of "immediate" operation, meaning thereby intervention during the period of hæmorrhage. In cases of bleeding from a chronic ulcer there is often a period after the first vomiting or melæna in which it is possible to operate; if this is not seized upon other and fatal bleeding may occur as in secondary hæmorrhage which it so much resembles. This is what I meant by operation at an opportune time, a view put forward on my behalf by my colleague, Dr. Robert Hutchison, at the before-mentioned discussion.

Bleeding from a chronic ulcer may be due to the rupture of a small aneurysm, or much more commonly to an acute infection spreading into the vessel. There are two great dangers—we are dealing with a hæmorrhage comparable to secondary hæmorrhage that brooks no delay, and also there is the danger that I consider is a very great one of coincident perforation, due to acute change in the ulcer. My practice has been to operate as soon as possible after the shock of the first hæmorrhage; this is usually in about 36 hours, plenty of fluid being given meanwhile, and, if necessary, a blood transfusion. It is essential to deal *directly* with the ulcer. If in the stomach, I usually tie the vessels on either side, destroy the ulcer with the cautery, and do a posterior gastro-jejunostomy to its cardiac side, but partial gastrectomy may be necessary; in the duodenum, posterior gastro-jejunostomy after the destruction of the ulcer with the cautery, taking care in suturing not to narrow the pylorus.

The immediate results of treatment are better in duodenal ulcer than in gastric, the remote are not so favourable. Up to the end of 1922 I had operated on 73 cases of chronic duodenal ulcer for acute hæmorrhage with 4 deaths, 82 cases of acute hæmorrhage from a chronic gastric ulcer with 7 deaths. It will be remembered that the death-rate in the treatment of uncomplicated cases of gastric ulcer is higher than that of duodenal. Of the 69 survivors of the cases of duodenal ulcer 50 have remained well more than two years after operation, 27 for more than six years, 14 for more than ten. Thirteen had recurrence of bleeding, and of these I wish to speak more fully later, in dealing with post-operative bleeding, and 6 were lost sight of before two years had elapsed. Of the 76 gastric survivors, 69 are quite well over two years, 41 over six years, 12 over ten years—really excellent results. In one remarkable case I was able to get a post-mortem 30 months later.

On June 6th, 1919, a male, aged 44, was admitted to the London Hospital with acute hæmatemesis which recurred four days later. He gave a typical chronic gastric history extending over six years. At the operation on June 24th, I found a large indurated ulcer in the centre of the lesser curvature and have a note that had his condition admitted I should have carried out partial gastrectomy. I tied the vessels on both sides of the ulcer and did a posterior gastro-jejunostomy to its cardiac side. He remained quite well abdominally but died of pulmonary tuberculosis in December, 1921. At the post-mortem the gastro-jejunostomy opening was perfect and 4.5 cm. in diameter. The only remains of the ulcer was a faint scar on the lesser curvature.

There has been no recurrence of bleeding in any uncomplicated case. In one of my early cases, however, I had to do a lateral anastomosis later on account of occasional vomiting. He had a slight hæmatemesis a few months later which was not repeated. This is

the only case of hæmatemesis I have had after operation for chronic gastric ulcer.

Showing the uselessness of gastro-jejunostomy alone and also evidence of what I have already stated that the hæmorrhage is usually due to an acute infection is the following:—

In October, 1914, I operated on a man of 35 who had been having attacks of pain for over a year, and four days before I saw him had an acute hæmatemesis which was repeated. At operation I found a small chronic ulcer on the lesser curvature near the pylorus, treated the ulcer in the usual way, and carried out posterior gastro-jejunostomy. Post-mortem revealed in addition to the chronic ulcer an acute ulcer higher on the lesser curvature with a small ruptured aneurysm.

This while showing the recent acute infection is, of course, fortunately very unusual, the acute infection in most cases being of the original chronic ulcer.

POST-OPERATIVE HÆMATEMESIS.

We now come to a very important group, that of post-operative hæmatemesis. This may occur after any abdominal operation, and I shall speak of it under two headings.

(1) *After Operation upon Abdominal Organs Generally.*

This is well known after operation for abdominal infection, particularly in connexion with acute appendicitis and acute cholecystitis. It is exceedingly rare, and in a number of cases a definite chronic ulcer has been found post mortem, the bleeding being due to an acute infection. In other cases acute ulcers are present of infective origin. Treatment is on the lines indicated with that of the general condition and the prognosis grave.

(2) *After Operations on the Stomach: Early Hæmorrhage.*

Nothing can be more alarming to the patient and his friends or more distressing to the surgeon than an acute hæmorrhage following gastro-jejunostomy or partial gastrectomy. All had gone well and a good prognosis given when the surgeon is recalled a few hours later to find the patient at death's door. Nothing but immediate operation is justifiable, the anastomosis must be undone and restitched. Fortunately I rarely had to do this, and since I have left off using a jejunal clamp and loosen the gastric one before putting in the anterior layer of sutures, I have never had a case of post-operative bleeding, and it must be of the greatest rarity. In any case, even before this, it was extremely rare. I will give you figures obtained from my last 100 cases of gastro-jejunostomy in which I think hæmorrhage was prevented in two, for after loosening the gastric clamp I had to secure a spurting vessel which would have caused serious bleeding and might have necessitated a second operation.

At a time when there was difficulty in obtaining what I consider the best catgut for stomach operations I had two cases of delayed hæmatemesis from too early absorption of the inner layer of sutures, both alarming, but neither fortunately fatal or of sufficient severity to require intervention. Both occurred on the fifth day after operation.

Remote Post-operative Hæmorrhage.

I now want to turn to acute hæmorrhage occurring at late periods after gastro-jejunostomy for chronic duodenal ulcer, cases with which I am afraid we are all familiar, which impress themselves on our imagination and make us think that they are more frequent than they really are. As I was writing this a patient returned to hospital who illustrates excellently points that I wish to bring out.

S. N., a male, aged 34, was sent to me on Nov. 12th, 1923, with the following history: For 14 years he had had attacks of pain late after food with free intervals. Night waking had been a feature for four years. Five weeks before I saw him

he had a severe hæmorrhage with three relapses. He was a thin man, anæmic, and in spite of his recent bleeding his test-meal was 0.16 free HCl, 58 total acidity. I operated on Nov. 30th, and found two chronic ulcers on the anterior surface of the first part of the duodenum. The gall-bladder was normal. I could not investigate his appendix owing to his condition. I destroyed the ulcers with the cautery, sutured vertically so as not to narrow the pylorus, and carried out the usual posterior gastro-jejunostomy. He had an uninterrupted convalescence, but did not show a satisfactory reduction of gastric acidity. His post-operative meal was 0.16 and 58. He was readmitted to hospital after a severe hæmatemesis on Nov. 13th last. Up to ten days before admission he was perfectly well. He then began to lose energy and to look pale. He fainted several times and passed black stools. On the day of admission he was suddenly seized with profuse hæmatemesis. He rapidly recovered under the usual treatment. His test-meal was 0.14 and 50, and his barium meal showed no abnormality. As I had not been able to remove his appendix I reoperated on Dec. 19th. The site of the ulcer was visible as two thin smooth scars; the anastomosis was perfect. I removed the appendix, which to the naked eye showed slight thickening of its tip.

The points I want to draw attention to are these. Those patients who have had hæmorrhage shortly before operation are those liable to get it again. Those cases in which there is not sufficient post-operative reduction of gastric acidity frequently have further symptoms, not necessary hæmorrhage, but those with this symptom before operation may get it after. It is only found after duodenal ulcer, and even then is a rare post-operative symptom. It is quite obvious that bleeding of this sort must come from an ulcer. My experience, as I have frequently said, is that chronic gastric and duodenal ulcers heal when gastro-jejunostomy is correctly performed, and that any later symptoms that may arise are due to fresh ulceration either in the region of the anastomosis or in the jejunum, but as I shall hope to show these ulcers may be so minute as to be undiscovered at operation.

To take first of all the cases of chronic ulcer operated upon for hæmorrhage up to two years ago. None of the gastric cases, with the exception of that just mentioned, suffered from remote post-operative bleeding even when they had been operated on for hæmatemesis; there was no difference in those treated by partial gastrectomy or gastro-jejunostomy. Eighteen cases of chronic duodenal ulcer suffered from post-operative hæmatemesis, but of those 13 had it before operation. In all these cases the bleeding was profuse, necessitating treatment in bed.

It will be obvious that the risk of remote post-operative hæmatemesis in those cases of chronic duodenal ulcer who did not suffer from it before operation is very slight, among my own cases about $\frac{1}{3}$ per cent. There are two possible sources: (1) the original ulcer, (2) fresh ulceration or erosions. I have many times made the statement that the original ulcer heals when it is of a suitable nature for treatment by gastro-jejunostomy, and in these cases, unless the ulcer is a large posterior one eroding the pancreas, healing always takes place after a gastro-jejunostomy, and my experience now extends to over 60 re-examined at a second operation or post-mortem at remote periods.

Cases with no Bleeding before Operation.

Those cases in which there was no bleeding before the operation are five in number. In all except one it came on within 18 months of operation. One patient, operated on in 1912, has had three attacks, the last a year ago; another, operated on in 1913, had attacks lasting to 1916, and has been quite well ever since, and last month I had a letter from him stating he had never been so well in his life. The third had a profuse hæmatemesis after slipping downstairs 13 months after operation, and now, 20 months later, is quite well without further trouble. None of these were explored. The fourth is the most interesting and difficult to account for.

In December, 1915, I operated on a male, aged 37, who since the age of 17 had had attacks of pain after food. I found a mass in the first part of the duodenum with a

definite anterior ulcer. I invaginated it and carried out posterior gastro-jejunostomy and removed a much thickened strictured appendix. He remained absolutely well until August, 1921, when he was camping out; he felt giddy one evening and at 5 A.M. next morning had a profuse hæmatemesis, repeated that day and the third day. He remained in bed a month and I saw him two months later. His test-meal was 0.11 and 52, much too high for a patient with a gastro-jejunostomy. I explored and found the duodenal ulcer absolutely healed and the first part of the duodenum normal but for a faint scar. There was no trace of ulceration in the jejunum or at the anastomosis. I opened the stomach and examined by sight the anastomosis and jejunum. His gall-bladder was normal. I heard seven months later that he had had another attack of an exactly similar nature.

I have quoted this case rather fully, for it stands unique among my cases in that symptoms first appeared at a period longer than two years after operation; in this instance there was nearly six years of perfect health. In one patient, a male of 40, operated on in 1911, painless hæmorrhage occurred in five months. I operated and found a true jejunal ulcer. He remained well and died of another cause nearly eight years later. We obtained a P.M. and found faint scars in duodenum and jejunum. I have post-operative test-meals in 13 out of these 18 cases; in 8 there was but little reduction; in 5 it was reduced almost to normal, in itself high after a posterior gastro-jejunostomy.

Cases of Recurrent Bleeding.

We now pass to those cases, 13 in number, which were operated on for bleeding and in which it recurred. It seems from what I have read on the subject to be assumed in many cases that this comes from the original ulcer or a recurrence. I do not believe this to be the case, not only because I have never seen it unhealed in many inspections, but because I think I have evidence to prove fresh ulceration. Of these patients one developed a definite jejunal ulcer, one an ulcer at the anastomosis, from which I removed silk. Two others were explored, one five years ago, but two years after the original operation. The duodenal ulcer had healed and there was no trace of secondary ulceration. He has remained quite well and is playing Rugby football. The other, eight and a half years ago, 22 months after his original operation, exactly the same state of affairs was found, and he remains well.

From these remarks two facts seem to emerge—one is that these post-operative hæmorrhages may result from definite chronic secondary ulcers, but usually no lesion is discoverable, and I believe it emanates from small erosions due to infection. It behoves us, therefore, to be satisfied that we have cleared up all abdominal infection. If the condition of the patient would not admit of this at the original operation and the post-operative meal shows insufficient reduction of gastric acidity, then further exploration should be carried out. In the patients reoperated on, in two I removed the appendix, which I had been unable to do on the first occasion. As far as the original operation was concerned I have been quite unable to find any constant common factor either in the position of the ulcer or in adhesions, or in the condition of other organs. As I have said on another occasion, if we knew the cause of secondary ulceration we should also know that of primary.

As these post-operative hæmorrhages occur almost entirely after gastro-jejunostomy for chronic duodenal ulcer, and we know that true jejunal ulcers also occur almost exclusively in this condition, and only found when acidity is not reduced, I look on them as small acute ulcers of this nature. In treating these cases of post-operative hæmatemesis a careful examination of teeth and naso-pharynx must be made, but lesions here should, of course, have been treated before the first operation. In cases of painless hæmatemesis, if the surgeon is satisfied that everything necessary in the abdomen was done at the previous operation, exploration should not be undertaken. In the rarer cases in which it is preceded by pain, and there is some evidence of a chronic jejunal ulcer, a thorough course of treatment directed towards reducing gastric

acidity must be carried out, and only if relapse occurs should operative treatment be advised.

Failure to Reduce Gastric Acidity.

We have yet to learn what is the cause of failure to reduce gastric acidity by gastro-jejunostomy. I am convinced that it is essential if the operation is to be permanently successful. I have been and still am working at the subject, and although we can trace the cause in certain cases, yet in others in whom a procedure in every way identical is carried out for a lesion in every way comparable, in one patient it results in a post-operative meal of, say, no free HCl and a total acidity of 20, and in another 0.1 and 50. I believe that it is in some way due to insufficient emptying of the gastric contents through the pylorus, hence the secretion of pancreatic juice is not sufficient. There is no doubt that pyloric exclusion prevents post-operative reduction, and I am sure that the most usual single cause is adhesions of gall-bladder to duodenum, interfering with the free use of the pylorus. I am convinced that for the most effective lowering of acidity it is essential that the pylorus be used as well as the new opening. Gastro-jejunostomy cannot be looked upon as purely a mechanical operation. I should like to reaffirm what I stated last year—no patient in whom the operation brought about a sufficiently lowered gastric acidity has had any post-operative symptoms whatever.

The lessons I have drawn from this small piece of clinical research seem to me to point out the great necessity for preventive treatment—to learn the cause of acute ulcers, and so prevent their occurrence, and when once they have developed so to treat the patient that they do not progress and drift into the group of recurrent ulcers or the true chronic ulcer, and then that operation on this type should not be delayed until hæmorrhage has occurred. The old adage holds: Prevention is better than cure.

PERIODIC MEDICAL EXAMINATION.

Being a portion of an Address read before the Assurance Medical Society, on Jan. 7th, 1925,

BY OTTO MAY, M.D. CAMB., M.R.C.P. LOND.,
PRINCIPAL MEDICAL OFFICER TO THE PRUDENTIAL
ASSURANCE COMPANY.

[IN opening an address on Life Offices and the Care of the Policy-holder, Dr. May said that, fundamentally, the aim of every life office, whether mutual or proprietary, must be to benefit its policy-holders by improving, as far as possible, its mortality experience. From the theoretical point of view this could be achieved along two chief lines: (1) by stringent selection at entry, including the careful assessment of impaired lives, and (2) by organising the care of policy-holders, so as to give them special facilities for the prevention and treatment of sickness, and thus help to ensure a favourable mortality.

Up to the present time British companies had concentrated their efforts almost entirely along the former line; in America, however, a good deal has also been attempted by some of the leading companies along the latter line. He suggested that the health activities of an insurance company might be classified under three headings, each of which he discussed in detail. These were (1) general health propaganda, (2) the endowment of research, and (3) the care and treatment of individual policy-holders. Dr. May summarised the activities on these lines of the Metropolitan Life Assurance Company of New York, which, he said, appeared to be the most active of all in the care of its assured. Under the third heading, an important item was the periodic medical examination of policy-holders, on which Dr. May spoke as follows:—]

The outstanding feature of the health work of the Metropolitan Life Assurance Company of New York

among ordinary policy-holders is the provision of facilities for *periodical medical examination*,¹ free of all cost to the holders. This scheme has been in existence since February, 1914, and allows the following privileges: (a) For holders of a policy of \$1000—an examination after four years, and every fourth year thereafter; (b) for holders of a policy of \$2000—after three years and every third year; (c) for holders of a policy of \$3000—after two years and every second year; (d) for holders of a policy of over \$3000—after one year and thereafter every year.

The examinations are conducted on behalf of the company by the Health Extension Institute of New York—an institution which undertakes periodical examinations for some 30 different insurance offices, as well as for employers and private individuals. It has branches throughout the States, so that policy-holders can be examined in almost any town of importance. The examination includes a routine survey by ordinary methods of the heart, lungs, abdominal organs, nervous system, nose and throat, eyes, general physique, and blood pressure, and a chemical and microscopical examination of the urine.

Nothing is said as to the provision of facilities for sputum examination, radiography, or blood examinations. Presumably, if their desirability is indicated by the routine examination, the policy-holder is referred to his own medical attendant for further investigation. The result of the periodical examination is confidential between the examiner and examinee: no information regarding it is divulged to the company, so that the policy-holder cannot be adversely affected with regard to possible future proposals.

Value of Periodic Examination.

Recently there has been considerable discussion in this country as to the value of periodical examinations, and about a year ago a special meeting was convened by the Federation of Medical and Allied Services with the object of passing a resolution in favour of a similar service by British life companies. At that meeting the lay speakers seemed to assume that the detection of early disease by such an examination presented no real difficulty. They failed to realise that, in many cases, the examination could be only the preliminary to accurate diagnosis. Suppose, for example, that it revealed a trace of glycosuria. What are the alternatives? If the examiner is referred to his family doctor, he may or may not go to him. If he does, in how many cases will the practitioner really investigate the sugar metabolism on the modern lines necessary to arrive at a correct estimation of the significance of the glycosuria? If, on the other hand, the examinee is referred to a specialist, is he willing to incur the considerable expense entailed thereby? And, if the result is favourable, will he be pleased with the company for providing him with a "free" overhaul that involves him in a considerable outlay which he feels to have been unnecessary? Exactly similar difficulties would arise in the case of many other conditions—slightly increased blood pressure, slight pulmonary catarrh, vague dyspeptic symptoms, albuminuria, and so on. It seems to me that either the company should be prepared to carry out the whole investigation of any abnormality detected in the course of the examination, or it should leave the policy-holder entirely to his own resources. The tendency of the ordinary "routine examination" will be to find out too much or too little—to interfere unnecessarily with the comfort and peace of mind of the examinee, or to lull him into an unwarranted complacency.

¹ For most of the facts in this section I am indebted to an address delivered in October, 1921, at the Annual Meeting of the Association of Life Insurance Medical Directors by the President, Augustus S. Knight, M.D.

Results of the Service.

As regards the actual results of the service, Dr. Knight's address gives some interesting figures. During the period under review, 1914-21, only 2.49 per cent. of the number eligible actually underwent medical examination. This does not look as though policy-holders were really anxious to avail themselves of the privilege. A careful statistical study was undertaken of the mortality experience up to November, 1920, of about 6000 males who presented themselves for this examination in 1914 and 1915. For this purpose the examination records were put at the disposal of the company by the Examination Institute. From these data the whole group was divided into four sub-groups according to the physical conditions revealed by examination: (1) "Preferred risks" (exceptionally good lives) (9181 policy-years); (2) "ordinary risks" (7111 policy-years); (3) "cases with albuminuria" (9850 policy-years); (4) "miscellaneous group" (with various impairments) (7485 policy-years).

The mortality experience was as follows. [Ratio of Actual Deaths to Expected by American Men (Ultimate Table).] (1) 47 per cent.; (2) 72 per cent.; (3) 46 per cent.; (4) 117 per cent. For the whole group it was 72 per cent.

Number of cases which presented themselves for a second examination: Subgroup (1) 41 per cent.; (2) 37 per cent.; (3) 33 per cent.; (4) ? (not given in Dr. Knight's paper).

These figures are of great interest, as they throw light on the answer to the question—To what type of policy-holder does the periodical examination appeal? Of the very few (2.5 per cent.) who availed themselves of the opportunity of a first "periodical examination" only about 30-40 per cent. took the trouble to appear a second time. The highest percentage was in the group who were physically fittest—i.e., who were least in need of it. The lowest percentage was among those who were told that they had a definite disability—albuminuria. In other words, it certainly seems that the people who are most anxious to avail themselves are those who are least in need of it; that it is the man who feels well who likes to come and be assured that he is well. To him the periodical medical examination is a species of self-indulgence; his vanity is tickled by his being pronounced "fit."

I have no time to quote Dr. Knight's exhaustive analysis of the mortality in these cases; he comes, by a different route, to the conclusion just mentioned as to the strong element of self-selection in those availing themselves of periodical examination—namely, that the privilege is made use of in inverse ratio to its utility. But to me the most striking sentence in his paper is as follows: "It would therefore be safe to say that the benefits of the life extension examinations are pretty well limited to the years immediately following the examinations, and run out at the end of about five years." I do not quite understand from the context what is the exact meaning of this sentence, whether the protection lasts five years from the date of the first periodical examination or the last. Judging, however, by the figures quoted above, it does not seem that there is any great distinction between these two alternatives—the first examination seems so often to be the last!

In spite of these limitations, the Metropolitan calculate that they are making a handsome profit on balance on the expenditure incurred in this scheme. So far as I know, in this country only two life offices have so far initiated any scheme of periodical examination for their policy-holders, and the experiment is too recent to allow any judgment of its value.

To recapitulate the pros and cons of such a scheme, it seems to me that, in theory, it is an excellent

principle, which should result in mutual benefit to the office and to the individual policy-holder. In practice, however, its success would seem to be impaired by the following difficulties: (1) The incompleteness of the arrangements for a really effective diagnostic service, including the difficulty of efficient medical personnel; and (2) lack of interest among the policy-holders, of whom the great majority fail to make use of the facilities provided; among those that do, there appears to be a "selection" in favour of those whom it benefits least; and of those who do avail themselves of a first examination, comparatively few persevere by undergoing subsequent re-examination.

THE PREDISPOSING CAUSES OF LEPROSY.

By E. MUIR, M.D., F.R.C.S. EDIN.,

RESEARCH WORKER IN LEPROSY AT THE SCHOOL OF TROPICAL MEDICINE AND HYGIENE, CALCUTTA.

MUCH of the confusion which exists with regard to leprosy is due to the want of recognition of the important rôle played by predisposing causes. There is probably no disease in which predisposing causes play a more important part than in leprosy. Many facts might be quoted to prove that healthy human beings, like the lower animals, are insusceptible to leprosy, that although the bacilli may be present in the body some predisposing cause or other is necessary before they can begin to increase in number and produce signs. Moreover, the course of the disease is profoundly affected by the nature, degree, and number of the predisposing causes. I have therefore considered it useful to study in this paper some of the commoner predisposing causes and their effects on leprosy.

Predisposing causes may be conveniently divided into temporary or self-terminating and permanent.

Temporary or Self-Curing Predisposing Causes.

These from their nature last but a short time, and while they last are accompanied either by the first signs of leprosy or by an increase in previously existing signs. They include all the acute febrile diseases such as enteric, influenza, small-pox, and other exanthemata. To take a typical case.

A female patient had a small, anæsthetic, leprosy patch on her arm, which was her only sign of the disease. She developed enteric fever, and during convalescence an erythematous rash spread in patches all over the body within a few weeks. The patches were raised and contained lepra bacilli. As the patient recovered her strength the patches began to fade in colour and became flattened out to the level of the surrounding skin. The enteric had lowered the resistance of the patient and made her tissues a suitable soil for the growth of *B. lepræ*. As the resistance returned the soil became unsuitable once more and the bacilli began to disappear.

Another case was that of a patient who had had a severe attack of influenza. The signs, formerly consisting of a small anæsthetic patch on the arm, rapidly increased to deep nodulation of the back, arm, face, and ear, which again rapidly recovered as the patient regained his strength. Treatment was given, but the recovery was much more rapid than could have been expected as the result of treatment alone.

In both these cases the rapid increase of leprosy signs took place in the afebrile period immediately following the febrile period of the predisposing disease.

Pregnancy is another common cause of the onset and increase of leprosy. The extra strain thrown on the system, especially in women who cease to take open-air exercise as pregnancy advances, is sufficient to cause the required conditions. Puberty, especially in poorly-nourished, rapidly-growing children, is often accompanied by the first signs of leprosy, or, if they have been present before, by their rapid increase. Besides the above, similar results may be caused by any circumstances which temporarily lower the

² This low mortality for albuminuria cases in the first five years of insurance is extremely interesting. (Cf. the American Medico-Actuarial Investigation figures for cases of albuminuria—mortality 78 per cent. for first five years, and 200 per cent. for next five years.)

resistance of the body such as change of diet, injuries, unfavourable climate or surroundings, vaccination, &c.

Permanent Predisposing Causes.

These differ from the above in that they do not tend to cease spontaneously. Syphilis, chronic bowel disorders, fevers of protozoal origin, such as malaria and kala-azar, are typical of such permanent causes; but any cause which weakens resistance and tends to remain for a prolonged period, whether it be biological, climatic, or social, may be included under this heading. We shall consider the more important, permanent predisposing causes seriatim.

(a) *Syphilis*.—A connexion between syphilis and leprosy has long been recognised. Impey¹ classes "syphilitic leprosy" as one of the four forms of the disease. There is a popular idea in India that leprosy and syphilis are different forms of the same disease. In a paper dealing with the Effect of Antisyphilitic Treatment in Leprosy,² it has been shown that anti-syphilitic treatment has a marked power to render a positive Wassermann reaction in leprosy negative, especially in early nerve cases; and we came to the conclusion that syphilis is an important complicating factor in both skin and nerve leprosy. The history of the first onset of leprosy following an attack of syphilis is very common; and when those who have been suffering from leprosy in a mild form contract syphilis, the former disease generally takes on a much more virulent form. There is no evidence that there is any ætiological connexion between the two diseases, but syphilis acts as a predisposing cause, and renders the human tissues a suitable soil for the growth of the lepra bacillus. It would therefore be expected that, other things being equal, the proportion of lepers would be higher among the syphilitic than among the non-syphilitic population, and as a corollary that the proportion of positive W.R.'s would be higher among lepers than among non-lepers. As a matter of fact this is found to be the case, although the high Wassermann rate cannot be entirely attributed to syphilis.³ An excellent prognosis can generally be given in an early case of leprosy when the W.R. is positive, as the predisposing cause, syphilis, is easily removed, and, as a rule, the leprosy infection dies out rapidly after the removal of such a strong predisposing cause. In more advanced cases of leprosy, on the other hand, the prognosis in a positive W.R., though good, is not as good as in early cases, as there is not the same certainty that the W.R. indicates syphilis, and even when syphilis is the cause and has been removed there is still the leprosy infiltration to deal with, which may take some years.

(b) *Chronic Bowel Disorders*.—Next to syphilis chronic bowel disorders form, perhaps, the most important permanent factor. Among these the most important in India are the dysenteries, amœbic and bacillary, and the chronic conditions which they frequently leave behind. Chronic constipation, with the absorption of toxins from the bowel, forms a most favourable condition for the growth of leprosy. This, unfortunately, is a condition which it is often very difficult to remedy, and in such cases the prognosis with regard to leprosy is rendered less favourable.

(c) *Malaria* is another common predisposing cause in India, especially benign tertian, which is sometimes very difficult to cure with quinine.

(d) In Bengal we have frequently found the first signs of leprosy appearing during an attack of kala-azar, after the fever has yielded to treatment.

(e) *Hookworm disease* strongly predisposes to leprosy. In five leper asylums, the inmates of which were examined for hookworm, an average of 90 per cent. were found infected. In one asylum only three were found uninfected. Remarkable improvement is often noticed in leper asylums after mass treatment for hookworm has been carried out.

(f) *Unsuitable diet* is another frequent predisposing cause. Hutchinson emphasised—and possibly over-

emphasised—this fact in his theory that leprosy is due to fish eating, or rather, as he defined it later, the eating of badly preserved or decomposed fish. There is no doubt that this is a predisposing cause. Hutchinson's mistake was in making it the only predisposing cause and in ignoring the importance of the lepra bacilli and their transmission by contact with infectious lepers. Stale, badly preserved food, whether it be fish or meat, rice or grain, fruit or vegetables, predisposes to leprosy. Overcooked, twice cooked, and badly cooked food is also injurious.

(g) *Climate* is another consideration of great importance. Sir Leonard Rogers has proved,⁴ by carefully collected evidence, that the incidence of leprosy closely corresponds with the humidity of the climate. Neither heat nor cold alone predisposes to leprosy, but both heat and cold accompanied by high humidity correspond with a high incidence. In this respect leprosy closely resembles tuberculosis.

(h) The importance of the *mental condition* of the patient must not be lost sight of in leprosy. In a disease which is so much dreaded and which brings with it social ostracism and loss of employment, mental depression, followed as it generally is by physical depression, is very common and plays not a small part in causing the progress of the disease.

(i) *Lack of exercise* is another important cause. *B. lepræ* lives and multiplies in the intercellular lymph spaces, and lymph stagnation is favourable for its growth. Vigorous exercise is always an essential for the treatment of leprosy, while on the contrary lazy and sluggish habits predispose to the disease. This is not uncommonly the reason why, when people of active habits retire from work and adopt a sedentary life the signs of leprosy begin to show themselves. It is also to a large extent the reason why leprosy is common among the rich. Employers not infrequently dismiss their employees on hearing that they are suffering from leprosy, whether or not the disease has reached a stage at which it is transmissible. This loss of employment, along with the accompanying mental depression, often leads to sluggish habits, and thus as an indirect result of the disease itself a powerful predisposing cause is brought into play which leads to its rapid increase.

(j) *Youth* has often been indicated as predisposing to leprosy. The fact, brought out by Rogers,⁵ that about 50 per cent. of lepers are infected before the age of 20 certainly points to youth as the most common period for acquiring leprosy.

(k) *Puberty and pregnancy* are certainly predisposing factors, as they are in many other ways critical periods in the life-history. Moreover, on the principle that the closer the contact the greater the chance of infection, the early years of life expose to infection if the parents, guardians, friends, or relations are infectious lepers, as children are handled and cared for and kept in constant close contact with their elders, and their skin is thin and tender and much more frequently abraded than that of adults. Apart, however, from the greater chances of infection and the crises of puberty and pregnancy which are liable to light up latent infection, youth does not directly predispose to leprosy to a greater extent than other periods of life.

Another critical period is the *climacteric* in women which is not infrequently accompanied by the onset of the disease.

Though leprosy is generally confined to the first three or four decades, it is not altogether uncommon to find its onset in more advanced periods of life. To give one typical example.

A patient acquired syphilis at the age of 20. The disease gave him only slight inconvenience and he was not treated for it effectively. At the age of 68 he began to show signs of leprosy, which increased rapidly till the B₂ form of the disease was reached (see diagram). When he was 75 years of age he came for treatment, and his W.R. was found to be strongly positive. A course of antisyphilitic treatment had a marked effect, the lesions disappearing to a very large extent.

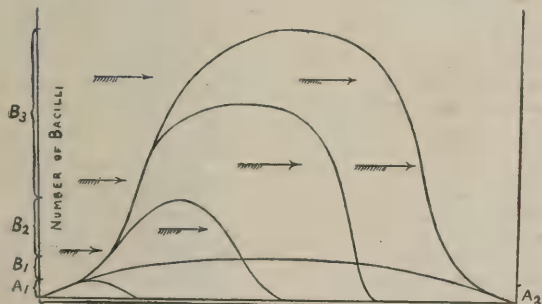
Predisposing Causes in Relation to Prognosis and Treatment.

We may expect to find one or more predisposing causes in every case of leprosy, though, while in some cases the cause is apparent, in others it is obscure. It may be taken as an axiom that the more distinct and removable the predisposing cause the better the prognosis with regard to leprosy. To try to treat a case of leprosy by special treatment without first removing the predisposing cause is like trying to drive a motor-car up hill with the hand-brake full on. Therefore, from the point of view both of prognosis and treatment, the recognition of the predisposing cause is of first importance.

Effect of Febrile Illnesses on Leprosy.—A curious phenomenon, however, is noticeable with regard to many of the predisposing causes mentioned above, especially those which produce a febrile condition. In the more advanced stages of leprosy such fevers instead of causing an increase of the disease tend to cause its resolution and disappearance. Within the last 12 months I have had under my treatment ten patients who developed kala-azar while in an advanced stage of skin leprosy. All of them without exception improved rapidly as far as leprosy was concerned, nodules and skin infiltration rapidly disappearing. Indeed, they made far better progress under the effect of kala-azar than under any form of special treatment. One very advanced case of leprosy, with abundant *B. lepræ* infiltrating the skin of face, trunk, and limbs, developed acute exfoliating dermatitis and died of pericarditis after two months' illness. Post mortem we were unable to find more than a few granular bacilli, the acute febrile condition having caused almost complete destruction of the acid-fast bacilli. I have noticed similar but less marked improvement after dengue fever, cholera, malaria, dysentery, and even after pregnancy. Trophic abscesses in the limbs when accompanied by inflammation and fever will cause rapid disappearance of both skin and nerve lesions.

Leprosy a Self-curing Disease.

I have described leprosy in a former paper⁶ as a self-curing disease and give here a diagrammatic representation of this process in different types and



Leprosy curves. A = nerve (anæsthetic) leprosy. A₁ = primary nerve leprosy. A₂ = secondary nerve leprosy. B = skin (nodular) leprosy. B₁ = first stage of same; free bacilli found in the skin. B₂ = second stage; more bacilli found in the skin. B₃ = third stage; very marked, generalised infiltration, abundant bacilli. —> = reaction-producing granulomatous causes.

stages of leprosy. Typical examples of the course followed by leprosy are illustrated by various curves, the perpendicular representing the number of bacilli in the body, and the horizontal the length of time. All cases pass through the A₁ stage, though some cases are difficult to recognise before they reach the B₁ stage.

In cases which are mild in type the disease may remain at the A₁ level, or it may pass on into B₁, B₂, or B₃. At any height, however, the curve may reach its uppermost limit or climax if the resistance of the body is raised sufficiently, as by the removal of the predisposing cause, either naturally, or as the

result of treatment, or, as we find it chiefly in the higher curves, by the induction of immunity following on the breaking down of leprosy tissue. In other words, the top of the curve corresponds to the point at which the general or special resistance of the body becomes sufficient to withstand the advance of leprosy. The febrile and other predisposing causes mentioned in the last paragraph as causing improvement in the advanced stages of leprosy may be termed potential reaction-producing causes. These are represented in the diagram as arrows.

We may consider such causes as forces applied in the directions of the arrows to bodies ascending or descending the curves. In the former, the body would tend to ascend more rapidly (and the steeper the curve the more so); in the latter the body would tend to descend more rapidly. In other words, when reaction-producing causes come into play during the rise of the curve they tend to make the disease increase; when they come into play during the fall of the curve they hasten recovery.

Part of the effect of various drugs used in leprosy, though not always the most important part, is due to this reaction-producing power which they possess in common with the febrile and other causes mentioned above. It will therefore be clear that in patients who have not reached the climax of the disease, and whose curve may still be represented as on the upward gradient, special treatment may have to be applied with care until the predisposing cause has been eliminated, and the general health and resistance of the patient improved. On the other hand, the injection of preparations of hydnocarpus and chaulmoogra oils has often the effect of arresting the disease and bringing about its gradual elimination, even in spite of the presence of minor predisposing causes.

The objection may be raised that if leprosy is a self-curing disease then why remedy it, why not let the curve take its natural course seeing it will reach the base line again in the end? The object of the removal of predisposing causes and of special treatment is to flatten the curve, to bring about the crisis as soon as possible, and to hasten the down-grade of the curve. Most of the deformities of lepers are due to lingering on the down-grade as the type passes from B₃ down to A₂. To avoid this, vigorous treatment must be applied when once the signs of the disease have begun to diminish and, above all, sluggishness must be avoided, as of all the predisposing causes it is perhaps the most common and most harmful. Moreover, vigorous exercise enables vigorous treatment with hydnocarpus ester injections to be borne without excessive reactions, and in this way improvement can be hastened.

Summary.

1. It is maintained that in almost all cases the onset of leprosy is due to some predisposing cause in conjunction with infection with *B. lepræ*.
2. Some of these will remove themselves; of the rest the majority can be removed by treatment.
3. Certain of these causes which predispose to the onset of the disease and to its increase in the first stages tend to bring about resolution of the lesions and general improvement in later stages.
4. It is essential to remove predisposing causes as far as possible before carrying out vigorous special treatment, as otherwise the latter may cause an increase rather than a diminution of the disease.
5. Most deformities in leprosy are due to the lack of vigorous treatment in the later stages of the disease.

References.

1. Impey, S. P.: Handbook of Leprosy. London: J. and A. Churchill. 1896.
2. Lloyd, Muir, Maitra: Effect of Anti-syphilitic Treatment on the Wassermann Reaction in Leprosy, Indian Jour. Med. Research, vol. xii., No. 1, July, 1924.
3. Lloyd, Muir, Maitra: The Wassermann Reaction in Leprosy, Ibid., vol. xi., No. 1, July, 1923.
4. Rogers, Sir Leonard: Trans. Royal Soc. Trop. Med., xvi., 440.
5. Rogers, Sir Leonard: Indian Med. Gazette, February, 1924, p. 68.
6. Muir, E.: Leprosy, a Self-healing Disease, THE LANCET, 1924, i., 277.

BREAST DISEASE AND THE *DEMODOX FOLLICULORUM*.

BY HELEN CHAMBERS, C.B.E., M.D. LOND.,*

AND

A. MILLICENT SOMERSET.

(From the Cancer Research Laboratories of the Middlesex Hospital.)

IN 1909 Borrel,¹ in collaboration with Gastinel and Gorescu, found an acarus living in the sebaceous glands at the orifice of the nipple in six cases of breast cancer. He put forward the hypothesis that the acarus transmitted a virus infection, and that the cancer was caused by this virus. The importance of this hypothesis lies in the suggestion that breast cancer is caused by some agent conveyed to the patient from outside through the nipple, for, clearly, if there is any truth in this theory, it should be possible to take effective preventive measures. Borrel's work has attracted very little attention in this country, and we have not been able to find any confirmation of his results in the literature. In view of our complete ignorance of the cause of breast disease, it seemed desirable to investigate and determine whether any data could be found in support of this theory.

During the last year, owing to the kindness of the medical staff of the Middlesex Hospital, and especially of Mr. Sampson Handley, we have had the opportunity of examining 63 breast specimens removed by operation, and have been able to confirm Borrel's finding that an acarus lives at the orifice of the nipple in a large percentage (nearly 60) of patients with breast cancer. The parasite has been found in breasts removed for mastitis and for papillomatous growths, and also in a few post-mortem cases when the patients have not, during life, complained of any breast trouble. It occurs apparently irrespective of the social class or personal habits of the patient, for it has been found in nine private cases out of a total of ten examined.

The *Demodex folliculorum* has been known for many years; it was found in man by Berger and Heale in 1841, and by Simon in 1842. It was first described in the dog by Tulk in 1844. Wagner in 1876 states that it is present in most men in the sebaceous glands around the external ear and face. Usually looked upon as harmless, it has been credited with causing impetigo (Lawrence), and inflammation of the Meibomian glands (Hausche and Jores). A similar type of acarus occurs very generally in animals and has been found in cats, dogs, rabbits, rats, goats, swine, and cattle. The demodex mange of dogs and cattle is said to be incurable, owing to the depth into the skin that the parasite penetrates.

Borrel, in France, examined the normal skin of 20 human cases, and found the demodex in 50 per cent. He thought that it was specially numerous in patients with cancer, and described 12 cases of rodent ulcer in which the acarus occurred in very large numbers immediately around the site where the malignant growth started. The parasite was found in six cases of breast cancer out of a total of seven examined, sometimes more than 100 were present in one nipple. Borrel has been a strong adherent of the theory of the parasitic origin of cancer for years, and he has collected many cases of malignant disease, both in man and animals, in which the growth apparently started around the site where some form of parasite had lodged. In the case of the demodex, although he was very careful not to draw conclusions beyond those which the data warranted, he strongly advocated that means should be adopted to rid

mankind of this pest. He looked upon the demodex as transmitted by close contact and family relationships, and suggested that its presence would explain the existence of so-called cancer houses and the so-called hereditary nature of cancer.

Method of Examination.

The method adopted by Borrel consisted in cutting serial sections of the nipple parallel to the surface of the skin. At first we followed this laborious technique; but it has since been modified and is now as follows:—

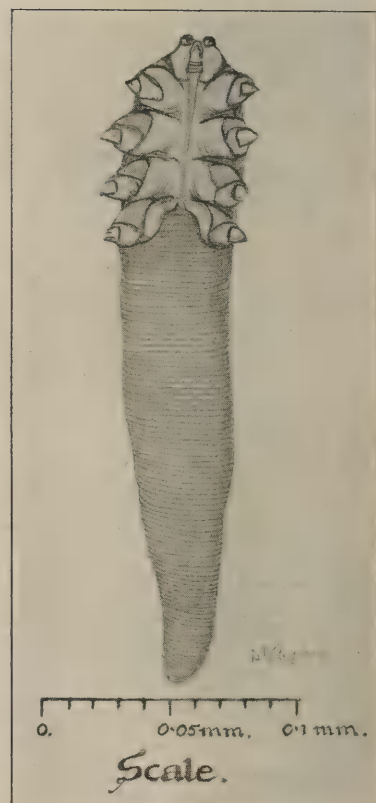
The breast is brought from the theatre soon after removal. The nipple is cut in half across the centre with scissors and one half put into fixative for microscopic examination. From the other half pieces of the nipple skin are cut about 1 mm. in thickness; the central pieces are taken first, as they contain, as a rule, most of the sebaceous glands. The cut surfaces of the strip are scraped in water on a slide, and the scrapings examined with 2/3rd and 1/6th objectives. The parasites are easily detected and their very distinctive structure leaves no doubt of their identity. In some cases as many as 12 or more are found on the first slide, in other cases only one or two are found in the whole nipple. The acarus has not yet been found by taking scrapings from the surface of the nipple of the living patient.

The *Demodex Folliculorum*.

The acarus is shown in the figure. It is about 0.3 mm. long, the male being smaller than the female.

The length is variable, and much smaller forms are met with when young. It lives head downwards in the sebaceous glands, and is commonly found in pairs, male and female, living together in close apposition. Sometimes as many as 20 parasites are found in one sebaceous follicle. The eggs are oval and are laid in the glands; they hatch out larvæ with only three pairs of legs instead of the four pairs which the adult form possesses. In most of the specimens the acari have not been numerous, and the eggs have been difficult to find.

The parasite protects itself from adverse conditions by burrowing deeply into the glands, and it has frequently been found alive in specimens removed by operation after the skin has been carefully disinfected for surgical reasons with alcoholic iodine or alcoholic picric acid. The acarus shows no tendency to leave the specimen after removal from the body, and it has been found alive eight days later in breasts which have been kept at room temperature and in which autolytic changes have been well advanced.



* Full-time investigator for the Medical Research Council.

¹ Borrel, A., Gastinel, P., and Gorescu, C.: *Acariens et Cancres*, Annales de l'Institut Pasteur, 1909, xxiii., 97.

Septic contamination quickly kills it. The acarus has been often seen in active movement, but attempts to cultivate it outside the body have so far not met with success.

Microscopic Changes.

Borrel stated that the sebaceous glands harbouring this parasite showed signs of chronic inflammation, and that he found it burrowing into the cellular tissues. We have not been able to confirm the latter part of this statement. Marked signs of chronic inflammation around the follicles have often been seen; in other cases, however, they have been entirely absent. Inflammatory changes associated with plugs of debris and bacteria in the orifices of the glands have occasionally been the first changes noted when the acarus has only been found after prolonged search. In a few cases inflamed gland acini have been found in close contact with the deepest parts of the sebaceous glands, almost looking as if a direct transmission of infection had occurred. This appearance has been traced sometimes in the breast quite apart from the nipple. Borrel thought the sebaceous glands increased in numbers owing to the irritating action of the parasites. In the cases recorded here the glands have sometimes been very numerous when no acari could be found at all. On the other hand, in cases where the acari have been very numerous, there have been comparatively few glands.

The Cases Examined.

Sixty-three breast cases have been examined; the details are given in the following table:—

Disease.	No. of cases in which the acarus was—		Total.
	Found.	Not found.	
Carcinoma	26	20	46
Papilloma	2	1	3
Chronic mastitis ..	8	5	13
Fibro-adenoma ..	1	0	1
—	37	26	63

There has been no opportunity of finding the incidence of infection among the general population. Seven normal breasts only have been obtained, and in these the acarus was present in two. Both were post-mortem cases from patients who had died from carcinoma, but in some other region of the body than the breast. The list of cases given in the table includes four males; the acarus was found in three of these, one had carcinoma of the breast, the other two had chronic mastitis. There was no reason to suppose in any of these cases that the acarus was limited to the region of the breast. It has been found on the chest wall, in the axilla, and in a case of epithelioma of the vulva on the mons veneris. The parasites are often so few in number, and there is so little sign of chronic irritation around the site where they are lodged, that it seems to the writers doubtful whether they have any direct bearing on the disease. On the other hand, the site where they live at the orifice of the nipple and their burrowing habits give them every facility to transmit a living virus if this is present.

Experimental Inoculations.

To obtain direct evidence that breast disease is caused by the agency of the *Demodex folliculorum* it would be necessary to produce the disease in animals. With this object emulsions containing the acarus have been inoculated subcutaneously into the breast region of a number of mice and rats.

Emulsions containing the parasite in fairly large numbers were obtained by the method already described, using sterile conditions. Each animal received four to six acari. In all, 47 animals were treated, 36 mice and 11 rats. The results were

entirely negative. At the end of three months 22 mice and 11 rats were alive, and at the end of four and a half months 11 mice and 11 rats were alive and well. This method of subcutaneous inoculation does not produce a chronic condition at all comparable with the chronic irritation so often found in the breast ducts in the human subject. To inoculate the breast ducts requires larger animals than those which have been available.

Conclusions.

1. Breast disease in England is often associated with the presence of an acarus which lives at the orifice of the nipple. This acarus apparently is prevalent irrespective of the social class or personal habits of the patient. It lives deeply in the sebaceous glands and is not killed by treatment of the skin with strong antiseptics; it can remain alive for over a week buried in the skin. Any form of preventive measures must, therefore, be long continued and must aim at destroying the acarus when it comes to the surface.

2. It has been suggested by Borrel that this parasite can convey to the breast ducts a living virus which can set up malignant disease. At present there is no evidence to support or to disprove this theory.

ETHYLENE ANÆSTHESIA,

WITH OBSERVATIONS UPON ONE HUNDRED AND TWENTY ADMINISTRATIONS.

BY C. LANGTON HEWER, M.B., B.S. LOND.,

ANÆSTHETIST TO ST. BARTHOLOMEW'S AND THE ALBERT DOCK HOSPITALS; SENIOR ANÆSTHETIST TO THE QUEEN'S HOSPITAL FOR CHILDREN.

ETHYLENE or olefiant gas is an unsaturated hydrocarbon having the formula C_2H_4 . The narcotic action of the gas is said to have been discovered by Simpson and investigated by Nunnally, of Leeds, but it is doubtful whether these early workers ever anæsthetised patients with it. The recent observation that ethylene dissolved in pure ether alters its anæsthetic properties revived interest in the gas, and its actions have been thoroughly worked out by Luckhardt, Carter and Easson Brown in America.

Preparation.

Until recently it has been impossible to obtain pure commercial ethylene in Great Britain, and most of the gas used in the following cases has been kindly prepared by Dr. W. H. Hurtley, lecturer in chemistry to St. Bartholomew's Hospital. The method of preparation is known as Newth's process, and is briefly as follows: Syrupy phosphoric acid is heated in a round-bottomed flask to drive off water. A thermometer is placed with its bulb in the liquid, and boiling occurs at about $160^{\circ}C$. The heating is continued until the temperature rises to $200^{\circ}C$. At this stage the flask is fitted with a cork carrying (1) the thermometer, (2) a tap-funnel whose stem reaches below the surface of the liquid, and (3) a delivery tube connected to a wash-bottle standing in ice. Ethyl alcohol is then allowed to drop slowly on to the acid from the tap-funnel, the temperature of the mixture is kept at about $220^{\circ}C$. and the ethylene collected over water. This method can be used commercially, and would be comparatively inexpensive, provided that duty-free spirit could be employed. The gas so prepared was compressed at a relatively low pressure (100 lb. per square inch) into ordinary nitrous oxide cylinders by means of an adapted motor-tyre pump. The remainder of the gas was imported from America to ascertain whether there was any appreciable difference in quality. It was found that the smell of the imported ethylene was pungent and resembled that of acetylene, while the other gas had a rather pleasant ethereal odour. At the same time there appeared to be no appreciable difference in the effects of the two gases on patients,

and the American ethylene when examined was shown to have a purity exceeding 99 per cent.

Properties.

The odour of ethylene has already been mentioned and will be referred to again later. The main point of interest to the anæsthetist is the inflammability and explosibility of the gas. Pure ethylene burns with a semi-luminous flame in the same way as hydrogen. A mixture of between 4 per cent. and 15 per cent. ethylene in air explodes with moderate violence in the presence of an electric spark. Mixtures of oxygen and ethylene explode with extreme violence if the oxygen percentage exceeds 40. It should also be observed that in this respect nitrous oxide acts in a similar manner to oxygen, a point to be borne in mind if anæsthesia is induced with nitrous oxide and continued with ethylene. From these considerations it will be seen that the only likelihood of danger from explosion in practical work lies in (1) the application of any type of cautery to the region of the face or mouth if the patient is anæsthetised with ethylene or mixtures of this gas with nitrous oxide or oxygen; (2) in cases where a double-airway endotracheal ethylene-oxygen anæsthesia is being given and the blast of the return airway is directed towards a naked flame, such as that of a steriliser; (3) in passing a tracheal catheter by means of a direct-vision laryngoscope with distal illumination. An imperfect contact or short circuit of the lamp might cause a minute spark, and for this reason the writer has now ceased inducing anæsthesia with ethylene-oxygen if a tracheal catheter is to be passed.

The question of spontaneous explosion must now be considered. Ethylene being an endothermic gas, it was thought possible that under high pressure explosion might occur in a similar way to acetylene. This fear, however, appears to be groundless, as in America thousands of cylinders of ethylene have been compressed to about 60 atmospheres and explosions are unknown. At this pressure, however, ethylene behaves in a curious way. The critical temperature of the gas is given by various authorities as between 10° C. and 13° C. In spite of this, ethylene compressed to 870 lb. per square inch at 18° C. does not behave as a gas, but follows no definite laws of pressure and volume, being apparently in some border-line condition between the gaseous and liquid states.

From these observations it will be seen that if ordinary care is used ethylene is safe, but it should be remembered that were an explosion to occur the consequences would be very different from those following the alarming, but comparatively harmless "ether flare," but will probably involve the death of the patient and serious injuries to the anæsthetist and other occupants of the theatre. One such explosion, involving the death of three persons, has recently occurred in America.

[Physiological Action.

Ethylene has an extremely powerful action on certain plants. For example, it was noted 15 years ago by Crocker and Knight that ethylene, in a concentration of 1 to 2,000,000 parts of air, caused open carnations to close. Upon animals and man a concentration of over 75 per cent. acts as an analgesic and anæsthetic. Spectroscopic examination of the blood drawn from patients under ethylene anæsthesia does not reveal any absorption bands, showing that the gas does not combine with the hæmoglobin, but is probably in a state of physical solution in the plasma. On discontinuing the administration the gas is very quickly eliminated, although traces can be detected in the breath for several hours.

The systolic and diastolic blood pressures and the pulse-rate appear to be practically unaffected by ethylene, provided that enough oxygen is given to avoid cyanosis. If this is allowed to develop, the pressures naturally rise. The depth and rate of respiration are also unaltered, provided that means are

taken to avoid accumulation of carbon dioxide. Muscular relaxation is a variable factor. All minor operations, except possibly the reduction of dislocations, can be performed under ethylene-oxygen alone, but most abdominal sections require the addition of ether or chloroform. There is no chemical action between these compounds, and the necessary amount of vapour can be added in the anæsthetic bottle of a sight-feed gas and oxygen machine.

To sum up, the general picture of a patient under ethylene-oxygen anæsthesia resembles one of natural sleep with a pink colour, normal pulse-rate and blood pressure, and with shallow regular breathing, the corneal reflex being present.

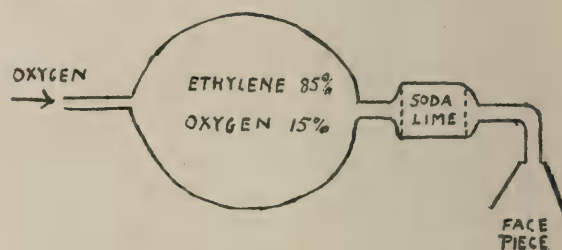
Administration.

Ethylene has been administered in a variety of ways as follows:—

1. *Ethylene and Air*, given with the usual simple gas apparatus. This method is quite satisfactory for short minor operations, such as dental extractions, the opening of abscesses, and the like. In dental cases the nasal method can be employed for the prolongation of anæsthesia in exactly the same way as with nitrous oxide.

2. *Ethylene-oxygen* with partial re-breathing. The writer has employed an ordinary Boyle's sight-feed gas and oxygen machine for this purpose and finds it quite satisfactory. It is wise, however, to check the enthusiasm of the nurse who lights the spirit-lamp on the older patterns of the machine to warm the reducing valves. The great feature of this method is that the majority of patients can be kept anæsthetised indefinitely on a mixture of 80–85 per cent. ethylene and 15–20 per cent. oxygen with no added ether. The result is a patient lying quite still with a pink colour. Most anæsthetists will agree that this is impossible with a pure gas-oxygen. Relaxation varies, but for abdominal cases some added ether is nearly always necessary.

3. *Ethylene-oxygen with Carbon Dioxide Absorption* and complete re-breathing. Since ethylene is exhaled



from the lungs unchanged, it follows that the same gas can be used again. The diagram illustrates the principle of the method. The two-gallon gas-bag contains the ethylene-oxygen mixture, and "to-and-fro" breathing takes place through a metal chamber containing granulated soda-lime to absorb the carbon dioxide. Sufficient oxygen is added to keep the colour pink. In practice a certain amount of leakage occurs and more ethylene must be added at intervals, but even so the method is extremely economical, as only about five gallons of gas are used in half an hour. The soda-lime must be changed when caked, but this does not occur till after four hours' use with a normal-sized filter. The most convenient apparatus to use is a Boyle's machine with the filter interposed between the bag and the face-piece, the stopcock being in the "no valves" position.

4. *Endo-tracheal Ethylene-oxygen*.—The writer has induced anæsthesia on several patients with ethylene-oxygen and then passed a tracheal catheter, continuing with endo-tracheal ethylene-oxygen. As previously

mentioned, although sufficient relaxation can be obtained to pass the catheter easily, the chance of explosion seems to render the method somewhat risky. Anæsthesia can be maintained with pure ethylene-oxygen, provided that the oxygen percentage is not allowed to rise too high, but for abdominal work or in other cases where great relaxation is required, some ether must be added.

Results.

The results obtained in the first 120 administrations of ethylene will now be summarised. The operations included abdominal exploration, amputation of the breast, excision of cysts, glands, ganglia and polypi, incision and drainage of abscesses, suture of tendons, circumcision, tonsillectomy, and dental extractions. The total time of anæsthesia varied between two and 58 minutes, while the age of the patients was from 2 to 62 years.

The average time for the induction of anæsthesia was 1 minute 50 seconds. No case gave rise to any anxiety during operation. Anæsthesia was completely satisfactory in 110 cases with ethylene or ethylene-oxygen only. In five of the remaining patients a little ether had to be added to secure the necessary relaxation. The rest of the unsatisfactory cases were all dental extractions which exceeded the estimated time, a nasal apparatus not being available. If this could have been used there is no reason to suppose that the anæsthesia could not have been extended to enable all the extractions to be completed. The "single-dose" method usually gives about 1½ minutes anæsthesia, which is longer than with a "straight gas" and rather shorter than with closed ethyl chloride.

After-Effects.

The noticeable lack of after-effects constitutes the chief advantage of ethylene anæsthesia. Out of 120 cases, only ten vomited at all and two of these had some additional ether. Most patients exhibit some aphasia for a few minutes after coming round, but if the time of anæsthesia has not exceeded ten minutes, they can usually walk without assistance three minutes after the face-piece has been removed. All the adult patients were questioned as to the smell, but only two complained at all strongly, the vast majority thinking that they had had nitrous oxide. From personal observation, the odour is distinctly perceptible for the first few breaths, but then becomes unnoticeable, as unconsciousness rapidly supervenes. The odour in the theatre is unusual, but is never strong enough to become a nuisance.

Patients are remarkably fit after ethylene anæsthesia. A good comparison with ethyl chloride was afforded by children having multiple dental extractions. Seventy per cent. of the patients who had had ethyl chloride vomited, and they had to be kept under observation for an average of 35 minutes. None of the children anæsthetised with ethylene vomited (59 cases), and they could be sent home after an average of ten minutes.

Conclusion.

These results agree substantially with the reports of large numbers of cases anæsthetised with ethylene in America, and appear to show that this gas has certain advantages over the other anæsthetics at present in use, especially for minor operations taking a moderate time and which require more than nitrous oxide.

The writer understands that limited quantities of ethylene are now available from Messrs. Coxeter, Pancras-road, N.W. 1. He wishes to express his thanks to Dr. W. H. Hurtley for the preparation of the gas and to Mr. Geoffrey Carte, Mr. T. P. Dunhill, and Mr. S. A. Withers for permission to anæsthetise their cases with ethylene. The majority of the cases cited above were anæsthetised at St. Bartholomew's Hospital and the Queen's Hospital for Children.

Clinical and Laboratory Notes.

TWO CASES OF ACUTE POLIO-ENCEPHALITIS.

By E. A. B. POOLE, M.D. DURH., M.H.,
D.P.H. LIVERP.,

MEDICAL OFFICER OF HEALTH, TAUNTON RURAL DISTRICT;
MEDICAL OFFICER, TAUNTON JOINT ISOLATION HOSPITAL.

RECENTLY, the two following cases of unusual infectious disease were admitted to the Taunton Joint Isolation Hospital, which seem worthy of record:—

CASE 1.—Male aged 17. Sent in from the local general hospital as a case of encephalitis lethargica.

Condition on Admission.—He had swelling about the throat, difficulty in speaking and swallowing, tonsils enlarged, fauces reddened, temperature normal; he had symptoms of bulbar paralysis and weakness of muscles of right leg. His face was dusky in appearance, and he was in great distress; there was no ankle-clonus, no Babinski sign, and the reflexes were very much diminished. Heart and lungs normal, no implication of the third nerve, and no history of double vision. He had moderate headache, marked retraction of the head, and Kernig's sign plus. He died ten hours after admission from failure of respiration, with a clear mind and no lethargy or mental symptoms.

The cerebro-spinal fluid was clear and not under increased pressure. The laboratory report was: Some alteration in the cellular elements; polynuclears in increased proportion. No organisms present; slight globulin reaction. Probably a case of aseptic meningitis.

I was informed by the house surgeon at the general hospital that before admission to the isolation hospital he had marked ankle-clonus, some rise of temperature, no retraction of the head or Kernig's sign, and that the knee-jerks were much increased.

CASE 2.—Male, aged 18, was admitted to the general hospital as a case of infantile paralysis and transferred to the isolation hospital as encephalitis lethargica.

Condition on Admission.—When admitted to the latter institution he had retraction of the head, Kernig's sign, no third nerve implication, no history of double vision, knee-jerks and other reflexes diminished, paralysis of the right arm, and a normal temperature. He also was in great distress with greyness of the face, his speech was normal, but he swallowed with difficulty. He had no mental symptoms or lethargy, and died after 12 hours from failure of respiration and with a clear mind.

The cerebro-spinal fluid was clear. The laboratory report was: No globulin reaction, no cellular alteration, no organisms present. Not a case of septic or tuberculous meningitis.

These patients came from different districts and from houses five miles apart and, as far as could be found out, had nothing in common. In the family of Case 2 a sister, aged 15, died in June, 1919, from typical encephalitis lethargica with profound coma. She was seen by me and I reported on the case to the Local Government Board. Since this girl's death this family has removed to another house about a mile away.

In addition to these, my attention was called to a third case which also terminated fatally in the cottage hospital of a town about seven miles away.

The patient was a female, aged 18, with a history of slight head injury a month previously and with a doubtful history of tuberculosis in infancy. She was ill for six days and had headache, some drowsiness and rise of temperature, but no third nerve implication. Her symptoms were much the same as in Case 2, and she, too, died from failure of respiration and with a clear mind. The cerebro-spinal fluid was clear and under some increased pressure, and the report was also indefinite. She was dead when the case was reported to me, so that I had no opportunity of examining her.

Commentary.

During the past 12 months there have been seven or eight cases of encephalitis lethargica in

these three districts. One of these was clearly incorrectly diagnosed; another was a child on a visit who remained for a day or so only and then returned home. The remainder were well-marked cases.

Whilst I ascribed these three cases to a "polio-encephalitis" of some sort I had great difficulty in the differential diagnoses. There were the following essential conditions to be kept in mind: (1) Epidemic cerebro-spinal meningitis; (2) poliomyelitis under various names, as "Heine-Medinische Krankheit," or the Heine-Medin syndrome, polio-encephalomyelitis, antero-myelitis, epidemic paralysis, &c.; (3) polio-encephalitis; (4) encephalitis lethargica, also known as acute infective ophthalmoplegia, epidemic toxic ophthalmoplegia, epidemic stupor, &c. As each of these four groups was a notifiable infectious disease, returnable to the Ministry of Health, each was presumably a separate entity.

Some 50 epidemics of poliomyelitis have been recorded since 1840, mostly in Scandinavia and the United States of America, and with very few in England; and although there is no essential difference in the classifications given by Medin and by Wickmann, Medin's report alone showed cases which could be described as "polio-encephalitis." Apparently there were none in the New York epidemics, nor were the epidemics followed by sporadic cases with symptoms like those of encephalitis lethargica.

It would seem that Landry's paralysis in an adult is always poliomyelitis and that whilst polio-encephalitis is rare, that rarity would not exclude it from the Heine-Medin group, especially when one remembers how the predominant symptoms of other epidemic diseases vary from epidemic to epidemic. Whether the classification of the Heine-Medin syndrome should be enlarged to include typical cases of encephalitis lethargica seems doubtful; on the other hand, it may possibly be later shown that some of the groups now included with that syndrome should rather be classed with encephalitis lethargica. A careful consideration of the Local Government Report No. 121, on Encephalitis Lethargica, does not help much, and leaves the impression that an attempt was made to mark off a new disease by excluding those cases with symptoms pointing to poliomyelitis. The differentiating factor was permanent extremity paralysis, which in my two cases does not help.

There is clearly a polio-encephalitis, with or without spinal symptoms, of the Heine-Medin group, and a polio-encephalitis without the lethargy of the new disease. Although stupor is present in 80 per cent. of the cases of the latter condition, it is often a late symptom, and hence would be absent in a case rapidly terminating fatally. Besides, the bulk of the cases of polio-encephalitis appear to be fatal in from four to six days. The symptoms obviously depend on the particular parts of the brain and cord implicated. The clinical picture in a given case varies rapidly from day to day, and unless there is time to observe permanent paralysis or definite lethargy, it is clearly impossible, in sporadic cases and apart from an epidemic, to distinguish between the two diseases. Histologically encephalitis lethargica belongs to the class of polio-encephalitic diseases: both are inflammatory in nature, the organisms stated to have been found are similar, and there is no real difference in the cerebro-spinal fluid; in fact, the two reports showed that the specimens varied little, if at all, from the normal. In poliomyelitis there is usually a difference, whilst in encephalitis, as a general rule, there are no appreciable changes, although occasionally changes are found similar to those in the former disease. In any case these two conditions suggest a relationship to one another like that of typhoid to paratyphoid fever. Both are transmitted by carriers, not themselves necessarily ill, and in both the infection is by way of the nasopharynx.

A CASE OF

TONSILLECTOMY IN A BOY WITH CONGENITAL HEART DISEASE.

By S. G. PAPADOPOULOS, M.B., B.S. LOND.,
LATE MEDICAL SUPERINTENDENT, MILLER HOSPITAL,
LONDON, S.E.

THE following case is interesting on account of its unusual character:—

The patient, a boy aged 15, was suffering from congenital heart disease (apparently a patent foramen ovale), being extremely cyanosed and poorly developed. He had very large tonsils, almost touching in the middle line, with attacks of bleeding from the surface of the tonsils and also from the posterior nasopharynx, discharging ears, and pigeon-chest due to obstructed breathing. I first saw him two years ago and suggested operation, not only for the improvement of his breathing and the ear discharge, but also as his only salvation, as repeated attacks of tonsillitis were making his life precarious. Since then he saw two or three throat specialists, who, owing to his heart condition, advised against operation. I saw him again in the middle of August. His condition was much worse; he had repeated attacks of bleeding and colds. The bleedings were due to general oozing from the surface of the tonsils and pharynx. Gargling with liq. fer. perchlor. and adrenalin easily stopped it.

Operation was again advised as his one chance, and was at once agreed to.

Operation.—The operation took place on Sept. 4th, 1924. Anaesthetic A.C.E. (very light). The patient took the anaesthetic very well, and the tonsils were enucleated and adenoids scraped. He bled moderately during and soon after the operation and vomited blood once. There was no bleeding between 8.15 and 10 A.M. At 10 A.M. sharp bleeding commenced from mouth and nose, and he vomited 6 oz. of blood. Adrenalin swabbing stopped the bleeding temporarily. There were no bleeding points to be tied. At 10.30 A.M. he bled again, and vomited half a pint of blood. At 11 A.M. a gargle of liq. fer. perchlor., 1 drachm to the ounce of water, stopped the bleeding at once. The fauces were examined, and there was no bleeding whatever. Clots were formed. Gargles were continued half-hourly. From this time on no bleeding took place from the seat of the operation. At noon he vomited half a pint of blood, which was repeated at 2 P.M. and again at 3.30 P.M. in large quantities. Pulse 116. By now he began passing pure blood per rectum. There was no bleeding from the nasopharynx, and I came to the conclusion that the bleeding was due to oozing from the mucosa of the stomach and intestinal tract. At 3.30 I gave him $\frac{1}{4}$ in. of adrenalin hypodermically, and at 4 P.M. he vomited a large quantity of blood. Things were looking very alarming, and I decided to try hypodermically an injection of coagulen Ciba. I gave him at 4 P.M. 5 c.cm., and the patient was allowed ice to suck. He slept until 7.30 P.M., when he vomited half a pint of blood and passed per rectum a similar quantity. Saline given per rectum was returned mixed with blood. I repeated coagulen Ciba 15 c.cm. hypodermically, and ten minutes later $\frac{1}{4}$ gr. of morphine. The effects were most gratifying. He slept soon afterwards, except for sips of water, until noon the next day.

Since then he made an uninterrupted recovery. He never vomited or bled by mouth or rectum after the second coagulen injection. The following night he had another $\frac{1}{4}$ gr. of morphine. He began to take fluids freely, and by the 6th his pulse fell to 92. On the 10th he was up and about in the room. His breathing is easy, he sleeps without snoring, and his ears are drying up. His colour is better, his heart regular, and his pulse normal.

Jan. 9th, 1925: The boy is now going to school; he has had no "cold" since the operation. He is gaining weight and looks much healthier.

Remarks.

The unusual type of hæmorrhage I attribute to the poor coagulability of the blood due to the mixing of venous with arterial blood. I had not before seen congenital heart disease or organic valvular disease in young people give trouble under careful anaesthesia. I was also struck by the almost magical action of the coagulen, and intend to try it again in any future case of intractable hæmorrhage. I propose also to put the patient on calcium lactate to prevent his tendency to bleed.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

JOINT SECTIONS OF MEDICINE AND ELECTROTHERAPEUTICS.

A JOINT meeting of these Sections took place on Jan. 16th, Dr. ROBERT HUTCHISON, President of the Section of Medicine, presiding, supported by Dr. STANLEY MELVILLE, President of the Section of Electro-therapeutics.

"ELECTRONIC REACTIONS."

Sir THOMAS HORDER, on behalf of himself, of Dr. C. B. HEALD, Colonel H. P. T. LEFROY, Mr. WHATELY SMITH, and Mr. M. D. HART, made a communication upon this subject. In his prefatory remarks Sir Thomas Horder thanked the joint sections for a liberal-minded decision to accept the communication which he described as "concerned with the procedure and results of an investigation of which the object was to determine, as conclusively as might be practicable, whether there be any valid basis for the claims put forward in respect of the so-called electronic reactions of Abrams (E.R.A.) or of any analogous technique allied thereto or developed therefrom." Other introductory points made by Sir Thomas Horder were, that the inquiry which he was now reporting upon had been confined exclusively to the "reflexophone" apparatus of Abrams and to the "emanometer" of Boyd, the latter being, he explained, not a variation of the apparatus of Abrams, but "a design de novo based on a different conception of the phenomena involved." He wished to thank Dr. W. E. Boyd, of Glasgow, for giving the fullest facilities for investigation, and, in referring to Dr. Boyd's work on the relation of certain electrophysical phenomena of homœopathy in special reference to the E.R.A., he wished for himself and his co-investigators specifically to emphasise that no recognition of homœopathic doctrines was implied as regards either fundamental principles or clinical methods.

Previous Critical Views.

Sir Thomas Horder then demonstrated upon the screen the emanometer of Boyd and the reflexophone of Abrams, the claims of Abrams being described as of a character to ensure reception by medical and lay critics alike with scepticism tantamount to hostility. He said that the essential features of the Abrams diagnostic technique were substantially as follows. "The specimen, usually a drop of blood on filter-paper, is placed in a box called the 'dynamizer' containing three electrodes; of these the two lower, on which the specimen rests, are electrically connected to earth, while the third, which forms part of the lid, is connected in series with three resistance boxes. The first of these is called the 'amplifier,' while the second and third are known as 'reflexophones.' From the second reflexophone a wire passes to another electrode placed in close juxtaposition with the forehead of a normal, healthy person standing on earthed plates facing west, and known as the 'subject' or 'medium.' Certain areas on the abdominal wall of this 'subject' are then percussed by the operator, and for each such area the first reflexophone is adjusted until the normal percussion note changes to 'dull'; the readings of the reflexophone corresponding to such changes of note are known as 'rates,' and these, taken in conjunction with the position of the abdominal area under percussion, are interpreted in terms of the pathological or other characteristics of the patient from whom the specimen was obtained. The 'intensity' of the disease is estimated by altering the second reflexophone until the reaction disappears and the percussion note resumes its normal character. The apparatus, as re-designed by Dr. Boyd and named the 'emanometer,' differs in several respects from that described above, although it equally involves—at present—the

use as a detector of a normal human subject standing on earthed plates facing west, or, more strictly, at right angles to the horizontal component of the local magnetic field. A receiving plate is connected through a variable inductance and a variable condenser in series therewith to an electrode strapped to the subject's forehead. The specimen—whether chemical or physiological—is carried in a holder, of which one side is earthed, and this holder may be moved nearer to or further from the receiving plate of the apparatus in order to measure the intensity of the reactions. Tuning is effected by varying the value of the inductance instead of by adjusting the first reflexophone or resistance box, as in the Abrams technique, but the processes of abdominal percussion are substantially identical in the two methods. An outstanding feature of the Boyd apparatus—as contrasted with that of Abrams—is the incorporation of earthed metallic screens which are claimed to eliminate contamination from external sources; these screens are made either of sheet copper or of copper gauze having a mesh of about 30 to the inch."

Sir Thomas Horder continued as follows: "A certain number of practitioners obtained, by sending specimens to Abrams for diagnosis, results which persuaded them that some at least of his claims were not wholly unfounded, and the technique accordingly spread until at the present time there are, it would appear, many hundreds of exponents of his diagnostic and curative methods in the United States of America alone. It is true that of these adherents all too large a proportion are of the variety known as 'advertising specialists,' but there has always been, and still is, a certain reputable minority who, whether they have adhered to the original Abrams apparatus, or like Dr. Boyd, have devised conspicuous modifications, have sought patiently and sincerely to elucidate the problems involved and to eradicate such errors as they have encountered. This fact, taken in conjunction with the importance of the issues at stake, should have sufficed to ensure for the technique a judicial and painstaking investigation and to save it from the bigoted and a priori condemnation in which, actually, critics almost exclusively indulged, and of which alone the majority appear capable. It would be idle to deny that Dr. Abrams constantly put forward the most startling claims on the slenderest evidence; that he persistently evaded test conditions; that he expressed himself in a jargon characteristic of charlatany; or that he had no scruple in selling or leasing to others, at high charges, apparatus crudely constructed and at best imperfectly developed. But all this, although indicating an unfortunate lack both of scientific method and of scientific conscience, is no justification of the manner in which the subject has been handled by critics. For the possibility should not have been forgotten that Dr. Abrams might, in fact, have lighted upon a discovery of genuine scientific importance and yet have elected to exploit it to the utmost for immediate advantage in preference to entering upon a prolonged, laborious, and financially unprofitable research. The sequence of events in the present case has been closely similar to the case of Mesmer, and it is at least certain that the methods of criticism hitherto employed have served mainly to create an atmosphere of bitterness and suspicion without contributing in any proportionate degree to the settlement of the issue. It is, indeed, not at all surprising that the ineptitude displayed has so alienated the sympathies of electronic practitioners that they have frequently refused to submit to the 'tests'—so-called—which have been suggested, although on the other hand their omission—speaking generally—to recognise the limitations of their methods or to suggest fair trials which they might be capable of satisfying is greatly to be regretted."

Sir Thomas Horder then briefly referred to the critical attitude with which various papers in this country and the United States received the claims of Abrams, and indicated that an investigation by the *Scientific American*, having been conducted by a committee on sound lines, had been taken as finally

adverse. The verdict of the committee was, he said, to find that the claims advanced on behalf of E.R.A. and electronic practice in general were not substantiated and had no basis in fact, and that the so-called electronic reactions did not occur and the treatments were without value.

The Present Investigations.

Sir Thomas Horder then explained the genesis of the new investigations which originated in the view of Dr. Heald, medical adviser to the Director of Civil Aviation, that, if there should be anything in the claims of the Abrams school an inquiry might with advantage be conducted on lines similar to those of a number of investigations which have been initiated in the Department of Civil Aviation during the past six years. Sir Sefton Brancker, Director of Civil Aviation, authorised a preliminary investigation, the result of which was that the Air Ministry, though maintaining a cordial interest, did not feel disposed to conduct an official research or to refer the matter for that purpose to the Medical Research Council. Dr. Heald then pursued his investigations as a matter of personal interest, when he found that much specialised knowledge outside the scope of normal practice made it necessary to enlist the services of Colonel Lefroy, head of wireless research at the Air Ministry, and Mr. Hart and Mr. Whately Smith, who are engaged in physical research work on behalf of the War Office and Air Ministry respectively. Sir Thomas Horder said that he had consented to act as chairman of a committee thus constituted. The work of that committee he defined as an inquiry under two headings, the first, purely physical, being the question whether the blood and secretions of a patient give out any form of energy which can be detected and measured by known physical means; the second being, what relation does any tuned and recorded "electronic energy" bear to known pathological conditions? He gave an account of the *prima facie* evidence which persuaded the investigators that the claims of electronic practitioners were not necessarily all ill-founded, but pointed out that a second phase was reached at the investigations by Dr. Boyd and Mr. Whately Smith in June of 1924.¹

Sir Thomas Horder then selected three cases of special interest as being of a sufficiently concrete nature to admit of reasonably succinct description, the purport being to show that the results obtained could not reasonably be attributed to pure chance, to ingenious guesswork, or to deception. Four series of tests were carried out, the results of which were summarised as follows: In the first series, 12 trials were successful and 8 were failures; in the second, 10 were successful and 2 were failures; in the third, 8 successful and 4 failures; in the fourth, 16 successful and 4 failures. Total: 46 successes and 18 failures out of 64 trials. It is easy to calculate the chances of these results being accidental, for if it is assumed—which the speaker found legitimate—that the demonstrator could not know by sight or by hearing the position of the screen, it is clear that his chance of giving by guesswork a correct answer in any given case is one-half. "Actually the chances are," said the speaker, "approximately as follows:—First series: 1 in 8 or 7 to 1 against. Second series: 1 in 62 or 61 to 1 against. Third series: 1 in 8 or 7 to 1 against. Fourth series: 1 in 216 or 215 to 1 against. Or, if the whole set of 64 trials be taken collectively, the chance of 46 successes or more being obtained by accident is about 1 in 3038 or odds of 3037 to 1 against."

Nature of the Problem.

"As evidence began to accumulate," Sir Thomas Horder continued, "the problem of how best to deal with the situation became increasingly acute. It is easy to condemn a novel and somewhat fantastic technique on *a priori* grounds, and it is not difficult

to establish a new discovery—even in the face of hostile criticism—if its phenomena can be easily reproduced and explained in terms of accepted scientific principles. But if in addition to their strangeness the phenomena be erratic and difficult to demonstrate and if their causes be in a high degree obscure, then special precautions must be taken in order to ensure a convincing outcome for the investigation. This was essentially the position which confronted the present investigators, and it will be desirable to give a few words in explanation of the reasons which determined their plan of action. The study of such phenomena as the so-called 'electronic reactions,' here considered, falls naturally into three distinct phases or aspects which may be referred to as demonstration, explanation, and interpretation respectively. In other words, there arises first the question of whether the phenomena under consideration occur at all; second, that of why they occur; and third, that of what significance they may possess. Now, the first aspect is of paramount importance in the earlier stages of an investigation of this kind; for provided it be shown beyond reasonable doubt that new phenomena exist there is not likely, in these days, to be any difficulty in ensuring an adequate study of their causes and their significance. But although this be true, there is no doubt that a demonstration supported by a reasonable explanation is likely to be more convincing and more readily accepted than a bare asseveration of facts which, however well these may be evidenced, must stand alone on their own merits. It was accordingly decided to conduct, in the first instance, a series of essentially physical experiments in order to determine whether the 'reactions' (i.e., the changes in the percussion note and the concomitant effects apparent only to the operator) were accompanied by any changes (e.g., in the electrical condition of the skin) which could be detected by physical apparatus of an ordinary type. And it was decided also to leave temporarily on one side all questions of the manner or degree in which the reactions, if any, might be correlated with disease or with any other physiological conditions of the persons from whom specimens might have been taken. It was thought that some relatively gross effects, similar, for example, to the change in skin resistance associated with the psycho-galvanic reflex, might be discovered, and that these would not only enable the existence of the phenomena to be demonstrated beyond cavil, but would also point the way towards the elucidation of their origin. Even in the event of experiments on these lines yielding negative results, the labour involved would not, it was decided, have been wasted; for if the reality of the phenomena were to be subsequently established a good deal of ground would have been cleared while, in the alternative case, it would not be possible for the 'electronists' to complain that any reasonable line of inquiry had been overlooked."

At this point the services of Mr. H. StG. Anson were requisitioned. This observer, said the speaker, was recommended by Faraday House as being exceptionally well qualified to undertake original work in experimental physics, and conducted experiments partly in London and partly with Dr. Boyd in Glasgow, over a period of some five months. He attempted to obtain instrumental evidence of some change in the electrical condition of the patient's skin concomitant to the variation of the percussion note and to obtain graphic records of the acoustical phenomena. Much of the work remained abortive, and in view of the negative results obtained

Crucial Tests

were embarked upon. Sir Thomas Horder continued:—

"In view of these considerations, it was decided to rely exclusively on tests of such a character that the value of the results obtained could be unequivocally computed by mathematical methods and to persevere with a series of such tests until it became apparent that their general tendency was either towards results

¹ Mr. Whately Smith's communication formed Appendix I, to the Report.

reasonably attributable to chance alone or else towards figures which could not rationally be ascribed to such causes.

The first test of this kind was carried out in London in May, 1924, with the co-operation of Dr. W. R. McCrae, assisted by Dr. Boyd. It took the form of an attempt to separate correctly 20 pairs of specimens of sputa taken from two patients chosen and approved by Dr. McCrae. Twenty specimens were taken from each patient by Dr. Heald and Mr. Whately Smith and were arranged by them in pairs and numbered according to an arbitrary key. Each pair contained one specimen from each patient, but there was nothing to indicate which was which. Control specimens were taken by Dr. McCrae. The outcome of the test was unfavourable to the technique, for of the results returned by the exponents 11 only were correct, while nine were wrong; which is just the kind of result which would be expected if chance alone were operative. In a memorandum addressed to the investigators, Dr. Boyd ascribed this failure to two main causes—namely, first that the screening arrangements then available at Dr. McCrae's laboratory were insufficient to ensure complete freedom from 'contamination,' and second, that the time required for examining, checking, and re-checking 40 specimens was so great that many of them became stale before they could be dealt with—a tendency liable to be aggravated by the necessity for avoiding undue fatigue on the part of operator and subject. He also expressed a desire that further tests of a slightly different character, but equally conforming to the requirements of the investigators, should be carried out in his own laboratory at Glasgow. To this suggestion the investigators willingly agreed, and on June 6th, 1924, Mr. Whately Smith visited Glasgow for the purpose. His full report is given in Appendix I., and the following quotation and abbreviated account of the tests is given here merely to show the kind of results obtained and the type of procedure adopted.

The first test consisted in discrimination between two apparently identical substances which were presented by the experimenter (Mr. Whately Smith) in such a way as to be indistinguishable by visual or other normal methods. Of 25 successive trials all were successful; the chance of this result being obtained by accident is 1 in 33,554,432.

Mr. Whately Smith's full account of this test runs as follows: 'The laboratory measures about 12 ft. by 6 ft. and is completely "screened" throughout as a precaution against radiation from sources other than the specimen under test; the floor is made of copper sheets, while the walls and door are covered with thirty-mesh copper gauze, all such surfaces being in metallic contact. Gauze screens are disposed about the room in various positions in such a way as to reduce the chances of interference by reflection to a minimum. In the end wall remote from the door is a window in which copper gauze takes the place of glass and which is provided with a hatch, about 12 in. wide by 18 in. high, fitted with a sliding gauze panel which can be raised or lowered by means of a chain and pulleys. Just inside this hatch is a narrow shelf on which test substances may be placed. This hatch communicates with an outer office in which drugs, papers, and other stores are kept, and it was from here that I conducted all tests, inserting specimens through the hatch as was required. After inspecting the laboratory and apparatus, the first test was attempted. From a group of about a dozen sterilised bottles and corks I selected two closely similar examples of each. One bottle was filled to a depth of about $\frac{1}{4}$ in. with a white granular substance believed to be "active," the other to an equal depth with a substance of identically similar appearance alleged to be "neutral." The corks were inscribed "sulphur 10 m." and "blank," respectively, in small characters. I satisfied myself by personal trial that it was utterly impossible for either the "operator" (Colin Campbell) or the "subject" (James Watson)—two Gallowgate boys—to distinguish the bottle visually when placed in position on the shelf just

inside the hatch. This was due to (a) the very dim light illuminating the bottles when in position; (b) the several thicknesses of copper gauze which in each case obscured the view; and (c) the close similarity of the bottles themselves. Dr. Boyd, Miss C. (his secretary), and myself then withdrew to the outer office and I inserted the two bottles "S" and "B" alternately through the hatch until the operator professed himself as satisfied with the tuning and as prepared to discriminate between the two substances. I then conducted a test consisting of 25 trials. For each trial I raised the sliding panel of the hatch, inserted a bottle, dropped the hatch and waited for the operator to say whether the reaction obtained was "dull" (corresponding to the "active" substance) or "clear" (corresponding to the "neutral" substance). The decision was practically always given within a second of dropping the panel, and on several occasions even before I had fully withdrawn my hand; I found it, in fact, difficult to keep pace with the operator. While this was going on, Dr. Boyd and Miss C. were, for the greater part of the time, just outside the room in which I was working, but continuously within sight. I was very careful to vary the order in which I presented the bottles and also to shuffle them frequently, so that no possible observation of my movements by operator or subject could furnish any clue as to which bottle would next be presented. After trials 8, 10, 12, 16, and 19, the operator asked, and was allowed, to check the two substances—that is to say, first the one and then the other was presented, and he was told which was which. After trial 10 the subject went out and washed in order to remove possible contamination.'

"The second and third tests," continued Sir Thomas Horder, "involved the selection and identification, in each case, of one specific substance from among a number of others; both were completely successful, and the chances of their results being obtained by accident were respectively 1 in 180 and 1 in 7776. These tests, like all the others, were conducted under conditions of control which appeared to be perfect. The fourth test was a repetition of the first. The operator gave 18 correct replies in 20 trials, and it seems probable that the two errors were due to faulty manipulation by the experimenter. But even if this be ignored, the chance of the actual result being obtained by accident is no more than 1 in 5518.

The fifth and last test was a screening experiment conducted on much the same lines as that already mentioned in an earlier section. Of 16 trials all were successful; the chance of this being due to accident or guesswork is 1 in 65,536. It was quite clear from these figures that the results obtained, whatever their true origin, could not reasonably be ascribed to the operation of chance alone. The only alternative to accepting the apparent phenomena as genuine was to assume either that Mr. Whately Smith's report was grossly inaccurate or else that he himself had been deceived by trickery—possibly pathological—on the part of Dr. Boyd or his assistant.² Both these possibilities appeared to the investigators to be exceedingly remote. It was, however, represented that an issue so important as this should not be allowed to depend on the unsupported testimony of any single observer, and the desirability of conducting a repetition of the tests described in order to confirm or refute these results as conclusively as possible was strongly urged. It was further pointed out that although the other investigators could deal adequately with the question of accurate reporting, it would be advisable to enlist expert assistance with respect to the possibility of fraud on the ground that no one who does not possess specialised knowledge of a high order is competent to express an authoritative opinion on such matters.

² It is desired specifically to emphasise the fact that at no time has there been the smallest suspicion or appearance of mala fides on the part of Dr. Boyd or any of his associates. The precautions taken were adopted purely as a matter of principle and to anticipate possible criticism.

The investigators accordingly approached Mr. E. J. Dingwall, M.A., and invited his coöperation in this aspect of the work. Mr. Dingwall is research officer to the Society for Psychical Research and has made a special study of the methods of deception and prestidigitatory technique associated with such matters as spurious 'clairvoyance,' 'billet reading,' 'spirit photography' and similar performances in which chicanery is frequently encountered and of all of which he possesses a world-wide experience. In the opinion of the investigators he represented the highest available authority on the subject, and they considered that although, strictly speaking, the only way of excluding trickery absolutely would be to repeat the tests in person using specially constructed apparatus and independent subjects; yet if an expert of Mr. Dingwall's calibre failed to detect any suspicious indication, they need feel no further uneasiness on this score, especially in view of the considerable bulk of collateral evidence with which they were already acquainted. Mr. Dingwall kindly consented to act as consultant in this matter and in due course accompanied Sir Thomas Horder, Dr. Heald, and Mr. Whately Smith to Glasgow on August 29th, 1924.

The tests conducted were substantially identical with those performed by Mr. Whately Smith in the course of his earlier visit, and the degree of success attained by Dr. Boyd was not less impressive.³ Mr. Dingwall carefully noted the arrangements and procedure and made certain suggestions as regards screening, &c., all of which were duly carried out without reacting in any way adversely on the success of the tests employed. It would therefore appear that, subject only to the theoretical reservation made above, all possibility of deception may safely be regarded as eliminated. The other investigators were entirely satisfied with the conditions of the tests and demonstrations given, and formed the opinion that no more convincing exposition of the reality of the phenomena could reasonably be desired.

Conclusions.

In view of the general considerations and concrete evidence cited in this paper, the signatories consider that the following conclusions are justified: (1) That certain substances, when placed in proper relation to the emanometer of Boyd, produce, beyond any reasonable doubt, changes in the abdominal wall of 'the subject' of a kind which may be detected by percussion. This is tantamount to the statement that the fundamental proposition underlying, in common, the original and certain other forms of apparatus devised for the purpose of eliciting the so-called electronic reactions of Abrams, is established to a very high degree of probability. (2) That no evidence justifying this deduction is yet available from the work of those who practise with the apparatus as designed by Abrams himself. (3) That the phenomena appear to be extremely elusive, and highly susceptible to interference, so that in order to obtain reliable results it is necessary to take the most elaborate precautions, particularly as regards the elimination of effects due to irrelevant objects. (4) That it would be premature at the present time even to hazard in the most tentative manner any hypothesis as to the physical basis of the phenomena here described.

It is impossible to emphasise too strongly that nothing in this communication is to be taken as implying that any correlation of those changes in the abdominal wall, referred to in conclusion (1), with pathological conditions has yet been shown, or a fortiori that any justification—physical, pathological, nosological, or clinical—exists for the direct use of either the Abrams or Boyd apparatus in diagnosis or treatment.

Bearing of the Conclusions upon Medical Practice.

Seeing that the electronic reactions of Abrams had their inception in the field of medicine, this communication will scarcely be complete without a reference to the question which will immediately be asked by many who read it: 'What relevancy have

the facts now demonstrated to the diagnosis and treatment of disease?' The electronic practitioner will probably answer, 'A great deal'; though he may protest that the demonstration has been entirely redundant; or, less ungracious, he may accept the demonstration as merely helping to establish further the claims he has already made. But in reality the answer must clearly be that the conclusions in this communication, as they now stand, are not in the slightest degree pertinent to the diagnosis or treatment of disease in any practical sense. That is not to say that they may not possess all sorts of potential bearings upon both of these things. But until the research is taken much further, and until either the explanation, or the significance, of the facts recorded shall be forthcoming, the application of the communication in the field of medicine is nil. At present there is no known correlation between the phenomena described and the fundamental facts of pathology, so that the value of this communication to the practising physician can only be negative.

As already stated, the present investigators have concerned themselves solely with the establishment, to their satisfaction, of certain basic facts. In view of the urgent need of an answer to the question 'Does anything happen?' they are satisfied for the moment with being able to say in effect, 'Something does happen.' Both the explanation and the application of the facts established await further investigation. Which of these will come before the other it is impossible to say, but until one of them arrives the mere statement of the phenomena here described gives no sort of sanction to any practitioner for using the Abrams method in practice. He may, of course, find a legitimate sanction elsewhere; for example, he may show results so consistently good as to justify him in continuing to use the Abrams apparatus in his daily work. But there is no evidence that even the most adept exponent obtains results so consistent as to justify him in doing more than experiment privately with the method. The present investigation clearly suggests one reason, and in itself a sufficient reason, why the electronist's⁴ results cannot but be inconsistent—namely, the absolute necessity for efficient screening as proved by Boyd. That it has not been found by electronists generally that such screening is imperative in order to eliminate errors, is in itself a damning proof that the haste with which the method has been carried into the consulting room has prevented any proper investigation of its limitations or of its potentialities. It seems probable that such developments as may take place on the clinical side are most likely to proceed from the methods initiated by Dr. Boyd, and still in process of elaboration by him.

By the term 'consistent results' is meant not the conformity of the electronist's diagnosis with the clinical and pathological facts of the case—concerning which reference will be made later—but some reasonable degree of conformity as between the results obtained by different electronists working upon the same material, and as between the results obtained at different sittings held by the same electronist, equally working with the same material. But this reasonable degree of conformity has been conspicuously absent in both cases. In the various efforts made by individual members of the present Committee to obtain evidence of 'something happening' by submitting tests of a simple kind to electronists willing to coöperate in this fashion—tests which it has not been thought necessary to specify in detail in this communication—lack of consistency has been very striking. On more than one occasion the electronist has admitted the discrepancies in his own results, and has on this account considered them unreliable and therefore to be disregarded.

There are in the hands of the committee details of experiments, carefully devised with a view to testing consistency of results, and submitted to exponents

³ A full account, said the speaker, is given in Appendix II.

⁴ This word is exclusively used, said the speaker, to refer to those who rely upon the apparatus and technique of Abrams.

of the Abrams method but with conspicuous failure. All account of these experiments has been omitted from this communication at the express request of the practitioner who was chiefly concerned pending further research. These belated misgivings may have been prompted by the knowledge of the imminence of a report of experiments carried out in such a way as to yield unimpeachable results. Here was an opportunity for some electronist, from whom the saving grace of the scientific spirit has not wholly departed, to come forward and acknowledge publicly the glaring inconsistencies which inevitably and constantly face him in his daily practice. But the opportunity has been missed. To turn king's evidence is never popular and oft-times unprofitable.

When electronists have been asked for an explanation of such inconsistencies as those referred to above they have sometimes attributed them to lack of expertness in their use of the methods and sometimes to new and startling discoveries as regards fallacies of dimensions so large that their very existence would seem, to any unbiased mind, to throw the whole thing back into the melting pot. But neither the modesty which may be supposed to dictate the first explanation, nor the fallacies referred to in the second, would appear to induce any such hesitation in actual practice. The practising electronist is not in the habit of prefacing his diagnosis by declarations of his own lack of skill, nor by any reference to such confusing facts as, for example, that unknown factors cause the same 'reaction' to be given by a carcinoma of the oesophagus and by pulmonary tuberculosis, or by simple gastric ulcer and by cancer of the stomach. No doubt any such prefaces, if systematically adopted, would quickly dispose of electronic practice altogether! It is obvious, therefore, that there is, at present, no proper sanction for the use of the electronic reactions of Abrams on the ground of consistency of results, whether as between different workers or as between the results obtained by the same worker at different times. But even supposing that such glaring discrepancies can be eliminated by proper attention to technical points such as the screening which Boyd finds so essential, and by the substitution of the Boyd apparatus for that of Abrams, sanction will still be lacking so long as there exists no demonstrable correspondence between the 'reactions' found and known pathological states. For patients do not suffer from 'reactions'; they suffer from anatomical and physiological disturbances. If it should be claimed by the electronist that the establishment as criteria of his 'reactions' is of greater moment to the patient than is the recognition of tissue changes and of the disfunctions of organs, then the onus lies with the electronist of stating adequate reason why the whole criteria of disease, as built up by the sciences of morbid anatomy and morbid physiology, should be revolutionised in this manner. This onus has never been accepted.

There is one other thing which may justly be regarded as a condemnation of electronic practice; electronists have been hard at work for some ten years; they have 'diagnosed' and 'treated' thousands of patients; yet no contribution to pathology, which is the bed-rock of medicine, has been made by any of them. Surely this is a significant fact, when it is remembered how epoch-making are the claims made on behalf of E.R.A.

To sum up. The conclusions arrived at in this communication leave the position of the practising electronist as scientifically unsound and as ethically unjustified as it was before. They give no sanction for the use of E.R.A. in the diagnosis or in the treatment of disease. Nor does there appear to be any other sanction for this kind of practice at the present time."

The PRESIDENT, after thanking Sir Thomas Horder and his colleagues for the report, put it to the vote of the meeting whether there should be a discussion upon it now or later, when the meeting decided against each alternative.

SECTIONS OF PSYCHIATRY, NEUROLOGY, EPIDEMIOLOGY, AND DISEASES OF CHILDREN.

A COMBINED meeting of these Sections of the Royal Society of Medicine was held on Jan. 13th, Dr. R. H. COLE, Vice-President of the Section of Psychiatry, in the chair.

Prof. EDWIN BRAMWELL opened a discussion on the MENTAL SEQUELÆ OF ENCEPHALITIS LETHARGICA.

He said that there had been considerable modifications in our views of this disease since the early cases were met with; the condition was now known to be much more varied and serious, with an onset that might be insidious and a course slowly progressive, remissions occurring months or years after apparent "recovery." It was difficult to draw the line between symptoms and sequelæ. While mental symptoms might predominate they were rarely if ever pathognomonic. Those which had impressed him most in adults were slow cerebration, mental fatigue, defective application and lack of interest in affairs. Recent memory impairment, while striking in one or two cases, was not a well-marked symptom on the whole; patients were usually unable to recall the early stages of their illness, but that was all. Great depression was unusual; there had been in his practice no cases of suicide, though two of his patients had spoken of it vaguely; usually they were complacent and did not worry over their condition. As an example of a common sequela, he cited a lawyer, previously a noted wit and after-dinner speaker, who completely lost his powers of repartee and his ability to tackle any new problem outside the routine of his work. This lack of spontaneous activity was characteristic; there seemed to be a general process of levelling down, the striking features of the individuality being lost. While disorientation and confusion were common at the outset, occasionally amounting to mania, and anxiety states might supervene on the failure to return to normal life, true psychoses were rare.

Encephalitis in Children.

In children Prof. Bramwell had met much the same phenomena, with the distinctions of a frequent failure on the moral side and a marked disturbance of sleep rhythm, the children being extremely restless at night. They lost the capacity for learning, although retaining the knowledge acquired before the illness. They lost interest in games, became careless about clothing and cleanliness, irritable, mischievous, destructive, dirty, cruel, obscene, untruthful, dishonest. Such changes in disposition were not commonly met with in the adult. While the mental symptoms were not generally adequate for a diagnosis, the history was usually sufficiently suggestive. A story of never having been well since an attack of "influenza" would be given, an influenza in which there had been no catarrhal symptoms and which had not spread to other members of the household; the patient would be said to have been drowsy or sleepless, with noisy respiration, so-called "chorea" or jerky movements, double vision for a few days perhaps, or an onset with an agonising pain for which no satisfactory reason could be assigned. The motor sequelæ might be very varied: Parkinsonian syndrome, some want of mobility of the face, some stiffness of trunk in turning, an unnatural pose of arm or hand, tremors and anomalous movements of all kinds would suggest the possibility of encephalitis lethargica.

Prof. ARTHUR HALL dealt with the subject from the aspect of the child patient only, these constituting, in his experience, some 40 per cent. of the cases. He pointed out that from this point of view the disease presented us with an entirely new picture, calling for new measures. The toxin selected those upper and upper-middle regions of the central nervous system which are not well-organised until adult life, and the damage to them produced a clinical picture which we had previously associated with adults rather than

with children. We had not been accustomed to observe sleeplessness for weeks on end in a young child, a case of paralysis agitans under 40, or homicide, suicide, and hooliganism in children. The main clinical aspect might be positive or negative. If the positive symptoms predominated there was tremendous feeling of fitness—euphoria; there might be continuous talkativeness, or the child be unmanageable and destructive. Delirium, if present, centred around the schoolwork or games, or something seen at the "pictures." The previously shy child would become bold and cheeky. These phenomena might be absent altogether or last for a few days, then giving place to death, or to a lethargic, drowsy, stupid condition. Prof. Hall compared these alternating effects to those of alcohol.

The Chronic Phases in Children.

The chronic phases Prof. Hall divided into four groups:—

1. The *Idiot*.—This presented no new problem, the higher centres were destroyed and the child irreclaimable. This type was only found if the onset had been in the first five years of life.

2. The *Parkinsonian* type, usually occurring after the tenth year. The mental defect underlying this was very hard to estimate because of the bodily disability. Prof. Hall thought that the greater the degree of pure Parkinsonism the less would be the mental defect found.

3. The *Apache* type.—This tendency was usually unmasked quite suddenly and unexpectedly in previously clever and good children. They became aggressive, quarrelsome, untruthful, dirty, and dishonest, and might commit homicide or suicide. Their number was not great, though they naturally called attention to themselves and were liable to exaggeration. They were mostly boys.

4. The *Difficult* or the "*Super-difficult*" child.—These formed the great majority, the borderline between them and the apache being ill-defined, and those cases lying near the border being peculiarly hard to deal with.

Prof. Hall showed a chart of the sleep hours of such a case, which manifested clearly the restlessness and activity of the night hours, the child falling asleep in the early morning and sleeping on long enough through the day to get the adequate amount of rest. He described the mental condition as one of asthenia, with lack of concentration and effort, and failure of the emotions, thus leading to a failure of parental control. The management of such a child might be compared to the riding of a half-broken colt with the reins suddenly cut. That they were amenable to really capable control was shown by the improvement in hospitals and country homes, and in the hands of competent parents. Any excitement tended to cause relapse. In regard to treatment, two rules could be enunciated: first, the community must be protected from the apache; and secondly, the difficult child must be saved from becoming an apache. For the latter, institutional treatment should be avoided, the child being given plenty of fresh air and good food, with organised play and exercise, while the mental training was very carefully graduated and supervised.

Encephalitis Lethargica and Intelligence.

Dr. F. C. SHRUBSALL gave an account of the records of after-histories of cases in the London school service. Two hundred and twelve cases under 15 years of age had been notified during 1924, and reports on 111 of these were to hand. Complete recovery was recorded in 26 only; in 44 there was change of conduct, in 40 sleeplessness, in 26 impairment of intelligence, muscular twitchings and tremors in 12, and ocular disturbances in 10. There was evidence of a rapid recovery of intelligence once the improvement had started, but the usual intelligence tests were difficult of application on account of the lack of concentration and the impossibility of ensuring the co-operation necessary. The rate of mental growth was found to be seriously retarded, especially if the child were less

than five years of age at the time of the attack. In older cases the growth of knowledge seemed to go on *pari passu* with a progressive loss, until finally the dementia won. Quite often a moral deterioration was unaccompanied by any diminution of intelligence, and masters would be very willing to take back employees who had been convicted of criminal offences, as they were satisfactory and faithful workers. The excitement symptoms might pass off under favourable conditions, but keeping the child in the limelight, or "baiting" by other members of the family might lead to secondary exacerbations. It had been noted that the disorder of conduct was usually one that might have been expected from a consideration of the heredity and environment, stealing, for instance, being met with in other members of the family, as if the disease merely unmasked or precipitated an innate tendency. The crimes committed were almost invariably done in the face of certain detection. It had been found that the irritability was reduced by carefully ordered industrial school life, but that the inclusion of such children in a community was disastrous for the other members, and any such institutions must be *ad hoc*. Regarded from the legal aspect there was no possibility of a successful plea of irresponsibility; they knew quite well the nature of the acts they committed; the only possible defence would be that of "irresistible impulse."

Dr. A. S. MACNALT, speaking from the epidemiological point of view, referred to the great increase in the number of cases, from 541 notified in 1919 to 1025 in 1923 and 4605 in 1924. He concurred in the difficulty of distinguishing between true after-effects and the persistence of the original infection. His colleague, Dr. Allan Parsons, had investigated some 250 cases of which 136 showed mental symptoms. There was mental impairment in 57; psychic disturbances in 47, drowsiness in 15, neurasthenia in 7, loss of memory in 6, and melancholia in 4. One hundred and twenty-one showed ocular palsies or pareses of face or limbs, and there was much weakness and exhaustion. In Dr. MacNalt's opinion the gravest symptom was the Parkinsonian syndrome. He agreed with Dr. Shruballs as to the kind of treatment desirable. The matter was under the consideration of the Ministry of Health.

The Nosology of Encephalitis Lethargica.

Dr. P. C. P. CLOAKE said that the symptomatology of this condition was so varied, striking, and bizarre that insufficient attention had been paid to a rational classification and explanation of the phenomena observed. He pointed out that many toxæmias might give rise to a state of delirium, although a constitutional nervous instability undoubtedly predisposed to its development. In encephalitis lethargica we had this process, and in addition a special selective action on the central nervous system. The state of toxic delirium accounted for the symptoms of impairment of apprehension, of the power of retaining mental impressions, memory defects, variability in mental capacity, and level of attention, going on to clouding of consciousness, with hallucinations and delusions and disorientation. As in all toxæmic conditions, these symptoms were worse at night. Due to quite another cause was the lethargy, resulting from a localisation of disease process in the mid-brain, and comparable to the symptoms produced by neoplasms of this region. Dr. Farquhar Buzzard had suggested that the mechanism of impairment was a blocking of the Sylvian aqueduct by swelling or scarring, with a resulting internal hydrocephalus. Dr. Cloake was of the opinion that the more we understood normal sleep the more we should understand this aspect of encephalitis lethargica. Either of these processes might be dominant. If the toxæmic syndrome were the more strongly marked there would be the excitement at night, while in the day the specific drowsiness would manifest itself in a milder form, it being easy to awaken the patient, who appeared then as if waked from normal sleep. If there were a diurnal delirium it was usually occupational and the patient could be

roused from it in a similar way. Coma, if it occurred, was probably toxic. This explanation of the symptoms also accounted for the sequelæ. The nocturnal restlessness was due to a mild subacute toxic state stimulating the cortex, and subsiding about 5 A.M. as such toxic states usually did. Mischievousness was really only hyperactivity, due to the removal of inhibitions, as in all mild intoxications. It must not be forgotten that the persistence of such behaviour might be partly habit, as shown by the improvement resulting from changed environment. Prolonged hot baths at bed-time were helpful in these conditions, lessening the toxæmia and drawing the blood to the peripheral vessels.

Delusions and confusion disappeared with the acute stage, but the brain did not at once recover from the damage, and what was left was a symptom-complex comparable to that of head injuries from any other cause. In the conditions resulting from head trauma there had been described the same difficulties in behaviour, the changes of character, impairment of concentration and memory, narrowing of mental grasp, loss of motor associations and failure of reasoning power, impairment of memory for recent and remote events, slowing of the stream of thought, and loss of inhibitions resulting in a life dominated by instincts, hitherto kept under control, which formed the characteristic sequelæ of an attack of encephalitis lethargica. In other cases the organic changes were not the most marked feature and the resulting picture was more characteristic of the specific lethargy, the lack of spontaneous activity, which might be present with or without impairment of intellect, the loss of psychic tone, which was pathognomonic, the apathy and inertia with good judgment and intellect, which might be compared to a permanent condition of half-sleep and which might exist without a Parkinsonian syndrome. There might also be adiposity and diminished sex activity possibly due to inadequate functioning or impaired absorption of the anterior pituitary. Lesions in the pituitary body had been recorded in encephalitis lethargica. True psychoses were accidents, and the mania, melancholia, and dementia præcox met with occasionally were not of the well-recognised types. The patient was often egocentric and hypochondriacal, but there was no real retardation of thought, and insight was always present. Delusions, if present, were weakly held, though persistent, and showed no systematisation or accretion, and the so-called "precocious dementers" had mental clarity and were accessible. They frequently showed basal ganglia lesions and were to be regarded as manifestations of organic cerebral disease.

Further discussion was adjourned until Tuesday next, Jan. 27th.

HUNTERIAN SOCIETY.

THE PERFORATION OF GASTRIC AND DUODENAL ULCERS AND AFTER.

At a meeting of the Hunterian Society held at the Mansion House, London, on Jan. 19th, Mr. H. W. CARSON occupying the chair, Mr. G. GREY TURNER delivered one of the Hunterian lectures of the session, taking for his subject the Perforation of Gastric and Duodenal Ulcers and After.

Mr. Turner began by exhibiting a table showing the results in all his cases during the past 24 years. The total number was 194, with 146 recoveries and 48 deaths. This was the gross number of perforations he had handled, and it included localised perforations, incomplete operations, and cases in which it was finally decided not to operate. The actual number of cases in which complete operations had been done during the same period was 147, with 124 recoveries and 23 deaths, the percentage of deaths thus being 15.64. Taking the 98 cases which were operated on within 12 hours of perforation, however, only eight deaths resulted, or 8.16 per cent. Of these, the

perforated gastric ulcers operated upon within 12 hours numbered 27, with three deaths, and the perforated duodenal ulcers 71, with five deaths.

He had selected this subject upon which to talk to a gathering largely of general practitioners because it was upon the general practitioner that the early diagnosis so essential to recovery depended. When a case was taken in hand reasonably early and was carried to a successful issue, the credit lay with the practitioner who had taken the responsibility and advised the operation, rather than with the surgeon who had actually carried it out. The all-important point was to get the case at a sufficiently early period. No new refinement in the technique of operation made anything like the difference that was made if only a short period had elapsed between the perforation and the surgical interference.

Importance of History.—The "Kissing" Ulcer.

He went on to speak of the extreme importance in these cases of relying upon the history. The onset was nearly always sudden, and it was of extreme value to take careful account of the evidence given by relatives and friends. On analysing his cases he was surprised to find how often these calamities occurred in people over 50 years of age. Among 50 gastric cases, six were in persons over 50 years of age, and among 143 duodenal cases, 40 were over 50. The fact that the symptoms occurred in a comparatively elderly person, therefore, need not deter a medical man from making the diagnosis. He also emphasised the frequency of the acuteness of the ulcer which perforated. He had, he said, long recognised how often the perforation which occurred was that of a second contact or "kissing" ulcer on the opposite wall of the stomach to that of a chronic ulcer. He felt convinced that this was an acute ulcer whose principal characteristic it was to perforate. It was not usually the chronic ulcer that perforated, it was the "kissing" ulcer.

Confronted with this calamity of perforation, the first duty of the surgeon was to save the patient's life. His figures with regard to immediate gastro-enterostomy suggested that this resort was apt to add to the mortality rather than to diminish it. Of 26 cases in which primary gastro-enterostomy had been done, 20 had recovered and 6 had died, a death-rate of 23.08 per cent., and of 98 cases without primary gastro-enterostomy, 81 had recovered and 17 had died, a death-rate of 17.34 per cent. His belief was that the best thing to do was to get the patient over the calamity of perforation, and then, if one was quite sure that a gastro-enterostomy was necessary for the cure of his trouble, to do this as a delayed operation before the patient left the hospital. He had done such delayed operation in 11 cases; no deaths had resulted. The average interval between perforation and gastro-enterostomy in these cases was just over 18 days.

Temporary Gastrostomy.

In very bad cases of general perforation he had tried temporary gastrostomy, and although the table of results might not appear to be very striking, he could speak about this procedure most enthusiastically. In many cases it had been of the greatest possible help. It must, of course, be understood that the cases in which it was done were very bad cases. Out of 147 operations for general perforations he had employed this measure 26 times, and in these 26 cases there were eight deaths, a mortality of over 30 per cent., but the average number of hours of perforation in these cases was 17. Another point of great interest was the question of irrigation of the peritoneum. He had started by being a most enthusiastic "washer," but later he altered his views. The death-rate as between cases irrigated and cases not irrigated in his own experience was not very different—about 16 per cent. in both instances. The percentage incidence of complications was 17 (irrigated) and 12 (non-irrigated). The death-rate also had to be read in conjunction

with the average period of perforation, which had been twice as long in the cases not irrigated as in the irrigated cases.

The Operation Problem.

The first problem that arose in connexion with the actual operation was the question as to where it should be carried out. In the great majority of cases it was better that the patient should be transported to a properly-equipped hospital, and except in a comparatively small number of cases this could quite safely be done. He thought that the surgeon should be content with the middle line of incision, and he must not be afraid to take hold of the stomach quite boldly. Very often the stomach was distended. Under these circumstances great help would be gained by passing a stomach-tube on the operating table; the stomach went down like a big balloon, and all that was then necessary was to stitch the ulcer. A thing which had astonished him was the way in which the dirty-looking material in the peritoneum was apparently absorbed without the slightest difficulty.

Complications.

With regard to complications, in his 147 cases of ruptured gastric and duodenal ulcer 23 developed major complications, and of these nine died. The complications were subdiaphragmatic abscess (five recoveries, three deaths), pneumonia and pleurisy (five recoveries, two deaths), pelvic abscess (one recovery, two deaths), gastric fistula (two recoveries, one death), pulmonary embolism (one death), and prolapse of intestine (one recovery). He also gave particulars of one remarkable case in which there had been repeated perforations. The first operation was done when the patient was aged 13, the ulcer being on the anterior wall near the pylorus. The second operation was at the age of 16, with the ulcer on the posterior wall, near greater curve. The third operation was at the age of 17, when there was a much indurated ulcer on the anterior wall, just in front of the hilus of the spleen. The fourth operation took place 21 days later. There was peritonitis due to rupture of an abscess just below the spleen. At the same time an anterior gastro-enterostomy was done. A fifth operation took place 29 days later for acute small intestinal obstruction. The patient made a good recovery, served all through the European war without trouble, and since demobilisation had had several obstructive attacks which were always relieved by medicine. Now, 15 years after the first operation and 10 years after the last, he looked and felt well, and could eat any food without trouble.

The lecturer gave a particularised account of the after-history of his cases. Out of 194 cases, 146 recovered, and of these 17 could not at present be traced; nine had been operated upon within the year, leaving only 120 cases for review. Of this number 81 were quite well, 19 had slight digestive trouble, 18 had had a further operation, two had recurrent trouble and required further operation, 17 had died (eight from some sequel of original trouble, and nine from other causes, without recurrence), and three were known to be well shortly after operation and were then lost sight of. As to the bearing of the type of ulcer on the question of recurrence, in a series of 31 acute ulcers the symptoms recurred in three cases, whereas in 44 cases of chronic ulcer 13 recurred.

Discussion.

The PRESIDENT said that Mr. Turner was to be congratulated upon getting his cases so early. When Mr. Turner stated that 75 per cent. of his cases were operated on within 24 hours of perforation, and more than 50 per cent. within 12 hours, he was amazed at the proportion. His own proportion was something like 15 per cent. in the first 12 hours.

Mr. JAMES BERRY said that Mr. Turner did seem to have a wonderful opportunity of getting these abdominal cases. This was largely due to the fact

that he and his colleagues at Newcastle had trained the practitioners in the neighbourhood to recognise gastric and duodenal perforations and send them without loss of time to the infirmary. With regard to drainage, his own feeling was that in the great majority of cases there was no need to drain at all: in a certain number of cases it was wise to put a single drain in the hypogastric region. It was equally essential that if that drain was put in it should be taken out very soon—the next day. He thought all surgeons would be agreed that irrigation was rarely to be done, though he remembered the days when surgeons used to wash out the abdomen thoroughly. As to whether gastro-enterostomy should be done after the original ulcer had been sewn up, his own practice had been not to do gastro-enterostomy, for it seemed to add a great deal to the risk of operation.

Mr. JAMES SHERREN commented on the change that had taken place in the type of perforated ulcer now commonly met with. Twenty years ago one found much more often than now an acute ulcer which had perforated, without any previous history. The majority of cases which perforated now seemed to be chronic and had given symptoms for many years. If an ulcer, whether of the stomach or duodenum, was chronic, he thought that, in addition to closing the perforation, the surgeon must at some time do a curative operation. The choice of the time would depend on the experience of the surgeon and the condition of the patient, and no rules could be laid down. The step taken would generally be a gastro-jejunostomy. His experience of cases which had refused gastro-jejunostomy had not been favourable; a good many of them had come into hospital with second perforations, and had died. No one, of course, would dream of doing a gastro-jejunostomy for the treatment of acute ulcer of the duodenum.

Mr. R. P. ROWLANDS said that cases which came to Guy's came as a rule very late; the main thing was to save the life of the patient, and he personally did not believe in doing a gastro-enterostomy as a routine. All these cases must be dealt with on their merits. If the operation of gastro-enterostomy became a routine, then there would be a high mortality, which would be quite unjustifiable. In a few cases in which it was not possible to close the perforation a gastro-enterostomy might be the only life-saving measure. Seeing that about one-quarter to one-third of the cases only required gastro-enterostomy, it seemed a pity to do gastro-enterostomy at the first operation; it was far better to watch and wait and do the gastro-enterostomy when the need of it was demonstrated.

Mr. GORDON TAYLOR thought that the mortality attending the catastrophe of perforation of gastric or duodenal ulcer had been greatly lowered, not by any particular modification of surgical technique, but by the comparatively early date at which, even in London, the cases were now received. Since the war cases of perforation had come under the surgeon's notice very much earlier than they used to do. With regard to the actual technique of the operation, in acute ulcers he confined his attention to sewing up the ulcer, but in the case of chronic ulcers, particularly juxtapyloric and duodenal ulcers, he did a simultaneous gastro-enterostomy. Mr. Turner had not mentioned one class of case, that of a simultaneous hæmorrhage and perforation, of which the speaker had seen two examples comparatively recently.

Mr. A. J. WALTON said that in his own experience, relating to 71 cases, nearly always these ulcers had been chronic ulcers. It was often said that the history was of little value, but in 36 gastric ulcer cases he discovered in all except two that there was a long past history, and the same was true of the duodenal ulcer cases. Then again, to confirm his belief in the chronicity of the ulcer, he found at operation the edge of the ulcer extremely indurated; in an acute ulcer, apart from perforation, there was never any induration. He had already published a series of 42 cases which were investigated in the post-mortem room of his hospital, and in all but one

it was reported that the ulcer on microscopic examination was manifestly chronic, and in the case of the exception it was not stated whether it was chronic or acute. It was his practice to perform gastro-enterostomy in most cases at the time. It added only about another ten minutes to the operation, and, as a general rule, he did not think it added to the danger.

Mr. T. P. LEGG said that he was usually content to suture the ulcer, and he did not perform a gastro-enterostomy; at any rate, he left the question of a gastro-enterostomy until a later date to see whether the patient needed it.

Mr. H. TANNER said that the wide distance one had to go with the sutures beyond the perforation was in favour of Mr. Walton's contention as to chronicity.

Reply.

Mr. TURNER said that it was quite likely that experienced surgeons might decide that in certain cases gastro-enterostomy was actually indicated and should be carried out at the primary operation; but he was sure that there would be fewer calamities if it was generally agreed that gastro-enterostomy, apart from exceptional cases, should be left to the second operation.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 1360.)

THE Commission resumed its sittings after the Christmas vacation on Jan. 13th, the Chairman of the Commission, Mr. H. P. Macmillan, K.C., presiding.

ALLEGED ILL-TREATMENT OR UNJUSTIFIABLE DETENTION.

The Chairman announced at the outset that the Commission had decided to undertake the judicial investigation of some cases of alleged wrongful detention and ill-treatment which had been selected by the National Society for Lunacy Reform, these involving serious allegations against particular individuals. It had been decided, he said, that both the persons making the allegations and those who met such should give their evidence on oath. The Commission, he added, were willing to receive and consider statements in writing by any person who might wish to bring information which might assist deliberations.

Dr. G. F. Barham (med. supt. of the L.C.C. Mental Hospital, Claybury) was examined. He said at the moment 2282 beds were occupied in that institution. The nurses were in the proportion of 1 to every 4.8 patients. During the last two years he did not think there had been cause to suspend any attendant pending investigation of a charge of wrong conduct. Three years ago he inquired into such an allegation, but the evidence did not support the charge. Only once in the past seven years had a nurse, a male, to be dismissed on account of ill-treatment of a patient. He said he favoured to some extent the employment of women nurses on the male side; under their influence the ward obviously became pleasanter and brighter, and by nature women made better nurses than men. In reply to questions, Dr. Barham said he favoured a scheme of co-operation between mental institutions and general hospitals by which periodic interchanges of staff might be effected.

He said he did not necessarily see all fresh patients as soon as they arrived, though one of the doctors did. He personally saw every new case within a few days of arrival; these were received into special admission wards, highly staffed. There was every facility for keeping patients until they had been completely examined and reported upon. In addition

to the usual history of patients supplied, the friends were written to, and information was received from a lady hospital visitor, who offered to visit the home from which the patient came. She was entirely a voluntary worker, and preferred to remain in that capacity. She was of very great assistance to him. She did not wear uniform. There was room for more such help. Her help was also most valuable when the time arrived for a patient to be discharged, for she found out to what sort of surroundings the patient was to go, and whether aid was needed for a fresh start in life. Asked as to the effect on a sensitive, educated patient of association with noisy patients, Dr. Barham said he had quiet reception rooms, and he would not subject a patient to such association. Shrieking, however, was much less frequent in a mental hospital than was commonly supposed. He added that a dentist attended twice weekly, and the institution could always procure the services of any specialist who might be needed. In reply to a question by the Chairman, Dr. Barham detailed the treatment carried on at the hospital, both mental and physical, remarking that the former included psychic analysis, and sometimes psycho-analysis. By constantly watching the patient and trying to rehabilitate the mind, one derived a good clue as to what was wrong. Small details, such as the manner of serving dinner and the arrangement of the ward, were regarded as important, for everything which tended to make life happier was a help. As soon as one of the doctors thought a patient was becoming convalescent, his (the speaker's) attention was drawn to him or her, and he gave such patient his personal oversight. In such a large institution he could not claim to know intimately many patients, but he could rely on his colleagues.

The Chairman asked him whether he favoured the separation of the administrative from the medical functions of the head of such an institution. Dr. Barham replied that it would be a very helpful thing if it could be managed, but he was fairly strongly convinced that it was impossible. Much of his routine administrative work he was able to delegate, and he had a large clerical staff. The idea of a responsible person being able to relieve the head of much administrative work and so enable him to concentrate on the medical work was capable of development. Division of responsibility, however, was a difficult matter. In answer to further questions, he said that some patients on going out might not have homes to go to, and in the solution of this problem the After-Care Association was of great value. Many times it was found that a patient, apparently recovered, on going again into the world unsheltered suffered a relapse. In the year 1924 184 patients were discharged from the hospital, 126 of them discharged recovered, 32 relieved and sent to the care of friends, 13 on trial, and one on trial had died. Twelve patients sent out on trial relapsed. Many patients received allowances on leaving the institution. A great deal of correspondence and trouble was caused by relatives and friends requesting discharge before patients were fit for it. A very considerable number of incipient cases if given early rest and appropriate treatment would, he was convinced, escape certification. If anything was developed along the lines of early clinics for these cases he hoped there would be a great number of places available; there should be liberty for patients to go where they wished for such treatment; and, of course, the Maudsley Hospital should be open to them. Asked about the effect of the "stigma" attaching to a mental hospital, the witness said that under the clinic system the mental department of a general hospital might come to be known as the "mad ward."

Asked by Mr. Micklem whether he thought it wise to have such large establishments as that at Claybury, Dr. Barham said he hoped that future institutions would not be built so large, though the Claybury Hospital was not out of hand. One catering for about a thousand patients was his idea. Discharges might occur of patients who had been inmates as

long as 20 years. Artificial feeding was sometimes necessary, and, as a rule, it was done without trouble. Dr. Barham was questioned about the bathing and meal-times of patients, as well as visitations, and in his answers he said that the tendency was towards the open door and window, and contrary to the idea that patients were irrevocably locked in. If a discharged person had a chance of employment and wished a certificate stating he was recovered, that was always readily supplied. In reply to Mr. Snell, M.P., he said that the employment of women nurses on the male side at Claybury was discontinued because it was a war-time measure, and when the men returned their posts were restored to them; also, structurally, Claybury was not designed for this. The Committee, however, had under consideration the construction of two villas, and he had recommended that these should be staffed by female nurses.

Replying to Sir Humphry Rolleston, Dr. Barham said it was necessary to fix the age of entry for female nurses at 18 so as to secure them before they were ear-marked for some other occupation. Somewhat above 25 per cent. remained to go through with their training. He was questioned by Sir David Drummond as to the lack of definite improvement in the recovery-rate of mental cases, and replied that he did not think the recovery-rate was an absolute criterion; patients were now treated in a more intelligent and a more human way than formerly, and much depended on the definition of "recovered." He added that he would like to see his own hospital linked up with a general hospital and attached to a school of medicine, and to have the coöperation of an outside staff. The further one proceeded with the investigation of these cases the more one felt the need for help. In answer to Sir Ernest Hiley, the witness said that not more than four or five of the patients in the institution had psycho-analysis.

MENTAL AFTER-CARE ASSOCIATION.

Miss Vickers, secretary of the Mental After-Care Association, said this body was formed in 1879, and was a charitable institution. Most of its funds were raised voluntarily, but recently boards of guardians subscribed, though there were no official funds. Last year the Association had touch with cases from 117 mental institutions, and was instrumental in sending cases for rest and change before resuming work to cottage homes, run by retired mental nurses who understood the work. Inquiry was made into the home conditions of patients. The help of the Association was invoked by mental superintendents, who informed the secretary of the imminence of a discharge, and then the machinery was set to work. Where necessary, grants to facilitate a re-start in business were made. Last year 1176 patients were relieved by the Association, which was now forming provincial branches. Miss Vickers said she had personally interviewed over 7000 patients, and always alone. Asked as to complaints, Miss Vickers said these were very few and trivial, and if only people who criticised would go and see they would realise how futile they were. Probably not more than 4 per cent. of patients made complaints, and only a very small proportion of that 4 per cent. complained of any ill-treatment. In the last 14 months only two people had refused the offer of a visit to their homes.

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION.

The sittings were continued on the day following, under the presidency of the Chairman, when evidence tendered by the British Medical Association was received, Dr. R. Langdon-Down being its chief spokesman. He was supported by Dr. J. W. Bone, Dr. F. H. Edwards, Dr. C. O. Hawthorne, Dr. E. W. G. Masterman, Dr. Christine Murrell, Sir Jenner Verrall, and Dr. G. C. Lord, the last-named in the capacity of assistant medical secretary.

The Chairman said the Commission proposed to include the Association's valuable memorandum on the subject in its proceedings. There were varieties

and degrees of mental ailment which did not necessarily need restraint. The document considered that the compulsory order should be the last resort, not the first. The definition of mental deficiency set out in the Mental Deficiency Act, 1913, seemed to include some states of what could be called mental disorder.

Dr. Langdon-Down said that unfortunately that Act endeavoured to set up a medical classification of those patients. Sir Humphry Rolleston thought the term "mental abnormality" should be replaced by "mental disability," as an abnormality might not be a pathological departure.

The next point discussed was the Association's view that in every case of certification two medical certificates should be required, the Chairman commenting on the extra total expense thereby entailed.

Dr. Langdon-Down did not think this, on a possible 15,000 certificates, would be an impossible amount. In some cases two certificates were very necessary, and how were exceptions to be made? To have only one put an undue responsibility on the certifying doctor. He added, in reply to further questions, that the Association considered that the usual medical attendant should be one of the certifying doctors. Any special standard, such as that of a holder of the Diploma in Psychological Medicine, would greatly limit the number of medical men available as signatories.

The Chairman pointed out the significance of the diagnosis on which the certificate was based, remarking that the specialist's diagnosis was regarded as the most valuable. He asked whether the curriculum of the medical student included a sufficient training in this branch of medicine, and Dr. Langdon-Down's reply was that he thought in most cases the student's course of training in this subject was sufficient. He asked that information on the point might be furnished to the Commission from university calendars. Asked by Sir Humphry Rolleston whether there was not at the present time great difficulty in getting general practitioners to certify at all, the witness said that was not because they distrusted their own capacity, but they were conscious of the risks to themselves in so doing. The profession considered that the protection to its members was inadequate, but it did not wish to under-rate its responsibility in the matter. The certifying practitioner, the Association thought, should enjoy the immunities of a witness in a court of law. The question at issue was, largely, one of the honesty of the practitioner.

The Chairman said that unless the professional man concerned could be trusted the system would break down. But to allow to the medical man the same immunities as a witness enjoyed would mean a considerable alteration in the law.

Dr. Langdon-Down replied that if the present law on the subject were allowed to stand it would certainly deter the medical man. After the first verdict in the Harnett case the Association received large numbers of letters asking for guidance in such matters.

The Chairman agreed that it seemed wrong that the doctor, for doing his duty in this respect, should be, as it were, placed in the dock to justify himself, instead of the onus of proof lying on the attacker; but it was a greater thing to ask for absolution from all possibility of an action.

Dr. Langdon-Down said the Association approved, in the main, the general principles of the Mental Treatment Bill.

On the question of the sending of a case requiring immediate attention to the workhouse—thereby rendering him a pauper—Dr. Langdon-Down said that if the accommodation and arrangement of workhouses were better there would not be so much objection to those institutions.

The Chairman said he thought some intermediate institution was the ideal, and the wards of the ordinary hospital might be used, though a separate section would have to be provided, and to this Dr. Langdon-Down agreed.

Dr. Masterman gave an account of the provision of infirmaries in London, remarking that if only the stigma could be removed, the accommodation for lunatics in the larger infirmaries of London was just what was wanted.

It was agreed that the evidence from these representatives of the B.M.A. should be continued at a later date to be arranged.

THE MEMORANDUM OF THE BRITISH MEDICAL ASSOCIATION.

The principal objects favoured in the Memorandum submitted to the Commission on behalf of the British Medical Association may be briefly set down as follows:

1. *To Meet Public Susceptibilities.*—In order to minimise the objections which prevent patients from accepting proper treatment at the earliest possible moment, it is proposed to avoid undeserved stigma by allowing less formal arrangements for suitable cases. It must always be borne in mind, however, the Memorandum adds, that the associations springing from any arrangements "will depend in the long run upon the actual facts and usage and not upon any verbal discretion or sympathetic intention."

2. *To Avoid the Need of Formal Certification.*—For mental patients whose symptoms, though acute, are likely to be short-lived, there is a hope that their recovery may render a formal reception order unnecessary. The Mental Treatment Bill of 1923 made a proposal for the temporary treatment of mental disorder without a reception order, the period to be limited to six months, with power to extend to a further six months. The Memorandum proposes to extend the voluntary boarder principle to cover all consenting cases and to make it applicable both to the 12 months of treatment and during convalescence if so desired.

3. *To Provide Opportunities for Voluntary Treatment.*—The provision enabling registered hospitals and licensed houses to receive suitable patients as voluntary boarders should be extended to county and county borough asylums. The system implies the consent of the patient and provides for care and treatment as long as necessary, thus avoiding or postponing the necessity for a reception order.

4. *To Arrange for Accommodation to Suit all Needs.*—Some sections of the population prefer public management, some private. There is a desire in the community generally that many patients should be treated otherwise than in public institutions. The existing veto on the setting up of new licensed houses should therefore be repealed or facilities provided for the treatment of patients in small numbers in private hands.

5. *To Secure Uniformity of Certification.*—Two medical certificates should be required by law in all cases, for submission to the judicial authority asked to issue a reception order.

6. *To Obtain Immunity for Medical Signatories.*—The Memorandum insists upon the medical certificate being definitely given the status of evidence, so that the protection which witnesses in courts of law are entitled to receive shall be extended to the practitioner who signs a certificate under the Lunacy Acts. Section 28, subsection 4, of the Act of 1890 runs: "Every medical certificate . . . shall be evidence . . . as if the matters therein appearing had been verified on oath."

7. *To Amend the Reception Order.*—The present urgency order might give way to a provisional order. It is clearly desirable that judicial authority should be obtained at the earliest possible moment for any measure which means the loss of personal liberty, and it should be sufficient for safety and convenience to limit the duration of an urgency order to three days. Such an order should be capable of extension for a further 28 days, at the expiration of which the patient must be discharged unless he is placed under a reception order or becomes a voluntary boarder. Experience suggests that many pauper patients who come under the 17 days period of observation get well and go home within this period.

8. *To Revise the Conditions of Voluntary Boarding.*—Permission in advance from the Board of Control or two members of the Visiting Committee appears unnecessary. Notice to leave should, in the interest of the patient, be extended to 72 hours.

9. *To Make Provision for After-care.*—The principle of permitting after-care and convalescent homes at the seaside or elsewhere in connexion with county and county borough mental hospitals should be recognised.

10. *To Ensure Unity of Central Administration.*—There should be a single administrative authority except in relation to property. Form 16 of the Lunacy Act, 1890, speaks of a person, entitled to payment from a public department, "by reason of mental disability unable to manage his affairs." This expression might be found useful to indicate the need for measures of control of the patient's property and affairs, not necessarily of his person, in place of the expression "of unsound mind."

The sittings of the Commission were continued on Jan. 17th.

ALLEGED WRONGFUL DETENTION.

The first of the cases of a specific charge of wrongful or improper detention was gone into, that of Mr. Hugh Wilson Holman, a consulting engineer and naval architect, aged 58. There were also present counsel for the doctors concerned and for Ticehurst Mental Home (Mr. Dickens, K.C., Mr. Croome Johnson, and Mr. Somerville, the last-named for the Medical Protection Society).

The Chairman said that when it was decided to take this case, it was thought right and fair to notify the persons concerned in the charges and criticisms, so that they might, if they so desired, attend and take part in the proceedings. The Commission decided to hear Mr. Holman's own personal experience only, and they would not announce their decision on any particular case inquired into in this way; the evidence so adduced would form part of the material upon which the Commissioners would ultimately base their report and such recommendations as they might make.

Mr. Dickens, K.C., on behalf of Dr. Percy Smith and Dr. Porter Phillips (who were present), asked that the specific charges against his clients might be formulated in writing, and stated that it would be necessary for him to go into the whole of the facts and call rebutting evidence from a number of witnesses. There was also the important matter of the expense of the proceedings.

Mr. Somerville pointed out that when the case of Mr. Holman was tried at the High Court, Mr. Justice Sankey, in his judgment, said he found not only that the authorities at Ticehurst were not negligent in acting as they did, but that they would have been negligent if they had released the defendant, under the circumstances. He, the speaker, therefore submitted that it was not fair to bring the doctors again to hear the same charge, nor profitable to hear evidence on which a judgment had already been pronounced in another place.

Mr. Stewart, who explained that he was briefed by Mr. Holman, intimated that there were many cases of the kind which could be brought before the Commission, and he called for the production of any documents which were or might be required to elicit the truth.

The Chairman said the Commission's difficulty was increased by the fact that the case had already been minutely examined in a court of law and judgment pronounced upon it. There was some embarrassment in dealing with concrete cases at all, because such hearing involved the mention of the names of particular persons. Yet it was felt it would not be proper to deprive critics of the existing system of the opportunity of putting forward some cases which they wished to have investigated; and the public would have the chance also of hearing any evidence which might be brought by way of answer.

Mr. Holman was then sworn, and examined by Mr. Stewart, who took him through his written statement, of which the following is a brief summary. In October, 1914, he suffered severe internal injuries as a result of an accident, and on recovery he took a post as hon. secretary to a Red Cross Hospital, and remained in the position two years. He then contracted pneumonia, and was taken to the house of a doctor in Croydon, where he became so ill that day that night nurses were necessary. In December, while there, he was certified and sent to Moorcroft though, he averred, his mental condition was quite sound. He transacted a good deal of business, saw a number of people, wrote letters, and kept a diary. A doctor came to see him, took a specimen of his blood, and, it appeared, reported a positive Wassermann reaction, but subsequent trials (five) were negative. At a later stage he declared he had never had any venereal disease whatever. A result of the report of a positive Wassermann was that he was declared to be a sufferer from G.P.I. He detailed visits of Sir Maurice Craig, Dr. Percy Smith, and Dr. Stoddart. He was driven quite unsuspectingly to Moorcroft, and on arrival there first learned that he was a patient in an asylum from the appearance of an old man, who came and sat down in an aggressive sort of way, and on being asked what he wanted said he was there to look after him, Mr. Holman. He then asked, "I am in an asylum, then, am I?" and the reply was, "Yes, you are in an asylum all right, and it will be very difficult to get out." He took that as a sort of challenge. On his first admission to the institution he was treated with considerable courtesy. He was seen by a special visiting justice appointed by the Uxbridge Bench, a grocer, who obviously knew nothing about lunacy. If he had had the opportunity of challenging the allegations on which he was incarcerated, he would have welcomed it. He said he was allowed to go into Uxbridge occasionally with an attendant, who often left him by himself. The witness alleged medical neglect when he had pneumonia and a relapse of his jaundice; he was, he said, left entirely to the head attendant, who was medically untrained. A surgeon was sent for to operate, but he did not do so, as he, the patient, was said to be suffering from general paralysis of the insane. After being in bed about a month he gradually regained strength. On the night of Feb. 8th, 1917, he escaped from the institution, and he sought out a doctor, who certified that he was fit for light duty, he having told the doctor that he was invalided out of the Navy and wished for an examination. He was retaken in Chancery-lane three days after his escape. This certificate was taken from him, and he was placed in one of the refractory wards. He took every possible legal step to secure his release, but without result. In January, 1917, he was transferred to Ticehurst, where he had only a cursory examination; all his protests against being detained were ignored. He determined to take the first opportunity of escaping from Ticehurst, and did so on August 28th, 1917, and hid for a fortnight, communicating afterwards with his solicitors to protect his interests and take means for obtaining redress. On representation to the Master in Lunacy, who was alleged to have expressed his dissatisfaction at the treatment, the witness's estate was released in his favour.

At the conclusion of Mr. Stewart's examination of the witness, Mr. Dickens, K.C., in cross-examination, asked whether he did not think he was at one time a menace to himself or others. The witness replied that he had not been a menace at any time, and he certainly had never been insane. He considered that the origin of troubles such as his was, that doctors were interested in private asylums, living as they did on fees derived for getting people in and out of those institutions. He considered that medical men should look upon themselves as members of a priesthood, holding aloof from the world's corrupt practices.

The Commission adjourned until Jan. 26th.

Reviews and Notices of Books.

RHEUMATIC HEART DISEASE.

By CAREY F. COOMBS, M.D., F.R.C.P. Lond.
Bristol: John Wright and Sons, Ltd.; London:
Simpkin, Marshall, Hamilton, Kent and Co., Ltd.
1924. Pp. 376. 12s. 6d.

THIS valuable monograph appears at a time when investigators in all countries are looking for a lead which will help to solve the problem of rheumatic heart disease. Dr. Carey Coombs during the past 20 years has given much time and thought to the study of this disease. Many articles have appeared under his name dealing with this subject, and these have been accepted by the profession as notable contributions to medical science. He writes from a wide experience which includes clinical observations made on a large group of patients, children and adults, extending over many years. In this book bacteriological investigations together with histological and pathological studies have been carefully recorded, and the chapters on diagnosis, prognosis, and treatment are dealt with from the practical viewpoint of after-history returns. Dr. Coombs is in complete agreement with Dr. F. J. Poynton, who contributes an introduction to the book, that the exciting cause of rheumatic fever is the streptodiplococcus first described by Dr. Poynton and Dr. A. Paine. To those familiar with recent transmission experiments in America, which offer strong evidence against the strepto-diplococcus hypothesis as the specific agent of the disease, the argument of the author in support of his view will appear unconvincing. In the chapter on physical signs, those structural changes in the valves and heart muscle which are recognised clinically by the usual methods of palpation, percussion and auscultation are described in detail. The author is not always on safe ground in his interpretation of these abnormal signs. There are certain adventitious sounds which are not so easy to explain as we are led to believe, nor for practical purposes is it essential to conclude from these signs that certain pathological changes exist. He takes the view that because a systolic murmur is sometimes absent in mitral stenosis, mitral regurgitation is not present in these cases. One could as easily argue that a systolic murmur is not a sign of mitral regurgitation. There are those who hold that mitral stenosis is always associated with mitral regurgitation, and as a systolic murmur is so often absent in this type of valve disease, it is fair to assume that the quality of such a murmur is an unreliable guide in the diagnosis of organic valve mischief.

Interesting facts emerge from the study of 600 to 700 after-history records of patients kept under more or less close observation over varying periods of years. The percentage of cases which could not be traced is small considering the difficulties associated with this type of research. The evidence furnished by this investigation has increased our knowledge of prognosis in rheumatic heart affections, and has enabled the author to write a valuable chapter on the treatment of this crippling disease.

BIOCHEMISTRY AND HUMAN PHYSIOLOGY.

Fundamentals of Biochemistry in Relation to Human Physiology. Second edition. By T. R. PARSONS, B.Sc. Lond., M.A. Camb., Demonstrator in Physiology in the University of Cambridge. Cambridge: W. Heffer and Sons. 1924. Pp. 295. 10s. 6d.

Mr. Parsons in his little volume gives the student a summary of elementary biochemical facts. In this edition he has included Werner's views upon the

formula for urea, and insulin is dealt with more fully than in the previous edition. Everywhere the descriptions are accurate, clear, and up to date, and we feel sure that they will be appreciated by the student. The difficulty of adopting a style agreeable to all is well known. Whilst a precise, cold analysis of facts, followed by a judicial summing up appeals to some, others may be more pleased with a lighter mode of expression. This little book is written in what might be called the "chatty" style. Quotations from some classical source head the chapters, and the Greek characters which adorn many of the pages may be out of place in a book for students. In essentials, however, the book is admirable.

THE PNEUMOCOCCUS AND PNEUMOCOCCAL INFECTIONS.

By L. COTONI, C. TRUCHE, and Mlle. A. RAPHAEL. English edition by D. S. PAGE, M.A., M.B., D.P.H., Assistant Pathologist to the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park; and EVA MORTON, M.R.C.S., L.R.C.P., late Assistant Medical Officer, Grove Hospital, Tooting. London: John Bale, Sons and Danielsson. 1924. Pp. 218. 16s.

THE original French edition of this book appeared some 18 months ago and British readers now possess the advantage of a well-prepared English edition. The work is divided into three parts, the first dealing with the bacteriology of the pneumococcus, the second with the habitat of the pneumococcus and diseases of pneumococcal origin, and the third with the treatment thereof. Of these three sections the first is the most interesting and original. The authors have encountered the difficulties which beset all bacteriologists in defining the really essential unvarying characteristics of the true pneumococcus, and on the whole they incline to the four tests of non-motility, absence of spores, presence of a capsule, and staining by Gram's method as the four most dependable means of bacteriological diagnosis. Probably most laboratory workers will agree with the opinion expressed, that when a wrong diagnosis is made it is usually in mistaking a pneumococcus for a streptococcus. Several new media are described for the cultivation of the organism, the basis of them being Chapoteant's peptone which contains albumoses and peptone. To the use of this preparation the authors ascribe their success in carrying on subcultures indefinitely with medium T, a peptone water containing salt and glucose (pH value varying between 7.2 and 7.5); furthermore, with a modification of this medium in gelatin the authors have been able to keep pneumococcal cultures alive in the ice chest for many months. Solubility in bile the writers do not regard as an altogether reliable test. With regard to pathogenicity tests, they advocate isolation of the pure culture first rather than the injection of the original pus or sputum into animals.

Undoubtedly the most important—and at the same time the most difficult—section in this part of the book is the long section dealing with the subjects of immunity and agglutination, and the translators are to be congratulated on the careful way they have rendered this intricate portion into English. Many interesting points are raised. In the hands of these workers living cultures of a virulent strain of pneumococcus proved to be an unsatisfactory method of inducing active immunity in animals, whilst dead cultures of a non-virulent strain was practically devoid of antigenic properties. A killed virulent culture generally conferred immunity against a variable number of strains and, broadly speaking, the antigenic power of the pneumococci tested varied with their virulence. In this way a multivalent serum could be obtained. A method for standardising a unit of virulence in animal experimentation is also described. In the second part of the book, dealing with the habitat of the organism and diseases of pneumococcal origin, a critical discussion is included on the paths of infection in pneumococcal

diseases, notably pneumonia, on infectivity and contagion generally, and on the possibility of pneumonia carriers; whilst the crisis in pneumonia and the mechanism of its production is considered at length. Part III., on the treatment of pneumococcal diseases, is deliberately confined by the authors to specific immunological forms of therapy, and no attempt is made to discuss the ordinary palliative treatment of clinical medicine. After experience of serotherapy, the authors write of antipneumococcal serum: "We do not imagine that the preparation of the serum has been brought actually to the point of perfection, or that it is always administered by the best route and in sufficient quantity, and only to cases in which its use is justified. It would be injurious to the method to ascribe to it successes which are not due to it, but we firmly believe that in a number of cases the serum is definitely beneficial." With this careful estimate most English workers who have used serum would probably agree.

The English translation is a lucid, accurate, painstaking piece of work. All references in the extensive bibliography have been confirmed and the list brought up to date by the inclusion of references to work published since the appearance of the French edition. The translators have also wisely adjusted the loose terminology existing in the description of the types of pneumococci, so that the erroneously named Type IV. receives its proper designation Group IV., inasmuch as it is not, in reality, a type but a heterogeneous collection of organisms of the pneumococcus class.

PEDIATRICS FOR NURSES.

By JOHN C. BALDWIN, M.D., Lecturer in Pediatrics, Johns Hopkins Hospital School for Nurses. New York: D. Appleton. 1924. Pp. 261. 7s. 6d.

THE amplification of the curriculum of nursing studies which has taken place in recent years has resulted in the need of considerably more detailed text-books. This need is well provided for by this book, in which Dr. Baldwin has embodied several courses of lectures to nurses at Johns Hopkins Hospital. The author emphasises the fact that one of the principal duties of the nurse is to observe, and he has provided a text-book which presents a fairly detailed description of the external signs of disease in children. The instructions for feeding and management are lucid and concise, and essentially practical. A considerable portion of the book is devoted to acute disease, the exanthemata being described somewhat fully and illustrated by charts. This work does not completely cover the syllabus of the General Nursing Council in this country—rheumatism and chorea, for instance, are not included—but the book as it stands is so admirable that it may be strongly recommended to nurses as a supplement to a general text-book of nursing.

ORTHOPÆDICS.

Die Amputationen und Exartikulationen unter besonderer Berücksichtigung des Kunstgliederbaues. By Dr. TH. KÖLLIKER, Professor of Orthopædics. Leipzig: J. A. Barth. 1925. With 39 illustrations in the text. Pp. 68. 2.70 gold marks.

THIS brochure is intended for surgeons and students. It may be of value in Germany to those who cannot have access to other or larger works on its subjects, but as it consists of little more than general considerations and gives few details it can be of little use to the medical man who wishes for information on the prosthetics of a hip-joint amputation—to take only one instance. But one artificial limb for the lower extremity is illustrated, and very few arms, the only one for above elbow amputation being the Carnes' arm. In his preface the author recommends Schmieden's and Gocht's works to his readers. We endorse this recommendation, for Dr. Kölliker's pamphlet will hardly satisfy their needs.

INTERNAL SECRETION AND THE DUCTLESS GLANDS.

Third edition. By SWALE VINCENT, M.D., F.R.S., F.Z.S., Professor of Physiology in the University of London, Middlesex Hospital Medical School. London: Edward Arnold. 1924. Pp. 463. 25s.

In adding a selected bibliography to this third edition the author has done a wise thing. There is also added a good deal of matter dealing with the pancreas and insulin, with the reproductive organs and the question of rejuvenation, and a short chapter on organotherapy. Prof. Swale Vincent takes up a conservative attitude with regard to the latter, and also towards "the whole fabric of vagotonia and sympathicotonia, so dear to the credulous physician." The book is full of valuable information.

AIDS TO SURGERY.

By JOSEPH CUNNING, M.B., B.S., F.R.C.S. Eng., Surgeon to the Royal Free Hospital; and CECIL A. JOLL, M.S. Lond., F.R.C.S. Eng., Surgeon to the Royal Free Hospital and Lecturer on Surgery and Operative Surgery at the Royal Free Hospital Medical School. London: Baillière, Tindall and Cox. 1924. Pp. 434. 4s. 6d.

A VOLUME which can count five editions and many reprints has reached a secure point of reputation. Criticism would be superfluous were it not that, in a subject so fluid as surgery has shown itself to be, only constant revision can possibly keep up to date such a volume as "Aids to Surgery." The authors have succeeded in keeping abreast of modern methods and in maintaining the high standard of previous editions. The volumes of the "Aids" series are not intended to be exhaustive, but they help the student to epitomise his knowledge and to arrange it in an orderly manner. The student who thus fairly uses the present volume will undoubtedly find it of real value, using it as a skeleton into which he can build the knowledge he has gained. The student who uses it unfairly as a text-book will, we sincerely hope, meet at the hands of his examiners the retribution he justly merits.

We have only two suggestions to offer: One, that the admirable preface to the first edition, acknowledging the great text-book of Rose and Carless as the basis of the epitome, should be replaced; the other, deeply though we should regret the loss of such a landmark, that the heading of Chapter XXXII., which deals with the whole of abdominal surgery, should no longer be "Injuries of the Abdominal Walls."

INTELLIGENCE TESTING.

Methods and Results. By RUDOLF PINTNER, Ph.D., Professor of Education in Teachers' College, Columbia University. London: University of London Press. 1924. Pp. 406. 7s. 6d.

ONLY a few months ago a report on psychological tests was issued by the Board of Education, in which a general survey was attempted of the work done so far on this subject. Now, from the other side of the Atlantic comes this book with a somewhat similar aim from Prof. Pintner, already well known as the joint author of certain intelligence tests of the performance type, suited for application to those who for any reason have difficulty with the use of language, such as the deaf, the immature, and the foreign-born.

The book is designed for use as a text-book by students of the subject, and as such marks an epoch in its history. After a short historical sketch and a rather inadequate discussion of the nature of intelligence, the author gives an outline of the chief tests now in use. This outline is necessarily abridged

and requires to be supplemented by study of the literature referring to each scale, of which a very complete list is provided. The largest section of the book deals with the results of the application of the tests to certain definite classes—the feeble-minded, the delinquent, the school-child and college student, the super-normal, the deaf, the blind, the employee, and the specifically American problems of the Negro and the alien immigrant. On the whole the judgments expressed are well-balanced without the enthusiastic and uncritical dogmatism which marred some of the earlier American literature on intelligence tests. There is candid recognition of the fact that interpretations of results must be carefully guarded. In dealing with the feeble-minded, Prof. Pintner, as a psychologist, naturally favours a psychological diagnosis by mental age, and suggests that those whose defect is on the side of temperament and character should be classed as "psychopathic." The statutory English definition of feeble-mindedness, however, compels us to base our diagnosis on "social incompetence," which may be due to either or both of these causes. One can readily sympathise with his summary dismissal of the idiots savants of the older medical literature as not idiots and "far from being savants."

Dr. P. B. Ballard, in an introduction to this English edition, pays tribute to Dr. Pintner's "honourable part" in the development of the subject of the book.

JOURNALS.

ANNALS OF MEDICAL HISTORY. September, 1924. New York: Paul B. Hoeber. \$2.50.—Among the papers in this number the most noticeable are A New View of Elisha North and His Treatise on Spotted Fever, by Dr. F. L. Pleadwell; the Siamese Twins of Espanola, by A. P. Chavarria and P. G. Shipley, being an account of the first known post-mortem examination in the New World; and An Unpublished Letter of Sir Thomas Browne, by Dr. E. Moschowitz. Elisha North (1771–1843) was a practitioner who was in advance of his time. He preached and practised moderation in bleeding and in the excessive use of mercurials. He laid stress upon the importance of good nursing and was one of the first medical men in America to advocate vaccination. However, he had his weak side, a side which is shown by a manuscript examined by Dr. Pleadwell. This consisted of notes made by North for a second edition of his "Treatise on Spotted Fever"—i.e., epidemic cerebrospinal meningitis. In this MS. North expresses the view that spotted fever and cholera are both manifestations of one disease, which he calls congestive asthenia. Despite these views his treatment of spotted fever by stimulation instead of copious bleeding and sweating was very successful.—The paper on the Spanish "Siamese" twins is chiefly noticeable for the reason that the post-mortem examination was carried out mainly for the purpose of deciding whether the twins had two souls or one and the decision was in favour of the former hypothesis.—The letter of Sir Thomas Browne fills up a gap which has hitherto existed in Browne's correspondence as known up to now. In the autumn of 1658 Mr. W. Dugdale (afterwards Sir William Dugdale) wrote to Browne for information about the draining and embanking of fen country. On Dec. 6th, 1658, Browne writes to Dugdale promising him the information in a few days, and the MS. which came under Dr. Moschowitz's notice is the letter in question, dated Dec. 11th. Dugdale embodied most of it in his work, "The History of Embanking and Draining, &c." The letter, of which a facsimile and transcript is given, is in Browne's best style.—Mr. Warren R. Dawson, F.R.S., contributes some medical notes from Herodotus, but he has omitted one of the most interesting, namely, the passage in Book II., Chapter 95, about the Egyptian fisherman's use of a mosquito-net.

THE LANCET.

LONDON: SATURDAY, JANUARY 24, 1925.

POLIO-ENCEPHALITIS.

In another column Dr. E. A. B. POOLE, medical officer of health for Taunton Rural District, has recorded two or three cases of acute and fatal nervous disease occurring recently in his area, and has assigned to them a tentative diagnosis of acute polio-encephalitis. At the same time he has expressed dissatisfaction with the term, and is evidently conscious of no little confusion in dealing, as a medical officer of health, with a disease notifiable under Ministry of Health regulations and yet not apparently conforming to what is described in the publications of that Ministry. We are not surprised at the difficulties encountered by Dr. POOLE, nor, indeed, at his seeming failure to derive diagnostic help from certain Government reports.

Etymologically, polio-encephalitis stands merely for inflammation of grey matter in the brain, and quite lacks topographical and pathological specificity. Any inflammatory process invading grey matter is in reality a polio-encephalitis. The disease usually designated epidemic encephalitis is not defined thereby, nor would it be by applying to it the former expression, for encephalitis is as non-specific as polio-encephalitis, while the affection does not occur solely in epidemics. Still less is it adequately labelled as lethargic encephalitis, since lethargy may be altogether absent from the clinical picture. There are, as is well recognised, types of this disease in which the unknown virus exhibits a tendency to locate itself in certain collections of grey matter in the base of the brain; the numerous examples of post-encephalitic Parkinsonism that are seen to-day furnish proof of this contention, since there is good pathological evidence to attribute the symptoms to the incidence of the toxin or organism on the corpus striatum and its efferent systems. Conceivably, therefore, we might speak of an epidemic polio-encephalitis. On the other hand, however, polio-encephalitis has for years been the accepted terminology for a comparatively rare invasion of certain mesencephalic or pontine nuclei notably as a result of persistent alcoholic excess (Wernicke's polio-encephalitis superior hæmorrhagica), as well as for those by no means uncommon cases of acute poliomyelitis in which the virus has implicated brain as well as cord, and for which the expression polio-encephalo-myelitis has frequently been employed. In practically all widespread epidemics of poliomyelitis this variety is met with, as was fully discussed by the late Dr. F. E. BATTEN in his Lumleian Lectures of 1916, and has been mentioned by numerous other authorities. Even in the ordinary sporadic instances of the affection one occasionally encounters a case with cranial nerve or other encephalic involvement. It is not impossible that some of the rare cases of sudden death in children following an indefinite malaise are due to an unrecognised polio-encephalitis of the bulb—that is to say, a poliomyelitis whose incidence has been on medullary centres. The other acute infections of the nervous system that might be here mentioned include acute ascending meningo-myelitis, Landry's paralysis, and acute toxic polyneuritis. Round Landry's paralysis much controversy

has raged, nor can it be asserted that the problem is solved. That, clinically speaking, there is an acute ascending motor paralysis which implicates proximal rather than distal limb segments and which occurs with or apart from epidemics of poliomyelitis must be accepted; the difficulty is to determine its pathological specificity. The disease called acute ascending meningo-myelitis differs from Landry's paralysis in its involving the cord funiculi indiscriminately, hence the concomitance of sensory and sphincteric disorders; on occasion it spreads to the brain, even to the optic chiasma, so that the clinical picture of a medullary or pontine or mesencephalic polio-encephalitis may be produced. Possibly this rare affection is a sort of ascending spinal lymphangitis, but in any case differentiation from other acute spino-cerebral lesions is obviously not easy except in clearly cut instances. An acute toxic polyneuritis may readily implicate vital respiratory and circulatory neural mechanisms and prove rapidly fatal without revealing itself in the periphery of the limbs to any notable extent. Apart entirely from the conditions enumerated above, the neurologist sees cases of infantile cerebral hemiplegia or diplegia which, by exclusion of syphilitic and traumatic and other morbid processes, he sets down to a polio-encephalitis of unknown origin, a polio-encephalitis not to be facetiously interpreted as a mere variety of acute poliomyelitis, since the cases seem to make their appearance at any time of the year and without any seasonal incidence. As a general rule, the child becomes unwell, probably develops a few fits, unilateral or otherwise, and is then seen to be paralysed on one side.

Obviously, then, amid these cross-divisions the seeker for diagnostic exactitude and the nomenclature purist alike will find themselves beset with difficulties. The trouble has arisen largely through the continuance of a pathological term by usage when it no longer fulfils the postulates that precise terminology demands; Dr. POOLE's interesting cases, in fact, raise more than one problem of practical importance. It is regrettable that the exigencies of the occasion, their brief duration, and the uncertainty of their character or prognosis, naturally precluded that minute and searching neurological investigation which they deserved. The absence, too, of subsequent microscopical examination, or at least the fact that Dr. POOLE makes no allusion to this, renders speculation as to their ætiology and pathology more than a little futile. From the clinical description a diagnosis of acute polio-encephalitis seems justifiable; from the pathological, the data are incomplete. Were histological confirmation of an inflammatory encephalic process forthcoming, the exact diagnosis would still be wanting, for the simple reason that we cannot always, or often, determine the nature of the postulated virus by the type of tissue-reaction. A pathological classification is preferable to a clinical one, but the pathogenic is superior to both. Until we know the features, cultural and otherwise, of the virus which we presume underlies epidemic encephalitis and of those which we imagine, similarly, are responsible for the other types of encephalitic and polio-encephalitic cases mentioned above, we shall have as much difficulty in differentiating our clinical material as the internist formerly had with alimentary infections of a typhoid type. In respect of acute poliomyelitis a more advanced stage has been reached, ætiologically and bacteriologically, and the same is true of those cases we have called polio-encephalo-myelitis. The strains of the coccus of epidemic cerebro-spinal fever, similarly, are known and are recognisable; but when we come to polio-encephalitis pure and simple, we can get at

present no further. We are not inclined to class epidemic encephalitis, still less the rarer affections to which allusion has been made, as sub-varieties of an all-embracing influenza, and the question of a pleomorphic organism behind these varying manifestations of brain inflammation is not, we believe, anywhere within reach of a solution. In a recent communication Prof. A. J. HALL, of Sheffield, has argued for a synthetic as opposed to an analytic approach to the encephalitis problem; but a consideration of the vexed matters which we have been discussing will, we think, convince the physician that the work of analysis must be prosecuted further ere the synthetic stage can be entered on with advantage.

"ELECTRONIC REACTIONS."

At a joint meeting of the Sections of Medicine and Electro-Therapeutics of the Royal Society of Medicine on Friday last (Jan. 16th), Sir THOMAS HORDER, speaking on behalf of himself and his colleagues, Dr. C. B. HEALD, Colonel H. P. T. LEFROY, Mr. WHATELY SMITH, and Mr. M. D. HART, read an account of an investigation into the Abrams technique and the related procedures of Dr. W. E. BOYD, the general title of the paper being "Electronic Reactions." We publish elsewhere an account of the meeting. The decision of the Sections to give a hearing to the communication was taken, we understand, with some reluctance, inasmuch as the alleged discoveries of ABRAMS formed the avowed starting-point of the investigation, and these discoveries have appeared hitherto to the medical profession to present no points worthy of discussion, the claims of healing being unprecedented and uncontrolled, and the underlying physical manifestations being inexplicable upon scientific grounds. The communication read by Sir THOMAS HORDER, which may be regarded as a report from himself and his colleagues upon "Electronic Reactions," suggested that while the labours of ABRAMS were of no account, those of Dr. BOYD at Glasgow, which had their starting-point in ABRAMS'S work, presented features that it would be wrong not to discuss, in view of possible developments. In those circumstances it will no doubt have been a disappointment to those engaged in the new investigation that, when a meeting of two Sections of the Royal Society of Medicine had heard the report they decided not to allot a date for debate on the questions involved.

The question therefore arises whether more harm than good has been done by the reading of the report, versions of which have already made their appearance in the lay press, upon which reflections have been founded of a misleading character. The authors of the report find that "electronists" using the Abrams technique have exploited the public, but the public on reading the report, or summaries of it, may not recognise the distinctions between the Abrams technique and the Boyd technique as fundamental, and may consider that some new and mysterious agency, related to the researches of ABRAMS, has now been recognised as at any rate containing therapeutic virtues. It is true that the report contains the clearest possible statement that there is no justification whatever for applying the alleged discoveries to the diagnosis or the treatment of disease, but what is to make the public accept this statement? And what is to make certain practitioners feel that "Short is the friend not Codlin," and accept the implied condemnation of their present activities? The reply of Sir THOMAS HORDER and his colleagues here would be

(or might be) that their considered report on the whole subject ought to force "E.R.A." practitioners to submit their work and results to carefully controlled experiments, as Dr. BOYD has done with his work at Glasgow. But we doubt the falling out of this position, for those who do not desire any scrutiny of the sort may consider that they have been judged already, and now prefer to point for their answer to results which they are prepared to claim without further support.

Dr. BOYD has allowed Sir THOMAS HORDER'S committee every opportunity for making and controlling full inquiry, and in this they were assisted at one period by the research officer to the Society for Psychical Research, as representing the highest available authority on the subject of conscious or unconscious trickery. All the investigators seem to have been satisfied with the conditions, and to feel justified in stating that certain substances, when placed in proper relation to Boyd's "emanometer," produce changes in the abdominal wall of the subject of a kind which may be detected by percussion. They point to figures as showing that such detection must connote real differences upon percussion and cannot be dependent upon chance. Our opinion is that the researches ought not to have left the cradle of a physical laboratory. The work is not ready for clinical experiment, while to anything like open debate in medical circles, the want of common grounds of accepted medical knowledge, and even of a generally accepted nomenclature, appear as fatal drawbacks. The absence of any claim to therapeutic advancements in connexion with "electronic reactions" indicates that the alleged findings should be tested in physical laboratories.

ANTI-VENEREAL PROPAGANDA.

THE existence of two societies concerned with propaganda and educational effort directed to the diminution of venereal diseases has been evident for several years; and the clashing between these bodies and the competition between them for public favour have undoubtedly been inimical to the object which is common to both. The Trevethin Committee was appointed to consider the possibility of combined action, and in due course reported in terms with which both the National Council for Combating Venereal Diseases and the Society for Prevention of Venereal Disease expressed satisfaction. Thereafter a liaison committee representative of both societies was formed, and in the first instance agreed on a memorandum which embodied the chief educational objects of the two societies. From the viewpoint of the first-named society their representatives must have felt considerable difficulty in agreeing to its contents, though if these are taken in their context no serious objection need be raised. The signature of this memorandum was justified by the importance of securing the limitation of propaganda as to personal disinfection to selected persons, or to persons definitely asking for advice on disinfection; and by the association in all printed matter with this advice of moral counsel and warning as to the dangers of promiscuity, whether disinfection is employed or not. A subcommittee of the above-mentioned liaison committee was further instructed to explore the legal possibilities of amalgamation between the two societies; and after legal consultation we are informed that the difficulties in the way of this were found not to be serious. The scheme for amalgamation which was prepared has not, however, been discussed, as, on further consideration, the Society for Prevention of Venereal Disease, at a recent meeting

of their executive committee, decided that fusion between the two societies appeared impracticable in view of the constitution and incorporation of the National Council, and that in their view combined action by coöperation remains the most practical and advisable policy. This decision is regrettable; but in view of its decisive character it becomes necessary to fall back on such coöperative counsel between the two bodies as may be feasible. Were it practicable for Sir AUCKLAND GEDDES, the president of one, to consent to become the president of both societies, the prospect of such coöperation might be bright. In any case the liaison should remain.

Meanwhile, there necessarily will arise questions on which combined Parliamentary representations may be made, and others on which consultation will be desirable on points on which there is common agreement. The importance of the varied educational work of the National Council, which is rapidly increasing in scope, cannot be exaggerated. Nor can there be doubt as to the desirability of giving exact scientific advice as to disinfection to persons requiring it, and of enabling druggists to sell materials for this purpose, embodying the exact advice just indicated, along with warning against exposure to the need for using it. The exact limitations of such advice are not likely to be finally settled until or unless the Ministry of Health make a definite pronouncement on this subject. The position demands this, and we trust that it will soon be given. When these conditions are fulfilled, we may hope that less will be heard of ardent propagandism in any special limited direction; that the problem of prevention of venereal disease will be viewed as a whole; and that all branches of preventive work, including a larger share of general social educational work, will get attention.

ISO-PROPYL ALCOHOL AS A SUBSTITUTE FOR METHYLATED SPIRIT.

RECENT modifications in the composition of methylated spirits introduced by the Excise authorities are of far-reaching importance, and from the standpoint of the legitimate user of the spirit they can only be viewed as deplorable. The addition of a small quantity of dye-stuff a few years ago was a subject for regret to many, but the recent addition of pyridine to the denaturants used is a far more serious matter. Pyridine is sufficiently irritant to the skin to render the use of the spirit containing it unsuitable for the preparation of lotions, or for washing the skin prior to operations, or for use in a hypodermic syringe. Industrial methylated spirit may be free from these drawbacks, but the restrictions surrounding its employment place it outside the reach of the practitioner. It seems almost impossible to suggest a denaturant which could be added to the spirit which would satisfy both the demands of the revenue authorities and the requirements of the legitimate user. The most important of these latter requirements is, of course, freedom from irritant or toxic action, while miscibility with water is also a most desirable characteristic. At the present time the best way out of the difficulty appears to be found in the use of iso-propyl alcohol. This substance, which can be manufactured by the reduction of acetone, resembles ordinary ethyl alcohol very closely in its properties, being almost identical in boiling-point, density, odour, and miscibility in water, and having very similar solvent properties. In these respects it is more akin to ethyl alcohol than to its own isomer, normal-propyl alcohol. Furthermore, it appears to be free from toxic and irritant action, and is quite suitable for all purposes for which the old methylated spirit or the modern industrial spirit could be used. Indeed, its toxicity is probably a great deal less than

that of methylated spirit.¹ The technical product contains about 95 per cent. of the alcohol and is available under various names, such as "avantine." The only real drawback seems to be that of price—namely, about 40s. to 45s. per gallon; but this is, of course, considerably less than that of rectified spirit, duty paid. Iso-propyl alcohol is also made in America from natural gas, but there do not seem to be any available data as to the physiological purity of the alcohol from this source.

Annotations.

"Ne quid nimis."

CORRECT POSTURE.

POSTURE is defined as the relative disposition of the various parts of anything and in a special sense as the position and carriage of the limbs and the body as a whole. In a more limited sense the word is used by Mr. Muirhead Little, in his article (see p. 197) on the Treatment of Postural Defects in Children and Adolescents, to mean the habitual attitude of the body and limbs when not in movement and especially in the upright position of the trunk. Postural defects are such faults of attitude as are not connected with permanent structural deformity and, in general, can be corrected by the patient's volition or by the application of small outside forces. As in the erect position posture must be affected by the position and form of the supporting lower limbs, it becomes necessary to take into consideration the condition of the feet and legs, seeing that equilibrium is only possible when a vertical straight line passing through the centre of gravity falls inside the boundaries of the supporting base. According to experiments made by Reynolds and Lovett,² this line falls normally just in front of the ankle-joint and the knee-joints, in front of most of the vertebral joints, and probably also in front of the hip-joints, although these latter are so situated that this position is only inferred from experiments made upon the dead body. This disposition of the joints as regards the centre of gravity enables the erect position to be maintained with a minimum of muscular action, owing to the existence of strong ligaments upon which much of the strain is thrown. To the question as to what is the normal erect posture there is no definite answer, for while all observers will agree that certain postures are abnormal, few will agree as to the exact degree of curvature in the several regions of the spinal column which constitutes abnormality. It is well known to sculptors and students of ancient art that the male Greek figure, as represented in such statues and reliefs as have come down to us, differs considerably from the best models of modern times. The difference would seem to consist chiefly of a greater sharpness of the lumbo-sacral angle. The tracings reproduced from photographs of statues and casts in the British Museum in Mr. Muirhead Little's article show this peculiarity, which seems to manifest itself in male figures only. We have no means of knowing whether these sculptures were true to nature or not, but at least they show that the ideal of manly beauty in the time of Pheidias differed from that of the orthopaedic surgeon of to-day. In the United States attempts have been made to establish a normal standard by the examination of a number of healthy young men at the beginning of their university course. Dr. Lloyd T. Brown,³ of Boston, has published the results of an examination of 746 freshmen at Harvard

¹ Martindale and Westcott: *Extra Pharmacopoeia*, eighteenth edition, p. 131.

² Reynolds and Lovett: *Jour. Amer. Med. Assoc.*, March 26th, 1910: *Amer. Jour. Phys.*, May 1st, 1909.

³ Lloyd T. Brown: *A Combined Medical and Postural Examination of 746 Young Adults*, *Amer. Jour. of Orthop. Surg.*, 1917, xv., 774.

and Dr. Robert Cook¹ those of 1393 at Yale University, but without establishing a really definite standard. Lloyd Brown, however, divided his cases into four grades, A, B, C, and D. Only about 7 per cent. of his cases were found worthy of Grade A. Figs. 5 and 6 (see p. 198) show this type standing at attention without conscious effort (5) and when he has been asked to correct his posture (6). In a later paper by Lloyd Brown and Roger I. Lee, dealing still with Harvard freshmen, rather different outlines are given as typical of the four grades, thus showing that the standard of normality is not yet quite established. It was found that in the highest grade a straight line drawn from the tip of the external malleolus to the middle of the great trochanter, if continued upwards, would pass through the shoulder (head of the humerus?) and the front of the external ear.

THE GREAT PLAGUE.

"What eye would not weep to see so many habitations uninhabited, the poor sick not visited, the hungry not fed, the grave not satisfied? Death stares us continually in the face in every infected person that passes by us, in every coffin which is daily and hourly carried along our streets."

SUCH was the impression made by the Great Plague upon an official of St. Paul's Cathedral, by name John Tillison, and chronicled by him in a letter to Dean Sancroft. Many books have been written about the plague of 1665, some from the medical side, as, for instance, "Loimographia," by William Boghurst (an admirable edition of which was edited by the late Dr. J. F. Payne for the Epidemiological Society), "Loimologia," by Dr. Nathaniel Hodges, and "Loimotomia" by Dr. George Thomson, who has left us the sole record of a post-mortem examination upon a plague patient. In fiction there is, of course, Defoe's "Journal of the Plague Year" and Ainsworth's "Old St. Paul's." But for a carefully documented and vividly written historical account of the plague we must allow that Mr. Bell's recent book² is the best that we have seen, taken as a whole, and is a fitting companion for his other book the "Great Fire of London." Mr. Bell apologises in his preface for the quantity of references with which he says his pages are peppered. For our part we consider that no apology is needed and we only wish that more writers would give their references as carefully. Mr. Bell has an extraordinary flair for picking out illuminating passages from the writings of his authorities. Quite early in the book (p. 59) we find the following remark in a letter from Sir Robert Long, auditor of the Exchequer, to his clerk:—

"I pray you use all possible care to preserve yourselves and my house. . . . Lett not the porter come into the house; take all course you can agaynst the ratts, and take care of the cattis; the little ones that will not stirre out may be kept, the great ones must be killed or sent away."

Long evidently had some idea that "the ratts" were a source of danger, and it is curious that he should not have seen that his cats might have been valuable assistants, even though, as is possible, they might have conveyed infection. The two regions of London where the plague was at its worst were St. Giles in the Field and the other parish of St. Giles—namely, Cripplegate—both being poor quarters. Cripplegate lay in a waterlogged situation, where shallow ditches were clogged with filth, and in addition the great laystall in Moorfields, where all the rotting garbage from the streets was raked together, formed an ideal attraction for rats. Against this laystall the College of Physicians had protested in 1636, but nothing was done. Plague having obtained foothold, its spread was rendered easier by the mistaken policy of shutting up houses with all their inmates directly one case of plague occurred therein, a policy which, it is sad to say, was endorsed by the

College of Physicians. As in all epidemics, there were instances of both cowardice and heroism on the part of the clergy and the medical profession, and Mr. Bell gives many details in pp. 223–226 and p. 290 respectively. A horror lay over the city, and as in Egypt of old there was scarce a house where there was not one dead. Mr. Bell is rightly severe upon the Court, which retired to Oxford, leaving Albemarle to do his best for stricken London, together with Lawrence, the Lord Mayor; and admirably they did their work. He also gives with hardly-veiled satire Evelyn's description of the Fellows of the Royal Society meeting at the Durdans, where he found Dr. Wilkins, Sir William Petty, and Mr. Hooke contriving chariots and other mechanical inventions. In one respect Mr. Bell has departed from his eminently "indifferent" treatment of his subject, for he goes out of his way to lament the sufferings of the Non-conformist ministers who were ejected on St. Bartholomew's Day, 1662. It is a matter which has but little to do with the Plague, and granted that the ejected ministers had grievances, it must also be remembered that most of them had been intruded into the livings when the rightful holders had been turned out by Parliament in 1640 and later. Granted, too, that the Conventicle Act and the Five Mile Act were oppressive, as they undoubtedly were, the latter was only an extension of an ordinance of Parliament dated August 19th, 1643, whereby one-fifth of the profits of their livings might be granted by sequestrating committees to the turned-out clergy, but on condition amongst others that they must remove out of the parish. Mr. Bell has, we see, read Calamy's book on "Non-Conformity," and we imagine that so learned a man as he must have read Walker's "Sufferings of the Clergy." The 2000 ministers who were ejected at Black Bartholomew-tide were not all learned and saintly men, though it is true that some were really sufferers for conscience' sake. But many were not in Holy Orders, and others we find from Calamy were illiterate. Thus, on p. 731 of Volume II. of the 1713 edition of Calamy, we find Mr. Ellis, a skinner from London, Mr. Miller, a London bookseller, Mr. Miles and Mr. Froude, both Anabaptists; on the next page Mr. Jones, an honest plowman, Mr. Jenkyn Jones, a Catabaptist, Mr. Joseph, who "spoil an ingenious husbandman to become an Ignorant Preacher," and lastly Mr. Thomas, who "turn'd a drunken steward." But when Mr. Bell is writing of the Plague and its attendant horrors he is admirable.

THE SUPERIORITY OF THE NON-SMOKER.

Dr. Rosslyn Earp's statistical inquiry at Antioch College, Ohio (U.S.A.), which we publish on p. 213, shows that while the non-smoking students of the College do not come out better than the smoking students in the ordinary cardio-vascular tests, yet in practice the non-smokers are the better athletes and show a better record of scholarship. We agree with him that the size of the population examined justifies the conclusions drawn, but it will certainly be urged that the population, as selected, may have bias apart from the tobacco habit. Athletes, as a group, do not smoke during training, and before any contest all the best athletes are known to be in the non-smoking group, with the result that that group would win the athletic events. Moreover, experience among school-children suggests that good physical and good mental equipment go together, so that, having placed non-smoking athletes in a group, it is natural to find in that group the better mentalities. Nevertheless, Dr. Earp's grading of Table C is good enough to suggest that tobacco may have some influence per se. A year or two ago an attempt was made on a small scale¹ to compare the mental work of smoking and non-smoking telegraph operators, using output as the criterion. The numbers at risk were few—viz., seven heavy smokers, five light smokers; the heavy smokers did not do so well as the light.

¹ Robert J. Cook: Report of the Orthopaedic Examination of 1393 Freshmen at Yale University, Jour. Bone and Joint Surgery (Boston, Mass., U.S.A.), 1922, iv., 247.

² The Great Plague in London in 1665. By Walter George Bell, F.S.A. London: John Lane. 1924. Pp. 374. 25s.

¹ Journal of Industrial Hygiene, October, 1920.

Output, again, was the measure in an investigation¹ of a larger group of glass bottle makers in relation to the physical effect of smoking. Smoking had little effect, nothing statistically reliable, but chewing markedly lowered output. There was no cross-influence of athletic training to invalidate the grouping in these inquiries. Examination of Dr. Earp's Table A does not show the regular progression on any observation made, upwards or downwards, moving with the amount of tobacco used, which would be desirable to bring conviction. The heavy-smoker group, in fact, gives results which tend to be closer to the non-smokers than to the moderate or slight. These results do not agree with either athletic prowess or mental capacity, and suggest that in this case pure tests are not being applied. The inquiry, however, is well worth making and the material for it is abundant.

FOOD PRESERVATION BY COLD.

THE dependence of this country upon imported food, much of it perishable food, makes a scientific study of the principles involved in the action of cold upon foods of great practical importance. The Report of the Food Investigation Board² for 1923, recently issued, contains, amongst numerous other matters of importance, an account of various studies dealing with this subject.

As regards frozen meat, there are well-recognised defects which detract from the practical utility of freezing and make it inferior to chilling. Actual freezing is, however, necessary for long-distance travel. The essential disadvantage of freezing meat is in the loss of texture when thawed, causing physical alterations and a tendency to drip. The latter is due to a separation of the water previously held within the fibres, which drains away from the cut surfaces, carrying with it some of the nutritive properties of the meat. It has been shown by earlier investigators that this undesirable change can be prevented if the rate of cooling is sufficiently rapid. Such a rapid cooling of beef is not practicable, since no known methods are adequate to achieve it in masses so large as a quarter of beef. To remove the drawbacks of freezing beef it is therefore necessary to try and discover some other method of producing the same effect which would not demand so high a rate of cooling. The best line of attack is to study the scientific principles concerned in the freezing of foods, and these were studied experimentally along a number of different lines.

Eggs were selected as a useful food to study, since previous work had shown that with them factors (such as limiting temperatures) other than the rate of cooling also affect recovery without physical damage. It was found during the year that the yolk may be preserved without sensible change in two ways—either by never allowing the temperature to fall below -6°C ., or by freezing and thawing with great rapidity. It is probable that some irreversible change of the nature of a coagulation occurs at temperatures between -6°C . and some unknown lower limit, but does not occur if this critical interval is hurried over with sufficient rapidity. Further light upon the problem was obtained by a study of the changes in a simple colloid system, that adopted being a mixture of gelatin and water. Where such a jelly is frozen and thawed water drips away freely—i.e., there is a definite separation of the water from the gelatin. These problems are still being studied, one interesting line of inquiry being measurements of the rate of advance of a fragment of ice in a cylinder of overcooled (-3°C .) jelly. The rate was found to be constant through the length of the tube, but the rate of advance was influenced by various factors, including the percentage of gelatin. Other studies have been carried out in regard to the autolytic changes in cod under frozen conditions. Foster and Fearon in 1922 found that the autolysis of beef or mutton frozen

rapidly in cold brine or mercury was similar to that of fresh unfrozen beef or mutton, whereas if the flesh had been frozen rapidly in air the course of chemical change was strikingly different. These results were confirmed for the cod, and the cause of the difference found to be due to the separation, in muscles which had been slowly frozen, of fluid containing proteins, ferments, and other organic substances in solution. It is this liquid which drips away from the flesh on thawing, and it is in this fluid that the more rapid autolysis takes place. The preservative action on fish of ice containing small quantities of antiseptic was tried, but on the whole the results were not satisfactory, because the flesh became impregnated with the antiseptic.

Another section of the report gives interesting particulars of results obtained by cold in the storage of different fruits. To obtain comparative results it is necessary to have some means of determining the commercial storage life of the fruit. Most of the work was done with apples, and for this and other fruits an arbitrary point for the end of commercial storage life was fixed as the length of time the fruit can be stored before loss due to fungal rots or functional diseases amounts to 10 per cent. In general, the results of work extending over three seasons was a pronounced extension of the commercial storage life of the apple by the action of cold storage due to a retardation and alteration of the natural ripening processes and to the delay or inhibition of fungal attack. In exceptional cases these satisfactory results were not obtained and ordinary storage yielded better results; the causes of this were studied and determined. Experiments with plums were less complete, and have yet to be placed upon a systematic footing. From cold storage trials with strawberries kept at 1°C . favourable results were obtained, and in this way they were kept in good marketing condition for seven and, in some cases, for ten days. When marketed the fruit realised the same prices as fruit freshly gathered. With such a rapidly perishable fruit as strawberries, the practical utility of this work is obvious.

TREATMENT OF MALARIA WITH PERACRINA.

AN account¹ of his experiences of the treatment of malaria in the famine districts of the Volga with the new drug "peracrina" has been given by Dr. J. Walker, who is the chief of the Swiss Red Cross Hospital in Russia. Peracrina is manufactured in Berne by the Haco Company in the form of sugar-coated pills, and is a combination of an albuminous substance with tryptaflavine. Each pill of 0.5 g. contains one-tenth of tryptaflavine. The effects of the absorption of this ingredient become apparent after ingestion of 3 g., the stools becoming coloured yellow and the urine fluorescent. As the result of his experiences in Russia, Dr. Walker believes that peracrina has a distinct and beneficial action on malaria, but that tryptaflavine alone, without the albuminous adjunct, is inactive. The series comprised 116 cases, of which 73 were benign tertian, 26 subtertian, and 22 mixed infections. Of these only 25 proved to be resistant to the drug, and the author is therefore hopeful that in peracrina we possess a specific for malaria which may possibly even replace quinine in the treatment of this fever. Further experiments are now being prosecuted in Syria and amongst the refugees in Greece. The dosage is as follows: For children of 3-6 years of age, 4-6 pills representing 2-3 g. of peracrina; from 6-8 years, 6-9 pills (3-4.5 g. peracrina); from 9-16 years, 8-12 pills (4-6 g. peracrina); adults 12-18 pills (6-9 g. peracrina). The course of treatment was extended in some cases over six weeks. A preparation, known as "peracrina 404," and possessing a high iodine-content, was not so active against malaria, and in two cases which proved fatal seemed to give rise to iodine poisoning. It was difficult to follow up the cases, but according to a recent report, out of

¹ Ibid., May, 1921.

² Annual Report for 1923. H.M. Stationery Office. 3s.

¹ Walker, J. (1924): Archiv für Schiffs- u. Tropen-Hyg. vol. xxviii., pp. 540-570.

30-40 patients who had been traced, only two had suffered from a relapse. The discovery of a specific more active than quinine, and shorn of its many disadvantages, would be eagerly welcomed by the profession, but more exact observations controlled by periodic blood examinations are necessary before optimism is justified. A perusal of the temperature charts and protocols in Dr. Walker's paper is not very convincing; we note in several cases the simultaneous exhibition of quinine hydrochloride had to be resorted to before resolution of the fever took place.

PRISONS.

THE report of the Commissioners of Prisons and the directors of convict prisons for the year 1923-24 has recently been issued.¹ It shows that notwithstanding the tendency for an increase in prison population to occur during the years following a war, and the large numbers of unemployed, the total receptions into the prisons of this country have again decreased in number. This in itself is a satisfactory feature of the report, and not less so is the account of the great amelioration of prison conditions which is gradually taking place. Educational facilities, particularly for adults, continue to make progress; there exists now in several of the prisons "clubs" or "honour parties" who hold meetings at which games are played and debates take place, and lectures, concerts of good music, &c., continue to play a part in the routine of the modern prison. The work at the Borstal institutions shows further improvement; at each of the three main boys' institutions—Borstal, Feltham, and Portland—there are now four houses each in charge of a housemaster, and the influence of a matron also helps the boys in the direction of their lives towards useful citizenship. It is interesting to learn that the officers of these institutions are now wearing plain clothes and the discarding of uniforms has had no untoward effect on the discipline. Although, as the report points out, this may seem a small matter in its beginnings, it is "one which may go far to promote the real spirit of a training school." A committee has been set up to consider the question of diet. The medical commissioner, Dr. G. B. Griffiths, also calls attention to the conservative treatment of prisoners' teeth. He suggests that long term prisoners would greatly benefit in health and well-being if an inspection and necessary fillings were carried out at the beginning of a sentence. The high state of general sanitation of the prisons is indicated by the small number of cases of infectious diseases notified during the year; four cases were reported from the local prisons and two from Borstal institutions. So far, then, the report seems fairly optimistic in tone, but there is another side to the picture. Special attention is drawn by the governors of two of the prisons to the increasing number of youths who, unable to find employment on leaving school, have their characters undermined by several years of idleness and drift into crime. This class of criminal, as the medical officer of the Feltham institution points out, is mainly derived from those children who during the war were deprived of the control and guidance of their fathers and were often allowed to run wild with plenty of pocket money; here the absence of male teachers from the schools led to further relaxation of discipline. There is a strong plea from the medical officer of the Birmingham prison for more satisfactory treatment of these young delinquents. Their "criminal" conduct is, he says, only one aspect of abnormal conduct which often has its roots far back in the early years of life. He suggests that abnormal conduct should be looked at as a whole and that the various authorities, those dealing with education, those concerned with the care of lunatics, mental defectives and epileptics, and those working particularly with criminals should co-ordinate their activities against all forms of "anti-social" conduct. This suggestion

seems a sound one and it merits close attention. We quote one sentence from the report in the hope that it will encourage those who give of their scanty leisure to the promotion of social welfare. It is stated to be "rare for a lad or girl to be received into prison who has been a member of a good boys' or girls' club, a boy scout or a girl guide, or a member of the Church Lads' Brigade."

DR. F. J. ALLAN'S RETIREMENT.

AT the beginning of this year Dr. Francis J. Allan retired from the position of medical officer of health for the City of Westminster, and his retirement means the loss of a very able and far-seeing member of the public health service. Dr. Allan acted as assistant to the late Sir Henry Littlejohn, and was some years in practice as a general practitioner before he was appointed medical officer of health for Shoreditch in 1890. Two years later he transferred to the Strand, and when on the creation of the metropolitan boroughs Westminster came into being by the amalgamation of the Strand District, St. George's, Hanover-square, St. James's, St. Martin's, St. Margaret's, and St. John's, Dr. Allan was elected medical officer of the newly formed borough. In 1892 he was appointed lecturer in sanitary science at King's College, and since 1915 he has been lecturer in public health in the Westminster Hospital Medical School. He is one of the trustees of the Society of Medical Officers of Health, of which he has been president, secretary, and editor of *Public Health*, the official journal of the Society. During the war Dr. Allan rendered great assistance to the metropolis as a sanitary expert, and he had the supervision of large numbers of refugees. In recognition of the latter services he was awarded the Albert Medal by the King of the Belgians. Dr. Allan's services to the City of Westminster have been more than merely administrative, and the influence of his work has had far-reaching results. It was through his representations under the Housing Act that the large and formerly unsavoury area (Clare Market) between the Strand and Holborn was condemned and cleared, leading to the formation of the present beautiful avenue of Kingsway. He was also instrumental in forming the first health society in Westminster, which eventually became the model on which other health societies have been formed throughout the country, and which may well be claimed as the foundation of the maternity and child welfare schemes now universally adopted. We are glad to know that Dr. Allan is still retaining his connexion with the Westminster Health Society and other bodies in Westminster, as well as his lectureship in the Westminster Hospital Medical School. The Westminster City Council have placed on record their high appreciation of Dr. Allan's services. It is to his personality that the smooth working of his department has been to no small extent due.

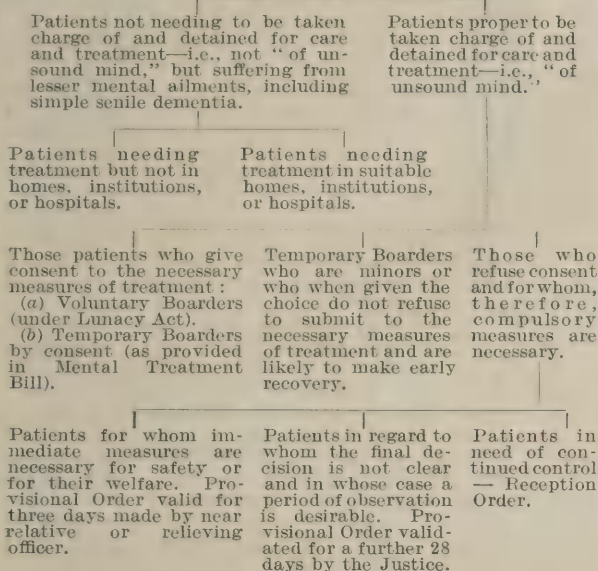
CLASSIFICATION OF MENTAL DISORDERS.

THE Special Committee of the British Medical Association which drew up the Memorandum of evidence to be set before the Royal Commission on Lunacy fully recognised the difficulty of dealing with mental disorders owing to the great variety of conditions presented. Thus the most lasting and grave forms of mental unsoundness may, at their onset, present only a mild type of mental disturbance. On the other hand, some of the most acute forms may be of only temporary duration, almost sure to recover, and possibly unlikely to recur. Then, again, some of the forms are marked by a natural tendency to remission and recurrence with intervals of apparent mental health; others, and these perhaps the most dangerous forms of mental disorder, are very difficult to detect and are carefully concealed by the patient for long periods. There are also chronic forms which

¹ Annual Report of the Prison Commissioners, 1923-24. London: H.M. Stationery Office. Pp. 90. 1s. 6d.

present no dangerous or conspicuously objectionable characters. If the best possible is to be done for the patient as a sick person the facilities for treatment and the types of accommodation must be sufficiently various to suit all these wide differing conditions. The Committee therefore drew up a scheme for the classification of patients suffering from mental disorders, which appears as an appendix to the Memorandum and is here reproduced. The scheme is based chiefly on the well-being of the patient combined with proper care for the safety of the community.

Scheme for Classification of Patients Suffering from Mental Disorders.



On a later page we print a general summary of the Memorandum and of the evidence given by representatives of the Association before the Royal Commission.

THE CORRECTION OF ASTIGMATISM.

FOR more than sixty years the prescribers of spectacles have been content with finding the cylindrical lens that will correct the corneal astigmatism for distant vision, and they have then assumed that the same cylinder will correct this astigmatism when used for near work. In the current number of the *British Journal of Ophthalmology* Mr. A. S. Percival has shown that this is not the case. The mathematic form of the article will not appeal to the ordinary reader, but the gist of the conclusions is this. If no presbyopic addition be given for close work, the power of the cylinder when used for near work must be increased by about 9 per cent. If a ± 5 D. cylinder corrects the corneal astigmatism for distance, it will require a ± 5.45 D. cylinder to correct this astigmatism for close work. If a full presbyopic correction of $+ 3$ D. sphere be given for reading, no alteration need be made in the cylinder; if a smaller correction, say $+ 2$ D. or $+ 1$ D., an addition of 6 or 3 per cent. respectively will be necessary if the cylinder be of high power. The practical application of Mr. Percival's observation is clear. For weak cylinders the amount to be added is negligible: for instance, a 1 D. cylinder for distance should only become 1.09 for reading. But where high-powered cylinders are required, better visual results for reading are obtained by an appropriate increase in the power of the cylinder.

THE anniversary dinner of the Medical Society of London will be held at the Grand Hotel, on Wednesday, March 11th, at 7.30 P.M.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CVI.

THE TREATMENT OF POSTURAL DEFECTS IN CHILDREN AND ADOLESCENTS.

THE spinal column consists of four regions, which are alternately rigid and flexible. From below upwards there are: 1. The rigid sacrum. 2. The flexible lumbar region (including the lowest two thoracic vertebrae) capable of bending in all horizontal directions and of a considerable degree of rotation. 3. The thoracic region, including only the second to the tenth thoracic vertebrae. No appreciable movement is normally possible in this region, although the normal curve may gradually be altered from various causes. 4. The mobile cervical region (including the first thoracic vertebra), in which bending in all directions and some rotation is possible. The regions most concerned in the posture of the body are the lumbar and thoracic, each of which reacts on the other, because to attain or preserve equilibrium an increase of curvature in one region must be compensated by an increase of curvature in the other. The lumbar curve is also affected by the position of the head. An increased lumbar curvature may also be compensated by an inclination of the trunk forwards pivoting on the hip-joints. While the limits of the range of motion are set by the shape of the articular surfaces and the length of the ligaments, the position assumed within those limits depends on muscular action, which is capable in the course of time of enlarging the range of motion in one or another direction. A similar but more objectionable result may be attained by the action of gravity, if unregulated by muscular action.

From what has been said as to complementary curves, and as to the rigidity of the curve in the thoracic region, it would be expected that extensive changes of the figure could only be brought about by long-continued, slowly acting agencies. Actual experience accords with this expectation. The relative strength and tonicity of the muscles constitute the immediate cause of the attitude assumed in the standing-still position. Figs. 1 to 4 represent the grades A, B, C, D, into which R. I. Lee and Lloyd T. Brown¹ divided the Harvard freshmen examined by them in the attempt to establish a normal standard. If the abdominal muscles are over-balanced by the lumbar muscles, an exaggeration of the lumbar curve results. Over-action or contracture of the psoas muscles leads to a like effect. Such relative weakness of the abdominal muscles may be the result of over-stretching by distension of the belly. Muscular fatigue is a common cause of postural defect. Most of us are aware that when we are tired there is a tendency to relax the muscles, and to allow the spine to collapse, throwing all or most of the strain on the ligaments, whereas when we are fresh and vigorous we sit or stand without conscious effort with the trunk and neck well braced up. Incidentally, the degree of curvature in the several regions of the body which constitutes abnormality is not an easy matter to determine, and even the normal posture regarded as ideal varies in different ages (see Figs. 7, 8, 9, 10).

Postural lateral deviation of the spine may be due to inequality of length of limbs or to a habit of standing on one leg in the stand-at-ease position. It disappears in the one case when the shortness of the limb is compensated by means of a high boot, or when in the other case the patient stands evenly on both, equally extended, legs. If it does not then so disappear, the deformity, although postural in origin, has gone

¹ Roger I. Lee and Lloyd Brown: *Journ. of Bone and Joint Surgery*, 1923, v., 753.

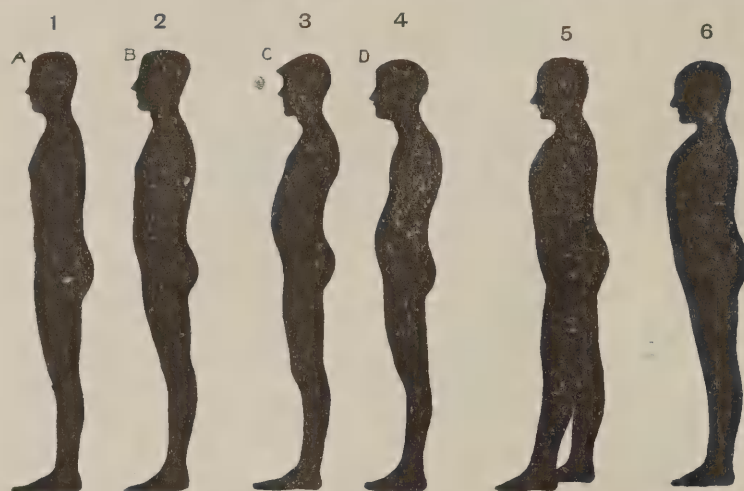
further and become fixed. There are also cases in which postural lateral deviation is due to want of tonicity in the muscles allowing the spine to sag to one side, just as it more often does in the direction of the normal spinal curves. Round shoulders, when not due wholly to abnormal curvature of the thoracic region of the spine, represent the direct result of relaxation, weakness, or atony of the scapulo-spinal

and hip flexion. A similar condition of the anterior muscles of the ankle favours excessive plantar flexion, to compensate which the knee and hip are hyper-extended. High heels are accused of causing defects of posture, as well as deformities of the toes. It is open to question whether this accusation is justified. As long as the heels are not so high as to place the foot in a position of such extreme equinus that no further plantar flexion is possible, it is difficult to understand how they can affect the posture of the body.

Inequalities in the length of the lower limbs must be compensated, knock-knee and coxa vara if found must be dealt with, as well as all other remediable abnormalities. The next step is to ascertain what is the best position which the patient can assume voluntarily and to train him so that he may know when he is in that position. For this purpose a large mirror is of considerable value. The patient being placed in front of it in his best position is able to see for himself what it is that he has to do. This is the more desirable because it is not unusual for a patient to put himself in a worse instead of a better posture when first told to hold himself upright.

Fig. 6 shows the effect of a well-directed conscious effort of correction from the position at ease in Fig. 5. When such a position can be maintained indefinitely *without* conscious effort a good deal of progress has been

made. Treatment includes every measure that tends to the improvement of health and strength, and excludes all those of a contrary tendency. It is in the stationary erect position that it is most difficult to avoid falling into bad attitudes and lolling, and



Figs. 1 to 4 (from R. I. Lee and L. T. Brown, loc. cit., 1923) represent the four grades A, B, C, D, among Harvard freshmen of the thin type. Figs. 5 and 6 (from L. T. Brown: Amer. Jour. of Orthop. Surg., 1917, xv., 774), represent a freshman of grade A, of heavy type, standing at his ease (5) and again when told to hold himself up (6).

muscles—that is to say, loss of the normal balance between them and the powerful pectoral group, from whatever cause arising.

Postural defects are generally the result of abnormal conditions and not the cause of them, but it must be admitted that if they are allowed to persist they probably aggravate those conditions, and thus a vicious circle is entered upon. The muscular weakness and atony which allow round shoulders and hollow loins and visceroptosis are themselves signs of malnutrition and faulty innervation, and the hygienic treatment which relieves the latter conditions will indirectly correct the postural defects. There is no lightning cure, but the example of army training which can turn the slouching recruit into an upstanding, well-set-up man, shows what may be done by unrelenting, well-directed treatment. Good results are only obtainable by oft-repeated and persevering efforts. Flat everted feet must be treated by exercises and the use of proper shoes and boots. Painful affections of the feet may prevent the normal distribution of weight by causing the patient to spare one part of the foot or feet, and to load unduly another part, either of conscious choice or instinctively. Thus, it is a common complaint by the parents of flat-footed children, that they are pigeon-toed, and they are brought to the surgeon because they turn their feet in. In such cases the weak inner side of the foot is unconsciously relieved and its flatness corrected by inversion and concomitant supination of the foot at the medio-tarsal joints. Inequality of length or contraction of any of the joints of the lower limbs may affect the general posture of the body by making it impossible for those limbs to support the centre of gravity of a normally poised trunk and thus necessitating an abnormal poise. Loss of normal muscle-balance acts in a similar manner. For instance, palsy or weakness of the calf muscles is followed by excessive dorsiflexion of the foot and secondary knee

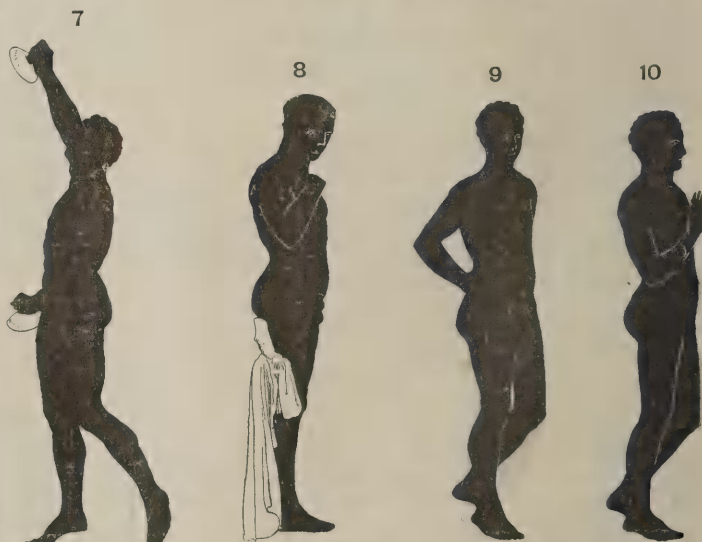


Fig. 7. From No. 1655. Third Græco-Roman Saloon, British Museum. "Satyr dancing. Known as the Rondinini Fawn." Fig. 8. From No. 120 in the Cast Gallery, British Museum. "A copy of a statue by Polycleites, 2nd half of V. Centy. B.C." Figs. 9 and 10. From a Votive Relief, No. 2155. "Offering a torch to Artemis Bendis. About 350 B.C." The above show the Greek ideal of the great period. There is in these a comparatively sharp angle in place of the longer lumbar curve in Figs. 1 to 6.

therefore standing still should be as far as possible avoided, at any rate, in the early stages of treatment. When the patient is not actively occupied he should be seated or recumbent. In this connexion I am of opinion that cricket, which involves, for a large proportion of the players, much standing about doing

nothing, is not a suitable pastime for the subject of postural defect.

The Form and Dimensions of Chairs.

The form and dimensions of chairs are of great importance. Much has been written on school chairs and desks, and many patterns have been recommended, especially in the United States. The desiderata in a chair for reading differ much from those in a chair for desk-writing. The first should have a low seat of such a height that when the feet rest on the floor, its front edge does not press unduly on the posterior surfaces of the thighs. The seat should have a backward slope downwards of ten degrees with the horizontal. The back should be high enough to reach to the sitter's occiput, and should be set at an angle of at least 95 degrees with the seat, and thus at one of 105 degrees with the horizontal. In such a chair the whole of the back is supported and the slope is great enough to check any tendency of the spine to sag, especially if a small thin cushion is fixed to correspond to the lumbar region. For writing or for reading books which are too heavy to be held long in the hands, a sloping desk is desirable, which should be of such a height that its front edge should be at the level of the middle of the patient's sternum

when he or she sits upright. A sloping seat is of no advantage for use at a desk, but rather the contrary, and as the back of the chair does not come into use in desk-writing any chair with a level seat of a height as above described will be suitable.

Exercises and Massage.

To describe in any detail the exercises by which it is hoped to correct postural defects is beyond the scope of a short article such as this. They may be learned from a manual of physiotherapeutics, such as "Exercise in Education and Medicine," by Dr. R. Tait Mackenzie,² and are to be carried out by those trained in that branch. Suffice it to state that massage of relaxed and overstrained and undertoned muscles is of value, in addition to volitional exercises selected to enable the patient to attain and to maintain a normal healthy posture. In every scheme of corrective training the importance of the abdominal muscles must be borne constantly in mind.

E. MUIRHEAD LITTLE, F.R.C.S. Eng.,
Consulting Surgeon, Royal National Orthopaedic
Hospital, London.

² W. B. Saunders Company, London and Philadelphia, 1923.

Special Articles.

ALASTRIM AND VARIOLA.

THE EXPERIMENTAL SIDE OF THE QUESTION.

BY J. C. G. LEDINGHAM, C.M.G., D.Sc.,
M.B. ABERD., F.R.C.P. LOND., F.R.S.,

CHIEF BACTERIOLOGIST TO THE LISTER INSTITUTE; PROFESSOR OF
BACTERIOLOGY, UNIVERSITY OF LONDON.

RECENT suggestions to notify as para-smallpox (or some such designation) the mild form of variola now current in this country have been criticised on the ground that, apart from the lack of "toxicity" and death-dealing power which constitute the chief features of the mild form, its clinical manifestations are indistinguishable from those of the old-fashioned variola. The further point has been raised that until clinical or bacteriological differences are formulated and proved, notification under a special term has nothing to recommend it. Prof. R. Jorge's¹ very able and critical survey of the whole question of alastrim *et hoc genus omne* deals perhaps rather summarily with the experimental and immunological side of the subject, his opinion being that while alastrim satisfies, in the main, the principles of Jennerian vaccination as evidenced by the protection of the vaccinated and the reciprocal immunity of the convalescents to vaccinia, it is not entirely justifiable to use vaccinia as a sort of experimental touchstone or substitute for variola. He does not appear, however, to be a dualist in the old sense. He would wish to be assured in the first place that alastrim virus can, like variola, be reduced to the condition of variola vaccine by passage through the calf, but, even if this proved to be possible, he would still hold that clinical and epidemiological features constituted a real difference. The results of the animal experiments quoted by Prof. Jorge seem to him confused and conflicting and consequently of little evidential value, but, on the other hand, it is clear that he has not adequately surveyed and appreciated the available data relating to this aspect of the subject. I propose, therefore, by invitation of the Editor of this journal, to detail somewhat more fully than Prof. Jorge has done the results of animal experiments which to my mind clearly establish the essential identity of alastrim and variola so far as that is possible in default of the fuller and more precise immunological data which only the artificial culture of these viruses will provide.

¹ THE LANCET, 1924, II., 1317, 1366.

The use of vaccinia as a touchstone in human and animal experiments has long been regarded as entirely valid in view of the now numerous demonstrations of successful variolisation of the calf whether by direct passage, oft repeated, or more frequently through the intermediary of the monkey. Moreover, the initial source of the current vaccine lymph of commerce, though often wrapt in obscurity, is almost certainly in all cases human variola.

Experiments on Man.

These concern the results of vaccination of recovered cases of alastrim, it being generally admitted by most of those who have recorded their experiences in various countries that as a preventive of alastrim recent successful vaccination is notoriously effective. I ignore for the moment certain experiences which seem to show that when alastrim does attack the recently vaccinated, its manifestations may be fully as florid as in the unvaccinated. Such happenings, in my opinion, simply serve to illustrate flaws in the immunising mechanism which declare themselves in all experimental work and which are most likely the immediate consequence of an insufficiently developed complement of viricidal body to meet a fresh virus attack. In this connexion also it should be borne in mind that the path of vaccination with its limited local range is not the path by which in all probability the full-blooded virus enters the system.

With regard to the reciprocal experiments, the following data may be adduced: Dickson and Lassale (1903), who investigated the "varioid varicella" of Trinidad, record that of 185 recovered cases 15 were successfully vaccinated, while de Korté (1904), in connexion with the South African amaas, reports that 14 cases vaccinated after recovery reacted "in varying degrees like individuals more or less protected by previous vaccination." Data concerned with the Brazilian alastrim are reported by Ribas (1910) and Rudolph (1911). The former found that the vaccination of 15 alastrim cases at periods of six months or later after recovery yielded positive takes in seven, while the latter vaccinated 20 recovered cases within one to six months with negative results in all. In a series vaccinated somewhat later, however, at 8-11 months, 3 out of 11 gave positive takes. Both Brazilian authors, impressed by these results, inferred that the immunity to vaccinia as conferred by alastrim was of relatively short duration. Robertson (1913), reviewing the outbreak of mild small-pox in New South Wales, states that the performance of vaccination on 675 recovered cases at varying periods after the appearance of the small-pox eruption yielded a positive take in one case

only which was vaccinated on the second day of the small-pox eruption. It would seem unnecessary to pursue further the consideration of this line of experiment and simply to multiply instances of general conformity with small-pox with occasional lapses from the rule.

Experiments on Animals.

If alastrim, and here I use it simply as a convenient term, is to be regarded as essentially identical with small-pox, one would expect it to show certain constant and distinguishing features which the latter disease has always exhibited when attempts are made to transmit it directly to animals by cutaneous inoculation. The rule is that monkeys are readily infected with material from the human lesion at the first trial, while calves and rabbits fail to react under the same circumstances. Adaptation to the calf is generally secured by repeated passage, starting with potent material from the monkey or occasionally from the rabbit. By a passage is here meant the cutaneous inoculation of scurfy material and cutaneous debris scraped from the abortive site on another calf, the final result being a crop of definite and typical vesicles indicating complete adaptation. There is a considerable element of luck in securing variolisation of the calf and the necessary passages may sometimes be quite few, but it is evident that before adaptation can be established the virulence of variola for the calf requires to be steadily raised. Once adaptation is secured, however, repeated passage tends, as is well known, to a weakening of the virus, and other methods have to be employed, such as revaccination, to restore its activity for commercial purposes. This subject is the peculiar province of the lymph specialist and need not be discussed here.

Monkeys.

The records of experimental work with monkeys to receive notice here will be those of Green, Leake and Force, and Blaxall, representing respectively Australian alastrim, West Indian alastrim, and English mild small-pox. Green (1915), in the course of his investigation at the Lister Institute, London, of material forwarded from the New South Wales outbreak of 1913, inoculated eight monkeys, all of which reacted at the first trial with production of vesicles "resembling vaccine vesicles so closely that it was impossible to distinguish one condition from another." Leake and Force (1921), of the United States Public Health Service, examined at Washington material transmitted from West Indian foci (Jamaica and Haiti). They inoculated two monkeys with crusts from Haitian alastrim and pustule contents from Jamaican alastrim with the result that the shaved areas of skin into which the materials were rubbed presented in the course of some days a vesico-papular eruption "similar to that produced in three monkeys which had been inoculated some months previously with pustule contents from a case of small-pox in the district of Columbia.

Blaxall (1923), of the Government Lymph Institute, Hendon, communicated to a Paris conference in connexion with the commemoration of the death of Jenner a very important and extensive series of observations, not so far published in English, on the small-pox prevailing in England in 1922. The material he examined came from suspected cases of the mild small-pox occurring in the north (three deaths in 821 cases) and also from the small outbreak of virulent small-pox which occurred in London and vicinity in the autumn of the same year (24 deaths in 74 cases). Samples from 12 cases of the mild type were inoculated in duplicate on monkeys. By the fourth day were observed papules which by the sixth, seventh, or eighth day had become definite and typical vesicles. Control experiments with material from suspected varicella produced no lesion. With the material from the London outbreak a vesicular eruption similar to that from the mild small-pox material presented itself on the seventh day and was harvested on the eighth day.

Calves.

Cleland and Ferguson (1915) in connexion with their investigation of material from the New South Wales outbreak of 1913, made experiments on six calves. Apparently they got some slight form of take at the first transference of human material to the calf, but it appears from the actual description that little more than a zone of redness round one of the scarified areas resulted. Scraped material from this calf yielded no result on a fresh calf. At the third and fourth removes, however, definite evidence of vesiculation was obtained and in all later removes the reactions were "indistinguishable from those of vaccinia." Green (loc. cit.), with the imported material from Australia, had a somewhat different experience with the eight calves on which the tests were made. Three calves, A, B, and C, inoculated with human material, showed at 120 hours along the lines of inoculation a series of yellow vesicles which in appearance did not resemble ordinary vaccine vesicles, being smaller and more discrete. They represented, on the other hand, too advanced a reaction to expect as a first result of inoculation of variola on the calf. Calves D and E inoculated in one spot with material from A failed to show any take, while inoculation on another spot with material from B gave suggestive "but not convincing poor-class vaccine vesicles." Calves F and G inoculated with material recovered from a monkey which reacted yielded "moderately fair quality vaccine vesicles." Green concluded that the Australian disease differed from vaccinia in its lesser ability to produce typical vaccinal vesiculation, though it approximated more closely after passage through the monkey. On the other hand, it differed from variola by the fact of its greater facility for vesiculating on the calf. In Blaxall's (loc. cit.) experience with English mild small-pox, calves completely failed to react at the first trial. So also did calves inoculated with material from the severe London outbreak. Starting with monkey material, however, he succeeded in variolising the calf by persistent passage from calf to calf of material from apparently abortive sites. At the third remove the originally abortive reaction had changed to a typical Jennerian vesicular eruption. Precisely similar variolisation was achieved with material from the London cases.

Rabbits and Guinea-Pigs.

Green failed to obtain any result by direct transference of material to 70 male guinea-pigs inoculated on the scrotum while 70 controls inoculated with vaccinia reacted typically. Leake and Force with West Indian alastrim obtained either negative or abortive reactions in two rabbits. They were, however, later found to be almost completely immune to vaccinia. Blaxall's extensive series of rabbits inoculated with English mild small-pox showed no vesiculation but only what might be termed a mild degree of papulation. With scurfy material scraped from these rabbits, especially when bleeding points were noted underneath the scabs, he succeeded in securing typical vesiculation at the third calf remove. In the course of this passage work he became impressed with the fact that only when bleeding points were observed under scabs in otherwise completely abortive sites was the material removed generally calculated to yield enhanced reactions at further removes.

Cross-Immunity Experiments.

These experiments have usually been concerned with the vaccination of animals at some time after recovery from a successful inoculation with alastrim material. Naturally, many factors have to be borne in mind in appraising such experiments, notably the time at which the subsequent vaccination is performed, the degree of the primary or immunising reaction, the potency of the vaccine lymph employed and probably many others. Variations in one or more of these categories may account for discrepancies in the observations of different workers. I enter here in tabular form Green's cross-immunity experiments

with Australian alastrim. They were performed on monkeys which were divided up into three lots, one receiving a primary inoculation of alastrim, a second of vaccinia, and a third of ordinary variola. The lots (containing, unfortunately, small numbers in each) were then tested subsequently with the reciprocal materials.

The dates of the test inoculation ranged from six to 18 days after the full development of the primary rash, which varied in intensity in the different animals.

Primary inoc.	No of animals.	Subsequent test.		
		Vaccinia.	Variola.	Alastrim.
Australian alastrim ..	8	7 (all +)	5 (4 + 1 -)	
Vaccinia ..	4	1 (-)	3 (all -)	3 (2 + 1 -)
Variola ..	5	5 (2 + 3 -)		5 (3 + 2 -)

The table shows that the Australian disease conferred practically no immunity to vaccinia or variola, that vaccinia protected against Australian disease in 25 per cent. of the cases, and that variola gave immunity to Australian disease in 40 per cent. of the cases. Also, while vaccinia protected against variola in 100 per cent. of trials, variola protected against vaccinia in 40 per cent. only. Cleland and Ferguson, who employed calves, came to the conclusion, which is not quite warranted from the actual experiments, that Australian disease and vaccinia are mutually more or less completely protective against each other, but they add the proviso "provided sufficient area is inoculated."

Blaxall's cross-immunity experiments with monkeys showed unequivocally that English mild small-pox gave protection to vaccinia. The interval between primary inoculation and immunity test with vaccinia was generally one week. With calves, as the variolisation process went on, subsequent vaccination led to less and less reaction, and the calves which showed at the third remove typical vesiculation from mild small-pox were found to be completely immune to vaccinia. Converse experiments were also carried out by Blaxall, calves and rabbits being inoculated with vaccinia and subsequently tested with mild small-pox material. Vaccinia gave complete protection. Allergic tests were also made by Blaxall on rabbits, about a week after scarification with vaccinia. Intracutaneous inoculation at that period of mild small-pox material, whether boiled or unboiled, yielded typical allergic reactions. Varicellar material failed.

Summary.

(1) Mild small-pox behaves like ordinary small-pox when transferred directly to the monkey. (2) Direct transference to calves and rabbits is uncertain and is most likely to fail, though the chances of securing some sort of atypical take at the first attempt would appear to be greater than in the case of variola. There may doubtless be slight differences between the various alastrims with respect to their animal affinities. (3) Variolisation of the calf can be accomplished by the usual passage methods. (4) Allowing for certain peculiarities which distinguish the experiments with Australian alastrim, there would seem to be no doubt that the mild small-pox of English origin behaves in all important respects like ordinary variola.

Conclusion.

The persistently non-toxic and non-lethal character of the prevailing small-pox is consistent with the view that the virus concerned is merely a variant of variola whose toxic properties for the human organism have become suppressed, while its affinities for other animal species have not appreciably changed. The intrinsic and epidemiological peculiarities of mild small-pox suggest tempting analogies with certain features exhibited by non-toxic or non-virulent varieties of bacteria generally, which recent research on bacterial variation has disclosed.

(Continued at foot of next column.)

A VISIT TO CULION LEPER COLONY, PHILIPPINE ISLANDS.

BY A. R. J. DOUGLAS, M.D., B.S. LOND.,
F.R.C.S. ENG.,

CHIEF MEDICAL OFFICER, BURMA RAILWAYS, RANGOON.

II.

IN a previous article (THE LANCET, Jan. 17th) I described the general features of the Colony and discussed the difficult question of the segregation of lepers. I now deal with the treatment as practised at Culion Island under three headings: chemical, pathological, and actual.

(1) *The Chemical Section.*—The chemical section at Culion is a development from the clinical work on leprosy which has been carried on for many years at the Bureau of Science, Manila, and is in charge of a chief chemist, G. A. Perkins, working with two junior chemists and four laboratory assistants. The chemical work includes the factory where the ethyl esters of chaulmoogra and other preparations for the treatment of leprosy are made, and the chemical laboratory and office. The chemical laboratory and office occupies a room in the same building as the other laboratories. Here the more refined tests in connexion with the manufacture of drugs are carried out and special research work carried on.⁵

The work in the chemical laboratory at present is based on the idea that the chaulmoogra group of oils are supposed to have two actions on leprosy. (1) A non-specific action, which is also produced by oils not belonging to the chaulmoogra group, such as olive oil, soya bean oil, &c.; and (2) a specific action, which is indicated by the special bactericidal action which chaulmoogra oil has on the acid-fast group of bacilli.

In connexion with the non-specific effect the chemical laboratory is coöperating with the chemical and pathological section in the use of various oils and in chemical blood analysis. With regard to the specific effect, an attempt is being made to produce substances having an increased specific action by preparing modification of chaulmoogra and hydno-carpic acid.

(2) *The Pathological Section.*—The present staff consists of three medical men, one confining himself chiefly to routine bacteriological work, a technical assistant trained in clinical microscopy, and a pathological technician, a clerk and laboratory helpers. The chief pathologist had, until early in 1924, served as acting chief physician, and had taken very little part in the actual work of the section. The present laboratory was made available early in 1923. It has working space for four workers, in addition to the

⁵ G. A. Perkins and A. O. Cruz: A Comparative Analytical Study of Various Oils in the Chaulmoogra Group, Phil. Jour. Sc., December, 1923.

⁶ G. A. Perkins: Chaulmoogra Ethyl, Propyl, Butyl, and Amyl Esters—Therapeutic Effects, Phil. Jour. Sc., 1924.

(Continued from previous column.)

ALASTRIM AND VARIOLA: REFERENCES.

- Blaxall, F. R. (1923): La variole en Angleterre pendant l'année 1922, avec quelques notes sur des expériences faites sur ce sujet, Bull. de l'Acad. de Méd. Séance de 23 Jan., 1923.
Cleland, J. B., and Ferguson, E. W. (1915): The Nature of the Recent Small-pox Epidemic in Australia: Microbiological Findings and Animal Inoculations, Proc. Roy. Soc. Med., Epid. Sec., viii., 19.
Green, A. B. (1916): The Australian Epidemic, 1914, Jour. Hyg., xv., 315.
Leake, J. P., and Force, J. N. (1921): Experiments on Alastrim, Public Health Reports, Washington, xxxvi., 1437.
Dickson, J. R., and Lassalle, C. F. (1903): Varioloid Varicella in Trinidad, Brit. Med. Jour., ii., 711.
de Korté, W. E. (1904): Amaas or Kaffir Milk-pox, THE LANCET, i., 1273.
Robertson, D. G. (1913): Small-pox Epidemic in New South Wales, Commonwealth of Austral. Serv. Publication, No. 4.
Ribas, E. (1910): Cited by Rudolph, q.v.
Rudolph, M. (1911): Weisse Pocken, Münch. med. Woch., p. 295.

technical staff. It is fairly well equipped for routine and research in pathology, bacteriology, immunology, and ordinary clinical microscopy.

Pathology.—There being more than 500 deaths per year, the great majority of which could be autopsied, it is necessary to select cases. This is done primarily for diagnosis, the clinical staff requesting autopsy on all cases in which the condition is unusual or the cause of death in doubt. The pathological staff also autopsies, on its own initiative, other cases of special interest to itself. From April 1st, 1922, to June 1st, 1924, practically 400 post-mortems have been made, the great majority by one man. The rate will be increased somewhat in the future, as two men are now available for this work. Of actual pathological research little has been done as yet, except study of the localisation of *B. lepræ* in the organs.

Bacteriology.—The bulk of bacteriological work consists of routine smears for *B. lepræ* in connexion with the admission of new cases, and particularly cases that are becoming or have become "negative"

of veins. Such cases were transferred to the ethyl ester groups. Before the end of the year the ethyl esters became the accepted general treatment. The number of cases was increased to over 1000 by the end of the year, and to over 1600 in April, 1922, when the work was expanded to its present scale.

The total medical staff, not including the chief of the colony, is now 17 physicians; 11 of these, with an equal number of nurses, are organised into two clinic groups, which administer practically all the anti-leprosy treatments to the 4000 and more patients on the treatment lists. One of the physicians in each clinic is appointed a supervisor. Each of the nine unit physicians attends to the medical care of the 400 to 500 patients on his list who become sick and require to be sent into hospital. The General Hospital, in charge of three other physicians, contains 250 beds, and here are treated the actually sick members of the, roughly, 1000 inmates who are too advanced in leprosy, tuberculosis, or nephritis to receive active anti-leprosy treatment.



Group of 225 negative lepers waiting the completion of six months' "negative period" before their release.

under treatment. The latter requires particular attention, to avoid error both in their original inclusion in the "negative list" and their continuance therein; the clinical staff re-examines them periodically.

(3) *The Actual Treatment as Carried on in the Clinics and Hospital Wards.*—In the earlier years little could be done with regard to the treatment of lepers at Culion, other than palliative work directed by a very insufficient staff. Chaulmoogra oil by the mouth being very slow in action and too irritating to the stomach, efforts were made to use it by injection. The first advance was the so-called Heiser-Mercado formula; the Jeanselme formula (1 part chaulmoogra and 1 part of a mixture of guaiacol, M59; camphor, M259; and oil of vaseline, M59) was also used, but much less. At first the Mercado mixture was found very irritating, but now, as prepared with refined oil, is much less so. Next, in 1920, Dr. Perkins⁷ prepared the sodium salts of chaulmoogra and cod-liver oils, and these were used on a small scale. A dilute "colloidal" emulsion similar to the collobasis of chaulmoogra oil of danise was also tried.

Five hundred favourable cases were now selected, and on July 1st, 1921, treatments were begun. The cases were divided into four groups: (1) sodium gynocardate A intravenously, 50 patients; (2) sodium morrhuate intravenously, 50 patients; (3) Mercado mixture intramuscularly, 100 patients; and (4) chaulmoogra ethyl esters intramuscularly, 300 patients.

All treatments except the Mercado were given twice a week. Soon it became necessary to discontinue the intravenous treatments because of obliteration

Treatments Used.

The chaulmoogra ethyl ester is the principal medicament used since late 1921. This is given intramuscularly, and in all but a comparatively small group but once a week. The iodised preparation with 0.5 per cent. iodine has proved somewhat less irritating than the plain drug, and it is now being given to a majority of the cases.

Cod-liver oil esters have been used in a few cases. They have proved not inefficient, but are less useful than the corresponding chaulmoogra product.

Mercado mixture has been given to a small number of patients to whom the ethyl esters were particularly irritating, and to a few who refused to take any other treatment. A few small groups have been put on ethyl, propyl, butyl, and amyl esters of chaulmoogra, and on ethyl esters of certain other oils.

*Antimony.*⁸—Tartar emetic injections and Castellani's formula by mouth have been tried for a short period but with injurious results.

Various creosoted preparations were also used, and now creosoted ethyl esters are being used for extensive test.

Adjuvant Medication.—Very little adjuvant medication as a part of the regular treatment has been given until recently. A consequence of this is that the main results that have been obtained are ascribable to the injections alone.

Cases under Treatment.—The data from the cases under treatment are from the last (second) semi-annual reports rendered by the treatment physicians, dated March 21st, 1923. These reports, it may be

⁷ Reports of Philippine Health Service for 1920, p. 41, and for 1921, p. 128.

⁸ Rodriguez and Enbanas: The Treatment of Leprosy with Antimony, Phil. Jour. Sc., col. 28, No. 6, December, 1923.

remarked, involve much work, and it requires two or three months to obtain the data and reduce them to a usable form. In 1922, in dealing with the figures supplied by the physicians in charge of the nine different units, it was found that the results varied very much in the different units. This was found to be due not only to the personal equation of each physician but also to the differences in classifying the types of case and in recording the degree of involvement of the tissues by the disease, and the degree of advancement of the disease where evident.^{9 10}

The necessity of taking active measures to secure more uniform reporting by individual physicians having been made clear, detailed instructions were prepared and distributed, using certain tentative classifications, it being understood that they were subject to revision later on.

Number under Treatment.—During the period referred to there were in round numbers 4200 patients under treatment. Since then 700 have had to be dropped from the treatment lists on account of nephritis, tuberculosis, &c., while some 300 new cases have been taken on. Patients not on the treatment clinic lists report to a dispensary clinic from time to time, and when necessary are hospitalised in the General Hospital, which is separate from the wards for "treatment" patients.

Sex.—Of 3975 cases tabulated 65.1 per cent. are males and 34.9 per cent. females, a curious proportion that has been repeatedly observed in leprosy.

Age.—Practically 70 per cent. of the 3975 cases are at the present time between 15 and 46 years of age. The smallest group, 35 to 40, is 9.8 per cent. of the whole; the largest, 20 to 25 years, is 17.7 per cent.

Duration of the Disease.—Of 3852 cases tabulated in this connexion only 15 claimed to have had the disease less than a year at the time of the report. The largest group claimed 5 to 7 years' duration. Roughly the average duration was between 8 and 8.5 years.

Types of Cases.—Of 3888 cases, practically 22 per cent. are recorded as of the cutaneous type, 69 per cent. as mixed, and 9 per cent. neural. This great predominance of the mixed type is due in part to the average long duration of the disease, and in part to the very careful search made for evidences of disturbed nerve function.

Relation of Type of Case to Duration.—It may be noted that there is a much higher percentage of pure cutaneous cases among those of short duration than among the chronic cases. On the other hand, pure neurals are much more common among those of longest duration. There is evidenced a distinct tendency to shift from pure cutaneous to mixed, and finally, among those surviving, for the cutaneous manifestations to disappear.

Results of Treatment.

Space will only allow of a brief presentation of the gross results and the factors that apparently affect them.

Gross Results.—Of the total of 4035 cases of all kinds and degrees of advancement, under all varieties of anti-leprosy treatment included in the last semi-annual reports, the present status as compared with the original condition is: Improved, 53.3 per cent.; stationary, 36 per cent. (totalling 89.3 per cent.); worse or dead, 10.7 per cent. Taking the improved as a separate group, 7.5 per cent. are reported as markedly improved, 20.9 per cent. moderately improved, and 71.7 per cent. but slightly improved.

These gross results must be considered with an appreciation of the influence of certain modifying factors. These are of two types—those independent of the material used, and those that are to a greater or less extent influenced by the medicament. The former includes sex, age, duration of the disease,

type of case, and time under treatment. Also, of course, the personal equation of the physician, but in so large a group these tend to neutralise each other.

Sex.—Males have improved to a slightly less extent than females—52 per cent., as compared with 55 per cent.

Age.—When the percentage of improved in each five-year group is laid down in a graph for the two sexes separately, the resulting lines show certain fluctuations and in places wide differences, probably corresponding with periods of greatest sexual activity and the menopause.

The statistics would seem to bear out the opinion of the individual treating physicians that marriage is harmful for lepers.

Duration of the Disease.—This has a very decided influence. Of the group (261 cases) claiming two to three years' duration, 68 per cent. have improved; whereas those of 15 to 20 years' duration (266 cases), but 43 per cent. have improved. In keeping with this there are relatively fewer marked improved in the older groups.

Type of Case.—This factor, as has been said, is to a considerable extent dependent on duration, the cutaneous respond best. Of the cases of the cutaneous type, 62 per cent. have improved, of the mixed 49 per cent., of the neural but 39 per cent. The neurals, by the way, have also the lowest worse figure. The percentage of stationary cases varies in reverse order, the neurals having the largest.

Time under Treatment.—This is naturally an important factor. But 35 per cent. have been a full year with 75 per cent. improved. For those treated less time the figures are much lower.

The factors that are influenced by the medications themselves are the number of injections given during a given period, the total amount of drug administered, and the reactions that occur during treatment. A bland medicament can be given more frequently, more regularly, and in larger doses.

The Number of Injections that a patient is given and the dosage are limited by the individual reaction to injections (and these vary widely), the development of complications of whatever degree of importance, and his own desire or lack of it to receive treatment.

Total Amount Given.—As for the total amount given, one-half of all the cases received 30 c.cm. or less during the six months, whereas the minimal desired dose for average active cases for the period was 60 c.cm. Less than 10 per cent. (8.7 per cent.) received more than this amount. Correlating improvement with dosage of those that received 30 c.cm. or less but 37 per cent. were reported improved, whereas of those (33 per cent. of the whole) that received more than 40 c.cm. 73 per cent. improved. Similarly the degree of improvement increased rapidly with the increase of amount of the drug taken.

Comparison of Preparations.—On comparing the effect of the plain and iodised preparations the only real difference that has been seen is that the iodised being somewhat less irritating, relatively more patients took larger total amounts, resulting in somewhat better improvement figures. Dose for dose there is no apparent difference.

Complications.¹¹

Pulmonary tuberculosis and nephritis are the most frequent causes of death in Culion, and offer serious problems in connexion with treatment work. (Table I.)

TABLE I.—Chief Causes of Death in Treated (T.) and Untreated (UT.) Groups of Patients, 1922-23.

Group.	Total number of deaths.	Tuberculosis.	Nephritis.	Heart disease.	Pneumonia.	Gangrene septic infections.	Dysentery and enteritis.	Leprosy.	Cerebral hemorrhage.	Malaria.	Other diseases.
T.	282	91 (32.2 %)	74 (26.2 %)	28 (9.9 %)	19 (6.7 %)	9 (3.1 %)	9 (3.1 %)	7 (2.4 %)	6 (2.1 %)	6 (2.1 %)	32 (11.3 %)
UT.	415	309 (74.4 %)	41 (9.8 %)	26 (6.2 %)	9 (2.1 %)	4 (0.9 %)	2 (0.4 %)	11 (2.6 %)	7 (1.6 %)	1 (0.2 %)	5 (1.2 %)

⁹ Report to the Director of Health on the Reorganisation and Activities of the Medical Section, Culion Leper Colony, and of the Results obtained from the Treatment Work, 1922. By H. W. Wade, M.D.

¹⁰ Leprosy Work in the Philippines. By H. W. Wade, M.D. Trans. of the Fifth Conf. of the Far East Assoc., 1923. Now in the press.

¹¹ An article by Dr. C. B. Lasa, Chief Physician, and Drs. B. de Vera, J. G. Samson, and F. C. Eubanas, of the Medical Section, Culion Leper Colony, "On the Chief Causes of Death Among Lepers at the Culion Leper Colony," will shortly be published.

Tuberculosis.—Death from all forms of tuberculosis in Manila in 1921 constituted 19.9 per cent. of the total deaths. In 1921 the Cullion rate was 32.0 per cent., distinctly higher than the corresponding Manila figure. In 1922 there was a sudden increase to 51 per cent., and in 1923 to 46 per cent. of the total deaths. This is ascribed to the irritating effect of ethyl ester treatment lighting up latent tuberculosis.

Nephritis.—Nephritis shows a much higher percentage in the treated than in the untreated. Directly or indirectly—probably both—the general and systematic application of the ethyl ester treatment gives rise to an intensification of the mild processes in the kidneys which are admitted by many authorities to be quite common in leprosy, and which we believe are frequently not sufficient in themselves directly to lead to a fatal outcome.

TABLE II.—*Analysis of Reports of Treatment, March to September, 1923.*

Drug.	Number.	Improved.	Stationary	Worse.
		%	%	%
Chaul., E.E.Pl. ..	927	57	28	14
„ E.E.I. ..	2325	66	22	12
Mercado „ ..	249	45	33	22
Morrhue, E.E. ..	60	73	13	3
E.E., creas. group..	26	62	35	4
Chaul., butyl, I.E.	33	(6)	(20)	(7)
E.E., camphorated	10	(2)	(6)	(2)
Amyl esters ..	10	(2)	(6)	(2)
Propyl esters ..	9	(1)	(5)	(3)
E.E., Wightiana ..	48	(16)	(29)	(3)

Figures enclosed with parentheses indicate number only, not percentage.

TABLE IIA.—*Negatives.*

Up to Jan. 1st, 1924 ..	..	..	..	..	235
Died ..	..	..	..	..	9 } 39
Paroled during 1923 ..	..	..	..	..	30 }
Remaining ..	..	..	..	..	196
Negative since January ..	..	..	..	..	34
Paroled ..	..	..	..	..	10—24
Total now in the Colony (March)	..	..	..	..	220
Probable negatives pending Committee's decision ..	..	..	..	..	63
Total ..	..	..	..	..	283

A table is also appended (Table II.) of the analysis of reports of treatment from March to September, 1923, but no detailed comments similar to those for the previous half-year are given.

Conclusions.

It is frequently asked whether one preparation is appreciably better than another. It is too soon to make any definite statements; probably at least another two years must elapse before it will be safe to make a dogmatic statement as to the value of the ethyl ester treatment with its various modifications. It is probably not even safe to say at present that the ethyl ester injections are of appreciably greater value than the intramuscular injection of refined chaulmoogra oil itself, but the figures are distinctly encouraging.

Both the impressions of the staff and patients and the statistical data indicate that the treatment is, on the whole, productive of much benefit, and is distinctly promising in those cases that are not too advanced or too badly affected by complications for marked or permanent relief to be expected. Among those whose treatment has been of less than one year's duration a comparatively low percentage are reported as improved, while of those of the one- or two-year group a high improvement rate of about 70 per cent. is shown. The amount of the drug given is also of great importance. Probably any treatment which is not likely to be continued regularly for at least two years is waste of time and money. Some patients show hardly any improvement for nearly a year, and then begin to make progress. This has to be taken into account in dealing with any uneducated and comparatively ignorant population who are undergoing *voluntary treatment* and who are likely to become impatient and give up treatment because the improvement hoped for is delayed.

On the other hand, treatment is likely to be abandoned because they consider that the improvement is so great that they are sufficiently cured. The publication of results drawn from the statistics of small numbers of patients (200 or 300, say), treated for short periods of less than a year, is strongly to be deprecated as likely to lead to false deductions and future disappointment.

Finally, it cannot be said that “a new cure” has been discovered for leprosy, but a good deal of research is being carried on, and it is hoped that one day a cure will be discovered (possibly on quite different lines) that can be described with truth as a specific for this disease.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Vital Statistics of the Irish Free State.

SPEAKING at a recent meeting of the Section of State Medicine of the Royal Academy of Medicine in Ireland, Sir William Thompson dealt with a few outstanding points in connexion with the vital statistics of the Irish Free State. He said that nearly 72 per cent. of the population of Ireland, according to the census of 1911, covering about 84 per cent. of its area, came under the jurisdiction of the Government of Saorstát Éireann as the result of the Treaty. The population of Saorstát Éireann, which was 6,547,652 in 1841, fell to 3,139,688 in 1911, that of Northern Ireland falling from 1,648,945 to 1,250,531. According to the census of 1911, about 27 per cent. of the population of Saorstát Éireann area was urban, while the urban population of Northern Ireland constituted about 47 per cent. of its total population. The marriage-rates in Saorstát Éireann for the various periods from 1871 to 1914 showed a decided tendency upwards, increasing from 4.38 per 1000 of the population in 1871–80 to 5.02 per 1000 in 1911–14, but rising to 5.06 in 1919–22. As might be expected, the crude birth-rate was low (19.49 per 1000 in 1923) as compared with England and Wales and Scotland, but a wide disparity existed in regard to the fertility-rate; in Saorstát Éireann the number of legitimate births per 1000 married women, aged 15–45 years, was 305, as compared with 197 for England and Wales. The death-rate from all causes, which was 17.64 per 1000 as the annual average for the years 1891–1900, fell to 13.34 per 1000 in 1923, the latter being the lowest rate recorded. The mortality from tuberculosis was 2.53 per 1000 of the population for the ten years 1901–10. The rate for 1923—i.e., 1.41 per 1000—showed a reduction of 1.12 per 1000, or 44 per cent. The rate represented by deaths from cancer rose from 0.37 per 1000 for the period 1881–90 to 0.81 per 1000 for 1911–14, since which period the mortality from cancer had remained practically stationary. The mortality from diabetes in Saorstát Éireann during the five years 1919–23 was 0.7 per 10,000 of the population as compared with 1.1 for Northern Ireland and England and Wales. Infant mortality, which was 99 per 1000 births during the decennium 1891–1900, was only 66 in 1923, the lowest rate recorded, the rates for Northern Ireland, England and Wales, and Scotland during the latter year being 77, 69, and 79 respectively. The infant mortality relating to urban areas in Saorstát Éireann was 99 per 1000 births in 1923, which is nearly double the rate (50) for rural districts.

Although the mortality among the infants whose births were legitimate was low (59 per 1000), that among the births of illegitimate infants must be considered excessive for the year 1923—viz., 344 per 1000 illegitimate births. In regard to this high rate, he pointed out, it should be borne in mind that in the absence of information relating to preceding years, and in view of the smallness of the numbers from which it was derived, it was possible that the period under review (1923) might not be a typical year.

Medical Referees to the National Health Insurance Commission.

It was stated in this column a fortnight ago that appointments of medical referees to the National Health Insurance Commission were to be made on the advice of a Selection Board set up by the Civil Service Commission. This is being done, but the Selection Board is so in name only, for it consists of three permanent medical officials of the civil service. The promise was made many years ago by the National Health Insurance Commission that when referees were to be appointed, the representatives of the profession would be consulted as to the suitability of the candidates. It was recognised that if the referees were to perform their duties effectively, they must be persons of such character and experience as to command the respect and confidence of the profession. Recently, when sanction was given to the appointment of referees, the medical members of the Advisory Committee to the National Health Insurance Commission were assured that the Irish Medical Committee would be invited to nominate one or more members of the Selection Board. Subsequently, this decision was reversed and a purely official board was appointed. This action, it is feared, will prejudice the efficiency of the referee system.

An Unintended Slight.

In the paragraph dealing with the terms of appointment of the referees in THE LANCET of Jan. 10th (p. 95), by unfortunate wording a slight appeared to be cast on the importance of the duties of the medical inspectors of the Department of Local Government and Public Health. It was intended to say that the duties of the latter were not "more exacting" than those of the medical referees whose salary was under discussion. Unfortunately, the word "more" was omitted, and the sentence stated that the duties were not "exacting." The work of a Local Government inspector is, of course, not only exacting, but important and responsible in a high degree.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. MacDonald is placed on the ret. list, with the rank of Surg. Capt.
W. A. Hopkins to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. M. G. Winder to be Lt.-Col., vice Lt.-Col. W. M. B. Sparkes to ret. pay.
Capt. T. F. Kennedy relinquishes the temp. rank of Maj., on ceasing to be empld. as a Dep. Asst. Dir. of Hygiene.
Capt. W. H. Ferguson relinquishes the temp. rank of Maj., on ceasing to be empld. as a Dep. Asst. Dir. of Pathology.
Capt. H. G. Hobson is restd. to the estab.
Lt. (on prob.) F. H. King resigns his commn.

ARMY RESERVE OF OFFICERS.

Surg. Lt.-Col. J. H. Power (Life Guards), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Army Dental Corps.—Lt. J. S. Lycett, late 71st (W. Riding) Fd. Bde., R.A., T.A., to be Lt.

TERRITORIAL ARMY.

Maj. W. P. G. Williams (I.M.S. retired) to be Major.
Maj. (Prov.) H. L. Garson is confirmed in his rank.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. P. J. Watkin, from Active List, to be Capt.

INDIAN MEDICAL SERVICE.

Maj. W. D. H. Stevenson relinquishes the temp. rank of Lt.-Col. on vacating the appt. of Assist. Director-General.

TESTIMONIAL TO PROF. RUTHERFORD MORISON.

The first subscription list to this testimonial appeared in THE LANCET of Jan. 17th. Further subscriptions may be sent to the hon. secretary and treasurer, Mr. R. J. Willan, F.R.C.S., 6, Kensington-terrace, Newcastle-on-Tyne.

Correspondence.

"Audi alteram partem."

ALASTRIM, PARA-SMALLPOX, AND VARIOLA.

To the Editor of THE LANCET.

SIR,—My interest in Prof. Jorge's masterly paper has equalled that of your correspondents, but I fear that too great attention is being devoted to the mere question of terminology, whereas the essential question is "What practical steps are necessary to deal with the small-pox of to-day, call it what you will?" I do not agree with the dictum that attempts to treat outbreaks of the present non-virulent strain of small-pox just as if it were a virulent strain tend to bring administrative action into contempt and disrepute. This is only true if the opportunity is missed, through mischance or defective administrative machinery, of dealing promptly and efficiently with the initial cases. My warrant for making this ex-cathedra statement springs from an experience of 38 years in a city and port now containing over 385,000 persons, and during this time I have had to deal with 85 introductions of small-pox, ranging in fatality from 2.9 per cent. upwards.

In 1904 an extraordinarily mild type of small-pox, conforming to the Gloucester type (with which I am acquainted), was brought into Bristol on six occasions, got amongst some dockers' huts at Avonmouth, and threatened trouble. While we marvelled at the abnormal mildness, at the tendency to abort, at the absence of secondary fever, and so on, this was not allowed to interfere with our plain administrative duties of control at the outset, and the total of cases was limited to 34, with only one death of an unvaccinated infant. About the same time (1903-04), I note, Leicester experienced a similar mild outbreak, leading to 321 cases and four deaths. Nor was the mildness of our Avonmouth type to be trusted—one patient carried the disease to South Wales where 15 cases, 4 confluent, and one death resulted.

I deprecate the suggestion that text-books tend to over-emphasise the heavy fatality of small-pox; it is impossible to exaggerate the risk when the malignant type is in evidence, as I well know from many pitiful experiences. Malignant small-pox is not played out, witness the recent experience of Michigan,¹ and it is unwise to encourage a feeling of false security.

I am, Sir, yours faithfully,

D. S. DAVIES,

Medical Officer of Health, City and County and Port of Bristol.

Jan. 17th, 1925.

To the Editor of THE LANCET.

SIR,—I think Dr. R. P. Garrow has hit the nail on the head. The Gloucester epidemic was *de facto* not small-pox, but yet it was related to small-pox, and this relationship should certainly be brought out in whatever nomenclature we finally determine to adopt. Exotic neologisms like *alastrim* or *amaas* simply confuse the issue; let us call this mild distemper *para-smallpox* or *para-variola*, on the analogy of *para-typhoid*. Having then thus fixed the fact of relationship, we may begin to consider more seriously than we have yet done what relationship actually involves. Does it not, in fact, mean that there is or can be (varying with time, place, &c.) a certain *coming and going* between the members of these disease-groups—thus within the varioloid group, the influenza-encephalitis-myelitis group, &c.?

I am, Sir, yours faithfully,

Edinburgh, Jan. 14th, 1925.

A. J. BROCK.

¹ The Medical Officer, Dec. 13th, 1924. Supplement, p. 7.

INFECTION SPREAD BY VAGRANTS.

To the Editor of THE LANCET.

SIR,—I am thankful to see from a paragraph in your issue of Jan. 10th that you desire the Ministry of Health to act promptly on the information given in the recent Official Survey of the provincial casual wards. A case before the Tavistock magistrates, reported in the *Western Morning News* of Jan. 6th, shows how tramps are treated in some wards notwithstanding the Official Survey has been made and published. A "casual" was prosecuted for damaging a lock in the Tavistock ward. The master said "that he made a complaint about not having his jacket fumigated. There were no grounds for complaint because they could not fumigate clothes on a Sunday." The prisoner used his jacket as a pillow because no pillows were provided.

Now, the regulations of 1882 (as stated in your paragraph) require that the casual's clothes should be taken from him, and, if necessary, dried or disinfected. And they make no exception for Sunday. Indeed, a garment is just as infectious on a Sunday as on a week-day. I take it as quite clear that the garment needed fumigation or the master would have told the justices that it was not necessary. No information is given in the report as to why fumigation was necessary, but I see in the *Poor Law Officers' Journal* of Jan. 16th that one of the Tavistock guardians said that "many of the men who tramped the country were covered with vermin." At all events there is no doubt that the regulations requiring disinfection are essential both for the safety of the public and of the inmates of the next ward to which the wayfarers come. And a man in verminous clothes is much hampered in his search for work.

I am blaming the guardians not the master; because it is the guardians who should have supplied the means of disinfection on Sundays and the pillows, and no doubt the master out of humanity allowed the man to sleep on his jacket. I believe in some cases the "paupers" are allowed to sleep with their boots for pillows. In some cases where there are hammocks they are so unsatisfactory that the men prefer to sleep on the floor using the hammocks as bedding.

I hope that some of the health authorities will move. I have just written on the subject to the councils of the counties mentioned in the Survey as having from one-sixth to one-third of their wards unheated, and to those where the cleanliness is said to be "poor" and some others. I shall be happy to send a copy to any other county council or any district council who would care to have it. As far as I can see from the Survey the Devonshire casual wards seemed to be among the worst; for out of the 15 wards in England and Wales where the cleanliness was said to be "poor," four belong to that county; and also it and Dorset are the only counties which had as many as one-third of their wards unheated. It is fair to Tavistock to say that their ward was heated.

I am, Sir, yours faithfully,

J. THEODORE DODD,
Barrister-at-Law and ex-Guardian.

55, St. Giles', Oxford, Jan. 17th, 1925.

INTRAVENOUS INJECTIONS IN NON-TUBERCULOUS MENINGITIS.

To the Editor of THE LANCET.

SIR,—I was impressed with the lucidity displayed by those who took part in the recent discussion on Non-tuberculous Meningitis at the Royal Society of Medicine (THE LANCET, Dec. 20th, 1924, p. 1281). It seemed to me that a fresh aspect of the case was indicated by Dr. D. Nabarro, who dwelt on the factor of a general septicæmia in a number of cases of meningitis. This recalled to my mind a paper I heard read in the recent French Congress of Oto-Laryngology in Paris by Dr. Maloens, of Brussels. His observations lead him to attach great value to the administration of an iodo-urotropin preparation. At first he

used it by the intrathecal method, and in proof of its value narrated a case of typical otitic purulent meningitis in which recovery was brought about. More recently he had become convinced that intravenous injection preceded each time by lumbar puncture secured the entrance of the remedial agent into the intrameningeal spaces, and he cited a case in which he had pursued this course—namely, one of diffuse purulent meningitis subsequent to an acute influenzal labyrinthitis in a woman of 25, in which "in spite of the extreme gravity of the prognosis (Mygind), he observed in addition to a characteristic fall of temperature and a progressive attenuation of the clinical symptoms, a parallel improvement in the characteristics of the cerebro-spinal fluid and complete recovery." The paper containing a full statement of the experimental researches by various investigators which had led the writer to adopt the intravenous in place of the intraspinal method of injection, is to be found in *Bruxelles Médical* for Nov. 16th, 1924. Although the method is intended to bring about the local action of the remedy on the contents of the meningeal spaces, it is at the same time well calculated to combat the general septicæmia to which Dr. Nabarro alluded.

In the treatment of such a fatal disease no suggestion can be lightly thrown aside, and this is my excuse for drawing attention to Dr. Maloens's views.

I am, Sir, yours faithfully,

JAMES DUNDAS-GRANT.
London, Jan. 16th, 1925.

"ELECTRONIC REACTIONS."

To the Editor of THE LANCET.

SIR,—I can only speak for myself, but I imagine that a number of other members of the Medical and Electro-Therapeutical Sections of the Royal Society of Medicine would agree with me that the communication of Sir Thomas Horder of Friday must certainly rank as one of the most extraordinary and tantalising communications that has ever been presented before a scientific society. As there was no time left for discussion, and discussion at a later date was not at present desired by those at the meeting, I can only hope that you, Sir, will allow a few comments through the columns of your journal.

Sir Thomas Horder disclaimed responsibility for the report except for a fifth share. But while on the one hand he emphatically declared for the final deposition as false gods of the oracular Abrams boxes, his acute diagnostic instinct might have warned him that the effect on the lay public and on "electronists" of the encouraging gesture he made on the other hand in disclosing the 100 per cent. accuracy of certain incompletely described physical tests with Dr. Boyd's modifications, would only be to confirm in the minds of many of the public the rightness of their view that there still "may be something" in the original Abrams boxes: and so, indeed, the *Morning Post* to-day (Saturday) interprets his Committee's Report.

One can only wish publication of any report had been delayed till further detailed announcements could be made with regard to the possible scientific or medical uses or not of Dr. Boyd's apparatus, or else that at least more information had been given as to the nature of the tests and responses in Dr. Boyd's almost magical copper-gauze-lined cabinet! A 100 per cent. accuracy is almost too good to be true in most scientific work: it suggests that some simple solution for the cause of the phenomena must be there to be found if only we can trace it. I shall only suggest briefly a few matters as to which I should have liked to have had information vouchsafed, and, indeed, before a scientific meeting might, I think, reasonably have expected information given.

1. The nature and origin of the substances used in the tests? What was used besides "sulphur"? What proof, for example, was there that there was no radium present in the "active" substance? In more detail we should have heard how the "substances"

were presented to the recording complex of apparatus and boys.

2. Without reflecting on the honesty of Dr. Boyd and Miss S., one would like to know what they did, and where they stood while the tests were going on. For unconscious deception has often been found in psychical tests, and in phenomena such as "thought-transference"—almost inaudible whispering, and the like. And in the interpretation of extraordinary phenomena every factor should be sceptically scrutinised. The "N" rays hoax was an example of how eminent scientific persons can be deceived—not that deception or hoax is here suggested.

3. What the copper-gauze screen was supposed to shield the apparatus from? Were any experiments made to test whether, for example, wireless waves were reduced in amplitude in the cabinet, or neighbouring potentials or electric fields, such as those in the electric lighting circuits, were diminished or abolished? In short, what were the physical differences between the outer room and the inside of the screened cabinet?

4. Scientific experiments and results (with the rarest possible exceptions) can be duplicated at other times and in other places. Would Dr. Boyd be willing to submit his work to a London committee in London? The copper-gauze can be duplicated: are the Glasgow boys essential?

5. What interpretation does Sir Thomas Horder give for the epigastric percussion sign? He acted as what may be called the medical referee of the Committee, and some attempt at explanation might have been expected from him at a medical gathering, of his findings on the boy, and his personal sensations when acting as indicator. The epigastric note on percussion depends obviously on two factors: (1) The contents of the stomach, transverse colon, &c.; and (2) the thickness or rigidity of the abdominal wall. With rigid rectus muscles the tympanic note is masked, and the note is "duller." Now, if the boy whose epigastrium is percussed has an abdominal wall contraction when the "active" substance is presented, he must have that (1) voluntarily, or (2) involuntarily, as a result of some sign or sensation—e.g., when an electric current passed from his forehead electrode to the earthed plates on which he was standing.

Now, as currents as small as 10^{-12} ampère can be measured by Einthoven and Paschen galvanometers, and even smaller currents can be accurately estimated by almost infinitesimal differences of potential by quadrant electrometers and electroscopes (currents much smaller than those potential changes continually taking place at and near the epigastrium owing to heart contractions), it seems strange that physical measurements were not made, or at least were not given, of the probable current changes: also of their differentiation from those detectable by the electro-cardiograph. Indeed, with the refinements of scientific apparatus now available, it would seem difficult to realise what useful purpose the boy and his epigastrium can serve as an indicator! Is the boy as a "medium" or indicator more sensitive than a modern electrometer to potential differences? For Dr. Boyd's use of an "inductance" suggests that potential differences are at work in the production of his results.

In short, the whole position from the point of view of those of us (specially of the Electro-Therapeutical Section, who were invited to the meeting, and were unable to express any opinions) who do know something of electrons, and of electrical apparatus and measurements, was left most unsatisfactory, if not ridiculous. The whole matter seemed to be as yet of no medical interest, yet medical developments were hinted at; so I can only suggest to Sir Thomas Horder and his Committee that it might be well to allow a full and unbiased investigation to be conducted by a representative committee of, say, physicists such as Profs. Sidney Russ and F. L. Hopwood, or physiologists who are familiar with physical experiments in medical subjects. Then one may hope Dr. Boyd's vaunted advance on Abrams's methods will be

removed from the atmosphere of thaumaturgy in which I, for one, felt the subject was left by the communication to the meeting on Friday.

I am, Sir, yours faithfully,

J. H. DOUGLAS WEBSTER.

Chandos-street, Cavendish-square, W., Jan. 17th, 1925.

THE GLUT OF WOMEN DOCTORS.

To the Editor of THE LANCET.

SIR,—I am sure that medical women will be grateful to Mr. W. Robinson for giving the number of applicants—namely, 78 women doctors—for a junior post open to women only at the Children's Hospital, Sunderland. His letter draws attention to such a serious state of affairs that the widest publication is necessary in order to secure a remedy. I refer to the fact that owing to the few hospital posts (junior, senior, or honorary) now open to well-qualified medical women, it naturally follows that when one post is available there will be a greater number of women candidates than a similar post when male applicants are required. I think one may safely say that 99 out of 100 posts as house physicians and house surgeons are regarded as the strict preserve of young male doctors owing to the policy pursued by the selection committees of voluntary hospitals up and down the land to exclude women doctors.

During the war there was a greater influx of both sexes of medical students to supply the needs of the nation, and the maximum was reached in 1919. In 1924 there came out a maximum of qualified men and women doctors from the medical schools. But even with this increase the proportion of the newly qualified is about one woman doctor to five men. The total registered number of medical women is somewhere about 2000 in Great Britain, and the medical men registered are about 25,000. It is also true that the number of medical students (men and women) entering the schools is returning to the pre-war level. What is really needed is fair treatment for women from the selection committees so that there is an increase in proportion of all hospital posts that are open to women. Why is it that there are so few hospitals which have appointed on their honorary staffs women doctors in charge of beds? Yet the numbers of women and children to men patients to be treated are as 3 to 1 of all patients. Pure prejudice on the part of the male colleague, I fear, must be the answer.

Public opinion has always been on the side of the women doctor, who must be allowed the same facilities to equip herself as her male colleague. With the changes that must necessarily come over hospital management and finance, the methods of appointment must also change. I am sure the day will come when the hospital patient will have the right of access to the services of a woman doctor. Every hospital which relies on an appeal to the public for support will have to see that a proportion of the honorary staff are women.

I am, of course, quite aware that Mr. Robinson's letter is meant as a deterrent and warning to parents and intending medical women candidates as threatening future unemployment for medical women. Let me tell them to take no heed of such Partingtons, for the public needs and demands medical women in many and ever-widening spheres. Our movement has too strong a hold to be pushed back, much as the reactionary would like it.

I am, Sir, yours faithfully,

MABEL L. RAMSAY, M.D., L.R.C.S. Edin.

Plymouth, S. Devon, Jan. 18th, 1925.

To the Editor of THE LANCET.

SIR,—Allow me to make some comments on Mr. Robinson's encouraging letter of Jan. 13th.

Although, since I am not in practice, the number of patients I come across is infinitesimal, still even I am frequently hard put to it, in an individual instance, to

recommend a medical woman, so lamentably few are they. The only case where there is anything like adequacy is in consultant gynaecological and obstetrical work in a few big towns. But a preponderance of women at the top of the tree by no means compensates for their lack elsewhere, or meets the growing demand for their services. So that the illumination Mr. Robinson sheds on the numbers of women practitioners in the making is highly gratifying.

A glance at the facts shows the shortage of medical women in a lurid light. Although men are accustomed to being tended by women in their infancy, and again perhaps later by women nurses, few would deny that it would be highly undesirable for them to be compelled to consult women rather than men doctors because there was no man within reach. A fortiori therefore, since women are not even accustomed in their infancy to be tended by men, they should not be compelled to consult a man doctor because there is no woman within reach. There will never be enough medical women in England till every woman is able to consult one if she so wishes. When one reflects further that the numbers of women patients are far greater than men because so many are included in the province of obstetrical medicine, one sees what a huge number of medical women are needed, and how ludicrous is the present proportion to men on the British register—i.e., roughly 1 to 20! Further, it is obvious that the supply of posts vacant can never be adequate to the demands of young graduates except at such times as that of the Great War, when everyone was seized on for work with avidity. But just as, at the cessation of the war, the Government found itself with surplus stocks of inanimate goods, so animate beings were also stranded, and unemployment is rife everywhere. Medical students preparing for service now find themselves qualified with no immediate demand for their work, just as do members of other professions.

It may be that medical women are taking rather longer than medical men to get absorbed in the general population, and here again Mr. Robinson's carefully analysed figures are very illuminating. Of the 78 applicants only 16 had London diplomas. Inasmuch as women from five or six London schools besides the provinces take London qualifications it is obvious that only a small fraction of these come from the London women's school—i.e., a school where only women are trained has very few of its students seeking work so far afield. This is what one would expect. It is natural that where women form only a small (new) proportion of graduates, their interests should not be pushed, when the staff, dean, and warden are all men. "Fellow-feeling," to say nothing of custom, tends to the forwarding of men's interests. The same applies to the boards of management of all hospitals. They are almost entirely composed of men, and tend to appoint such.

At any rate, some 30 years ago the number of women qualified to posts available was in a much higher proportion than now; and just as the members of the then "glut" have long ago resolved themselves into useful, busy, and most prosperous citizens whom the community could ill spare—so we rejoice that history is repeating itself, and that the members of another delightfully large "glut" are waiting for absorption in the same way!

I am, Sir, yours faithfully,

H. B. HANSON, M.D., B.S., D.P.H.

Circus-road Mansions, N.W., Jan. 19th, 1925.

UNIVERSITY OF VIENNA: FACULTY OF MEDICINE.—

The programme of the Sixteenth International Course of Lectures on Medicine, which is to take place in Vienna from Feb. 9th to 21st, has reached us. The course will deal with the Diseases of the Digestive Organs and their Therapeutics. A practical course following the lectures will be held from Feb. 23rd to 28th. Those taking part in the course include Profs. J. Tandler, H. H. Meyer, K. Sternberg, K. F. Wenckebach, C. Pirquet, among many others. Foreign medical men who desire to attend are asked to communicate with Dr. Kronfeld, Porzellangasse 22, Vienna IX.

Obituary.

CLEMENT DUKES, M.D., B.S. LOND.,
F.R.C.P. LOND.

Dr. Clement Dukes, for 37 years medical officer at Rugby School, had a deserved, even a world-wide, reputation as an authority on the health of the school-boy. His death occurred on Sunday last, Jan. 18th, at the age of 79.

Clement Dukes was born in 1845, son of the Rev. Clement Dukes. He received his medical education at St. Thomas's Hospital where he was a distinguished student, graduating in 1869 at the University of London with honours in medicine, and in surgery with the gold medal. After holding house appointments at St. Thomas's Hospital and at the Hospital for Sick Children, Great Ormond-street, other clinical appointments at the City of London Hospital for Diseases of the Chest and at the Royal Ophthalmic Hospital, Moorfields, he was appointed in 1871 medical officer at Rugby, which post he held until his resignation in 1908. He served under four head-masters, Canon Hayman, whose removal from office two years later was the subject of prolonged litigation, Dr. Jex-Blake, Dr. Percival, afterwards Bishop of Hereford, and Dr. James. While holding this position he proceeded to the M.D. of London in 1876 and was later elected a Fellow of the Royal College of Physicians. On his retirement he was appointed consulting physician to the school.

Dukes was the fortunate possessor of an orderly mind and great literary capacity—knowing much, he was able to record his knowledge in assimilable form. He was the author of "Health at School," which went through four editions, and remains a standard work even though developments along many lines have rendered some of his reflections obsolete; of "The Preservation of Health by Cleanliness and Temperance," which was awarded the Howard Medal and a money prize by the Royal Statistical Society; of "The Essentials of School Diet," which passed through two editions; and of "L'Hygiène et l'Éducation de l'Adolescence," which gained the silver medal of the Société Française d'Hygiène, much of the information being strikingly new to a French audience. He also wrote the articles "The Hygiene of Youth" in Allbutt and Rolleston's System of Medicine, and "Scarlet Fever and Rubella" in the Encyclopædia of Medicine, his last work being "The Fourth Disease," published in 1901 and following his attempt in the columns of THE LANCET to establish the clinical entity of a certain group of febrile symptoms accompanied with rash.

Dukes will long be remembered by his earliest work "Health at School," which had its origin in a communication to the popular compendium "A Book of Health," compiled by Sir Malcolm Morris some 15 years after Dukes had started on his life-long association with Rugby. There had been before this date many disconnected articles dealing with school health, referring in particular to positions at the great private enterprises called public schools. Many of these contributions had arisen out of particular occurrences like outbreaks of enteric, ophthalmia, or ringworm, but the subject of public school life in its general sanitary aspects had never before been considered comprehensively, with outbreaks of disease taking part in the plan as episodes requiring preventive as well as curative measures. Dukes's book was found at once to deserve careful study by parents and all school authorities, head-masters, house-masters, and form-masters alike. The sanitary construction of boarding-houses, as it was then understood, was set out as well as the need for proper attention to diet and to hours of work and play. Dukes indicated clearly that the amount of work which can be safely done may be ascertained by general rules, but that these may need in individual cases special adaptation where the collateral circumstances of the age and

health of the boys are considered. He pointed out on the subject of overwork the necessity of discrimination by the authorities upon medical advice between laziness and sickness, the symptoms of pressure not necessarily depending upon the stress of lessons, but sometimes upon disinclination and sometimes upon physical disability. He further discussed the medical arrangements for the treatment of disease in a school population and for the isolation of infections, pointing out the need for the quarantine of doubtful cases until their exact nature had been determined. The book was prepared with great care; it showed a practical knowledge on the part of the author of the subjects of which he treated, as well as prevision in directions where developments might be expected. The success of the work was as certain as it was well-earned.

His name again will in text-books be long connected with the question of the existence of the "Fourth Disease." He described in THE LANCET¹ three outbreaks of an infectious disease having characteristics sufficiently constant to entitle it to be considered an entity, and differing in definite respects from measles, German measles, and scarlet fever. Dukes's description of "Fourth Disease" was accepted at the time by many medical men as satisfying them that certain cases which had come under their care had belonged to this special category, but the leading authorities upon the subject of fevers do not to-day acquiesce in his theories.

Although it was as medical officer to Rugby School that Dukes substantially led his life, he took considerable part in public affairs. He was for years on the staff of the St. Cross Hospital, Rugby, was surgeon-colonel V.D. Midland Brigade and 2nd V.B. Royal Warwickshire Regiments, a medical referee under the Workmen's Compensation Act and the Mental Deficiency Act, and a justice of the peace for Warwickshire. He was twice married, first to Alice Mary Harford, who died very shortly afterwards, and secondly to Florence Emma, daughter of Mr. J. W. Battley, of Enfield, and had five sons and four daughters. We join with these, and with Dr. Dukes's many professional and personal friends, in regret at the death of a distinguished medical worker and pioneer.

LILLIAS HAMILTON, M.D. BRUX.,
L.R.C.P. & S. EDIN.

Lillias Hamilton, who died recently at Nice, was, when at school at Cheltenham, stimulated by Miss Beale to adopt some profession. She trained first as a nurse at the Liverpool Infirmary and later as a doctor at the London School of Medicine for Women and the University of Edinburgh, qualifying L.R.C.P. & S. Edin. and M.D. Brux. in 1890. The story of her life shows her to have had an enterprising and adventurous spirit. To those who knew her even slightly her energy and strength of purpose were apparent, while even in her books, especially in "The Vizier's Daughter," these qualities manifest themselves. Indeed, any girl who qualified in medicine 35 years ago, having previously submitted to the rigorous discipline of a hospital nurse's training, must have had a will of no common order. She might well have emerged from these strenuous years of preparation with the spirit of adventure somewhat dimmed, but Dr. Hamilton evidently took work easily in her stride as a preliminary to a life's career which proved as full of colour as even a school-girl's imagination could have painted it. From private practice in Calcutta, and the charge of the Dufferin Hospital there, she became court physician to the State of Afghanistan and established at Kabul a hospital whence at least some of the Western views on hygiene and the care of the sick spread to the surrounding population. She lost her own health in India while promoting that of others, and returned to this country in 1898, when, after a period of private practice, she became warden of the Studley Horticultural and Agricultural College for Women. During the war she returned to

medicine as officer in charge of a hospital in Montenegro, afterwards resuming her task at Studley of training women students to follow expertly yet another of the professions.

She will be remembered as one of the outstanding women of a transition period.

PHILIP PREBBLE, M.B., C.M. ABERD.

THE sudden death of Philip Prebble on Jan. 10th at his residence in Blackburn at the age of 59 removes one of the most respected practitioners of the town. Dr. Prebble was a native of Blackburn and received his early education there. He studied medicine at the University of Aberdeen, graduating M.B. and C.M. in 1895. He took post-graduate courses at Manchester, New York, and at various continental clinics before settling in Blackburn. He was appointed assistant physician to the Blackburn and East Lancashire Royal Infirmary in 1905, and at the time of his death was the senior physician at this institution. A life member of the Pathological Society of Manchester, he was also a former president and treasurer of the Blackburn District Medical Society, and a member of the Manchester Medical Society. He was at one time chairman of the Blackburn division of the British Medical Association, medical officer for the Blackburn Union Cottage Homes, and district medical officer for the Blackburn Union. Dr. Prebble was one of the few local medical practitioners who did not apply to be placed on the panel under the National Insurance Act. Later, he was elected a member of the Medical Service Subcommittee and chairman of the Pharmaceutical Subcommittee, and vice-chairman of the Finance and General Purposes Committee. He was for a few years a member of the Municipal Council.

Public Health Services.

HOSPITAL NOTES.

SCOTTISH HOSPITAL INQUIRY.

THE inquiry opened recently in Edinburgh into hospital needs in Scotland is of vital public importance. The Committee was appointed last June by the late Government to inquire into and report upon the extent and nature of the inadequacy of the present hospital and auxiliary services in Scotland and to make recommendations for the development and maintenance of those services to meet the needs of the community. The chairman, Lord Mackenzie, in opening the inquiry, stated that the remit was wider than the similar inquiry held in England, as it covered, in addition to voluntary hospitals, public health and Poor-law hospitals.

Evidence was opened by Mr. A. E. Maylard speaking for the city of Glasgow, who said that the present provision was not meeting the demand; this might be measured by the long waiting lists and the difficulty experienced by practitioners in getting patients into hospital. Prof. G. L. Gulland, speaking for Edinburgh, said accommodation was inadequate, and pointed out that the demands made upon voluntary hospitals by the community are in the future likely to increase owing to the ever-rising standard of diagnosis; further accommodation was even needed for acute illness. He suggested that auxiliary hospitals attached to the central hospitals should be provided, to which patients might be transferred after a shorter stay in the general hospital.

Sir David Wallace urged the utilisation of Poor-law hospitals to relieve the congestion; there was a great objection, due to the stigma of pauperism, on the part of many patients to entering these institutions; if this could be removed and the hospitals well staffed, there was no reason why they should not gain a reputation for good work and, moreover, patients would enter them unhesitatingly. The fact that

¹ THE LANCET, 1900, ii., pp. 89, 114, 289, 1384.

increase in hospital beds for patients must mean increased accommodation for the nursing staff had been lost sight of in the past, with the consequence that nurses were often "more or less stowed away" instead of being well housed and cared for. He was convinced that philanthropists were unlikely to support a State hospital, and this opinion was generally accepted.

Regarding maternity needs, Prof. B. P. Watson alluded to his experience in Toronto, where for many years he held a post in a maternity hospital of 600 beds of which about 150 were for private patients. All patients in this hospital paid for their maintenance; if they could not pay for themselves the municipality paid for them. There was no Poor-law in Canada; the private patients were accommodated in a separate block for which extra payment had to be made, and doctors were paid fees by patients in the private block. In Scotland, he said, there was urgent need for hospital accommodation for maternity cases; centres should be established in the larger towns where expert obstetricians were available.

Prof. T. K. Munro (Chair of the Practice of Medicine, Glasgow University) spoke of the inadequacy of the accommodation for surgical and tuberculous cases. He was opposed to the idea of voluntary hospitals taking paying patients. He would leave the Poor-law hospitals as they are, but thought that State contributions to capital expenditure might be accepted without detriment to the voluntary principle.

The inquiry is still proceeding and evidence is to be taken from well-known practitioners. The general consensus of opinion appears to be that the maintenance of the present voluntary system is desirable, but that increased accommodation is an urgent necessity; this might be achieved most easily by the institution of inexpensive auxiliary hospitals somewhat of the nature of convalescent hospitals. Some method of coördination between the various areas might be helpful. It was generally accepted that State control, or at least State aid, would be undesirable.

MEDALS FOR NURSES AT SHEFFIELD.—The committee of Sheffield Royal Infirmary has decided to award annually a gold, a silver, and a bronze medal to nurses for good ward work, general conduct, and examination results. Each year three nurses will receive four months' midwifery training at the Jessop Hospital. A large house close to the Royal Infirmary has been acquired to augment the accommodation for the nurses, who have been increased in strength in consequence of the growth of the number of beds, which now exceeds 500.

NOTTINGHAM CRIPPLES' GUILD.—The Duchess of Portland has laid the foundation-stone of a preventive, after-care, and training centre which is being built by the Nottingham Cripples' Guild at a cost of £7000. It is intended to deal with potential cripples, with children returning from special hospitals, and with those for whom vocational training can be provided. During the last six months there have been 4000 attendances at the present inadequate premises, and Mr. S. A. S. Malkin, the orthopaedic surgeon at the clinic, stated that there is a very definite cripples' problem in Nottingham.

KING EDWARD VII. HOSPITAL, WINDSOR.—The recent opening of the new nurses' hostel has enabled the setting aside of ten separate rooms as a paying ward. The ward is equipped with a special staff of nurses and is separate from the other portion of the hospital, but participates in all its advantages.

HOSPITAL SATURDAY FUND.—The income in 1924 exceeded that of 1923 (£100,765) by over £6000. The business house, workshop, and factory collections amounted to £79,583.

A FRIENDLY SOCIETIES' COLLECTING SCHEME.—The first year's working of a collecting scheme initiated by the local friendly societies in aid of the Bath Royal

United Hospital has produced £4900; 50 per cent. more was collected in the fourth quarter than in the first. The hospital serves a population of approximately a quarter of a million, and its area extends roughly from Swindon in North Wiltshire to Shepton Mallet in North-East Somerset, but the scheme has so far covered only about one-half of this wide district. Interest in the movement has been noticeably stimulated by the organisation of visits to the hospital by stewards of districts, collectors, contributors, and the general public.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 10TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—small-pox, 91; scarlet fever, 1738; diphtheria, 1047; enteric fever, 49; pneumonia, 1292; puerperal fever, 49; cerebro-spinal fever, 12; acute poliomyelitis, 5; acute polio-encephalitis, 2; encephalitis lethargica, 45; dysentery, 3; ophthalmia neonatorum, 99. There were no cases of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were reported from the several counties, as follows: Chester 2 (Dukinfield); Derby 12 (Derby C.B. 4, Bolsover 1, Chesterfield 3, Chesterfield R.D. 3, Shardlow R.D. 1); Lancaster 1 (Ashton-under-Lyne); Lincoln Holland 1 (Boston R.D.); Lincoln Lindsey 4 (Gainsborough); Northumberland 17 (Ashington 1, Weet-slade 11, Morpeth R.D. 5); Notts 23 (Hucknall 10, Kirby-in-Ashfield 11, Skegby R.D. 2); Warwick 7 (Coventry C.B. 1, Nuneaton 4, Atherstone R.D. 2); Yorks North Riding 22 (Middlesbrough C.B.); Yorks West Riding 2 (Bradford C.B. 1, Wortley R.D. 1).

Deaths.—In the aggregate of great towns, including London, there were 7 deaths from enteric fever, none from small-pox, 23 from scarlet fever, 47 from diphtheria, 79 from measles, 124 from influenza (as compared with 100 and 83 in the two preceding weeks). In London itself the deaths from diphtheria numbered 9 and from whooping-cough 18.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The second of the present series of lectures will be delivered by Sir Humphry Rolleston on the Medical Aspects of Gall-stones on Jan. 30th, at 1, Wimpole-street, W., at 5.30 p.m. A combined course in Diseases of Children, arranged by the Paddington Green Hospital, Victoria Hospital, and the Children's Clinic, will begin on Feb. 2nd. There will be two sessions daily at 10 and 2 during the three weeks of the course. A four weeks' course starting on Feb. 2nd will be held at St. John's Hospital for Diseases of the Skin. A comprehensive course at the London Lock Hospital runs from Feb. 2nd until the 26th; early application for this course is desirable. Eight clinical demonstrations on Tropical Diseases will be given twice a week at the School of Tropical Medicine by Dr. G. Low and Dr. P. Manson-Bahr from Feb. 3rd. The course in Gynaecology at the Chelsea Hospital for Women, due to begin on Feb. 2nd, has been postponed until March 16th. From Feb. 16th to 28th the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham, N.) is holding an intensive course. The programme will cover the whole day, and will include all the general and special departments of the hospital, in addition to a special lecture each day at 4.30 p.m., free to members of the Fellowship of Medicine. The lecturers will be Mr. James Sherren, Dr. H. W. Barber, Dr. P. Manson-Bahr, and Mr. H. D. Gillies, as well as members of the permanent teaching staff. On the Saturday mornings there will be demonstrations of cases at associated hospitals: on the Early Diagnosis of the Infectious Fevers at the North-Eastern Fever Hospital, by Dr. Frederic Thomson; and on Mental Diseases at the L.C.C. Mental Hospital, New Southgate, N., by Dr. S. J. Gilfillan. The names of those wishing to attend this course should be sent to the Secretary of the Fellowship of Medicine, or to the Dean, Dr. A. J. Whiting, at 19A, Cavendish-square, W. 1, not later than Feb. 13th. Apart from the foregoing special courses, the general work, as indicated in the Fellowship *Bulletin*, is available and can be begun at any time. Copies of the syllabus of the above-mentioned courses and the *Bulletin* may be obtained on application to the Secretary at 1, Wimpole-street, W. 1.

MOORFIELDS RESEARCH SCHOLARSHIP.—A scholarship of the value of £50 per annum, tenable for one year, but renewable for a second year, is being offered at the Royal London Ophthalmic Hospital. The scholar will be required to give three mornings a week to research at the hospital on subjects approved by the Medical Board. Applications should be sent to the hon. secretary, Medical Board, Moorfields Eye Hospital, City-road, London, E.C.1, not later than Jan. 31st, if possible with suggested subjects of research.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on Jan. 12th, the following were admitted as Honorary Fellows: Sir Humphry D. Rolleston, Bart., K.C.B., President of the Royal College of Physicians, London; Sir Archibald E. Garrod, K.C.M.G., F.R.S., Regius Professor of Medicine in the University of Oxford; and Lieut.-Colonel Sir Leonard Rogers, C.I.E., F.R.S., formerly of the Indian Medical Service and Professor of Pathology in the Medical College, Calcutta. Mr. Tom John Honeyman, M.B., Ch.B. Glasg., was admitted (after examination) as a Fellow of the Faculty.

MANCHESTER AND A CANCER COMMITTEE.—The Manchester Public Health Committee have agreed to coöperate in the work of forming a local cancer committee. Dr. R. Veitch Clark, the medical officer of health, last summer privately invited a number of medical men and others interested in the subject to meet and discuss the position. After several meetings of this unofficial committee it has now been arranged that a local cancer committee be established with representatives of the local hospitals, the University, the corporation, medical men, and others concerned. The Public Health Committee will be officially represented and take part in the proceedings. The new committee will consider the medical, industrial, and geographical aspects of the subject.

ALL-RUSSIAN CONGRESS ON MALARIA.—The Third All-Russian Congress on Malaria will be held in Moscow from Feb. 3rd to 8th. The Congress will discuss the epidemiology of malaria, the fight against malaria in Russia, and a number of scientific questions. Among those invited to the Congress are representatives of the Commissariat of Public Health of regional, provincial, and border districts of Russia; representatives of the malaria centres, of the health resorts and watering places, and of the war sanitary districts; as well as the representatives of the Central Committee of the Professional Union and the Central Board of the Social Insurance Service, of the medical societies, and of all the medical organisations of the Soviet Republics. All inquiries are to be directed to the Sanitary Epidemiological Department, Narkomsdrav Moscow, Maly Tcherkassky Pereulok, Moscow.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirteenth meeting of the Commission was held at the Home Office, Whitehall, on Jan. 15th, Lord Lawrence of Kingsgate in the chair. Mr. Joseph Cave, High Chief Ruler of the Independent Order of Rechabites, and Mr. Jonas P. Illingworth, a director of that Order, were examined on the following subjects: The rates of cash benefits, the deposit contributors' scheme, the administration charges, and the extension of medical benefit. Thereafter evidence was heard on behalf of the Rational Association Friendly Society, represented by Mr. Jonathan Duncan, general secretary, and Mr. Harry Bailey, assistant secretary. Questions as to the age limits for insurance, the size of societies, extension of benefits, workmen's compensation, and dental benefit were dealt with.

JUBILEE OF THE ROYAL SANITARY INSTITUTE.—This Institute came into being in 1876 for the purpose of aiding the carrying out of the provisions of the general Public Health Act of the previous year. It arranged congresses and meetings for the discussion of problems and procedure, exhibitions for showing sanitary appliances and encouraging their development, and training and examinations for sanitary officers. This work has been actively continued and developed for a period of 50 years, and the operations of the Institute have been extended throughout the United Kingdom and also to the overseas dominions of the Empire. By these means the Institute has taken a large part in educating the people in public health and in qualifying men and women to undertake official duty, thus rendering easier and more effective the work of public authorities in carrying out their health measures. It has been decided to celebrate the occasion of the jubilee of the Institute in 1926 by holding a congress in London, and it is hoped to make it an opportunity for gathering together those engaged in public health work from all parts of the Empire and for bringing responsible opinion to bear on the many questions affecting the health of the people.

Four free lectures on the Bodily Senses and their Mental Representation will be delivered by Sir Robert Armstrong-Jones, at Gresham College, Basinghall-street, London, E.C., on Jan. 27th, 28th, 29th, and 30th, at 6 p.m.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors of this fund, held on Jan. 20th, Surgeon Vice-Admiral Joseph Chambers being in the chair, the sum of £60 was distributed among the several applicants.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben lectures will be delivered in the Lecture Theatre of the Institute at 37, Russell-square, London, W.C., by Prof. E. L. Collis on Phthisis and Industrialism (National and Occupational) with Reference to Other Infectious Diseases, at 4.30 p.m., on Jan. 26th, 27th, and 28th. Admission is free.

NORTH-WESTERN TUBERCULOSIS SOCIETY.—A meeting will be held on Jan. 29th, at 3.15 p.m., at the Public Health Laboratories, York-place, Manchester, when Prof. W. W. C. Topley will read a paper on Some Problems of Infection and Resistance in Tuberculosis in the Light of Recent Research. All medical practitioners interested are invited to attend.

THE LATE DR. JOHN FRASER.—The death is recorded at the age of 80 of Dr. John Fraser, who was a Commissioner in Lunacy for Scotland from 1895-1910, following on a period of seven years as Deputy Commissioner. Dr. Fraser graduated M.B., C.M. Edin., with first-class honours in 1870, and became F.R.C.P. Edin. in 1895. He was a keen botanist, and was a Fellow of the Royal Society of Edinburgh.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MEETINGS OF SECTIONS.

Monday, Jan. 26th.

ODONTOLOGY: at 8 p.m.

Casual Communication:

Mr. G. F. Cale Matthews: A Case of Long-standing Insomnia Cured by the Extraction of Pulpless Teeth.

Paper:

Mr. L. E. Claremont: The Problem of Pulpless Teeth.

Tuesday, Jan. 27th.

PSYCHIATRY
NEUROLOGY
DISEASE IN
CHILDREN
EPIDEMIOLOGY

Special Discussion (adjourned): at 8.30 p.m.: The Mental Sequelæ of Encephalitis Lethargica.

Speakers:

Dr. J. C. Spence, Dr. C. Worster-Drought, Dr. E. Mapother, and others.

Wednesday, Jan. 28th.

COMPARATIVE MEDICINE: at 5 p.m.

Discussion on

Canine Jaundice, with Special Reference to Leptospiiral Infection (with epidiascopic illustrations), to be opened by Dr. C. C. Okell, Mr. T. Dalling, and Mr. L. P. Pugh.

Thursday, Jan. 29th.

UROLOGY: at 8.30 p.m.

Discussion:

Radiotherapy and Electrotherapy in Diseases of the Bladder and Prostate.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Jan. 26th.—8.30 p.m., Prof. A. Castellani: Parenteric Fevers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

Monday, Jan. 26th.—5 p.m., Sir Arthur Keith: Recent Discoveries of Fossil Man. (Hunterian Lecture IV.)

Wednesday.—5 p.m., Lecture V.

Friday.—5 p.m., Lecture VI.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

Monday, Jan. 26th, to Saturday, Jan. 31st.—WEST

LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Lecture arranged by the Fellowship of Medicine, and open to all members of the profession. At 5.30 p.m. Friday, Jan. 30th, Sir Humphry Rolleston, Bt.: The Medical Aspect of Gall-stones.—WEST END HOSPITAL FOR NERVOUS DISEASE, 73, Welbeck-street, W. Intensive course in the Diagnosis and Treatment of Common Diseases of the Nervous System. Daily, at 5 p.m., Lectures, including clinical demonstrations upon selected cases.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Tuesday and Saturday, at 11 a.m., Lecture-Demonstrations by Dr. Porter Phillips and Dr. Thomas Beaton.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 26th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—11 A.M., Dr. Endeau: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tytrel Gray: Surgical Wards.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Mr. Sinclair: Surgical Dyspepsia. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—10.30 A.M., Dr. Pritchard: Medical Wards. 10 A.M., Sir Henry Simson: Gynaecological Operations. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, Jan. 27th.—4.30 P.M., Mr. N. B. B. Fleming: Eye Changes as Signs of Organic Disease.

FRIDAY.—4.30 P.M., Dr. C. E. Sundell: Enuresis.

Daily: In- and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Jan. 29th.—4 P.M., Dr. Harrison: Routine Clinical Examination of the Urine.

ROYAL DENTAL HOSPITAL OF LONDON POST-GRADUATE LECTURES.

FRIDAY, Jan. 30th.—5 P.M., Mr. D. P. Gabell: Partial Dentures.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Jan. 27th.—5 P.M., Dr. A. M. H. Gray: Xanthoma; Herpes.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Pemphigus and Allied Eruptions.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Jan. 27th.—4 P.M., Prof. A. Patrick: Clinical Application of Tests for Renal Efficiency. Discussion to be opened by Dr. Orr and Dr. Hynd.

SATURDAY.—A meeting of the Association for Clinical Investigation will be held in Edinburgh. The morning session will be in Prof. Murray Lyon's Wards in the Royal Infirmary at 11 A.M. An afternoon session will be held, the subject and time of meeting being announced at the morning meeting.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES.

(At 3.30 P.M.)

MONDAY, Jan. 26th.—(At the Children's Hospital.) Mr. McMurray: Paralysis.

TUESDAY.—(At the Southern Hospital.) Mr. O. H. Williams: Colitis.

WEDNESDAY.—(At the Northern Hospital.) Dr. Murray Bligh: Broncho-pneumonia.

FRIDAY.—(At the Royal Infirmary.) Mr. Hallam: Dental Disease in Relation to General Medicine.

Appointments.

COHEN, J., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer, Paddington Casual Wards, Metropolitan Asylums Board.

MITCHELL, A. PHILP, M.D., M.Ch., F.R.C.S. Edin., Assistant Surgeon to Leith Hospital.

Certifying Surgeons under the Factory and Workshop Acts: DUNCAN, C., M.B. Durh. (Chester-le-Street); MACINTOSH, J. F., M.B., Ch.B. Aberd. (Braemar); WIGAN, C. A., L.R.C.P. Lond., M.R.C.S. (Portishead); GERRARD, R. F., L.R.C.P. Lond., M.R.C.S. (Ellesmere); ROBEY, W. C. T., L.R.C.P., L.R.C.S.I. (Eastwood, Notts); HOLMES, A. M., M.B., Ch.B. Edin. (Heanor, Derby); PATON, W. R., M.B., C.M. Glasg. (Ilkeston).

Vacancies.

For further information refer to the advertisement columns.

Blackburn County Borough.—M.O.H. and Sch. M.O. £1000.

Cardiff City.—Asst. M.O. £600.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Second Res. H.S. £75.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. at rate of £125.

Gloucester, Gloucestershire Royal Infirmary, &c.—Asst. H.S. £150.

Grocers' Company, Grocers' Hall, E.C.—Research Scholarships. £300.

Hospital for Sick Children, Great Ormond-street, W.C.—Cas. O. £400.

Huddersfield Royal Infirmary.—Sen. H.S. £225.

Hull Infectious Diseases Hospitals.—Res. M.O. £400 plus bonus.

Hull Royal Infirmary.—H.P. £200.

L.C.C.—Jun. Asst. M.O. Mental Hospitals. £432.

London Hospital, Whitechapel, E.—Obstet. and Gynaecological Reg. and Tutor. £400.

London Temperance Hospital, Hampstead-road, N.W.—Med. Reg. 40 guineas. Anaesthetist.

Maidstone, Kent County Ophthalmic Hospital for Diseases of the Eye, Ear, Nose, and Throat.—Hon. Rad.

Manchester, Ancoats Hospital.—Two H.S.'s. First 6 months at £100. Second 6 months at £150.

Manchester, Baguley Sanatorium.—Two Asst. M.O.'s. Each £350.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—H.S.'s at rate of £200.

Mount Vernon Hospital, Northwood, Middlesex.—Jun. Asst. M.O. £75.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. Cas. H.S. at rate of £100.

Royal London Ophthalmic Hospital, City-road, E.C.—Four Refraction Assts. at rate of £100 each. Research Scholarship. £50.

Ryde, Royal Isle of Wight County Hospital.—Res. H.S. at rate of £180.

St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—H.S. £200.

St. Mary's Hospital, W.—Asst. Pathologist. £500. Cas. H.S. at rate of £100.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. at rate of £100.

Seamen's Hospital Soc., Dreadnought Hospital, Greenwich.—P.

Seamen's Hospital Soc., Hospital for Tropical Diseases, Endsleigh Gardens, N.W.—Med. Supt. £250.

South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Assts.

Staffordshire Education Committee.—Asst. Sch. Med. Insp. £600.

Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Second Res. M.O. at rate of £250.

Wakefield, Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. M.O. £500.

West London Hospital, Hammersmith-road, W.—Hon. Surg. Reg. £100.

Willesden General Hospital, Harlesden-road, N.W.—Hon. Anaesthetist, &c.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Highbridge, Somerset; Fricockheim, Forfar; and Stillington, Durham.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for Dundee District (Sheriffdom of Forfar). Applications should reach the Private Secretary, Scottish Office, not later than Feb. 9th.

Births, Marriages, and Deaths.

BIRTHS.

ATKINSON.—On Jan. 10th, at Stainer-street, St. Thomas's-street, S.E., the wife of Dr. C. Hewitt Atkinson, of a daughter.

CADE.—On Jan. 15th, at Harley-street, W., the wife of Stanford Cade, F.R.C.S., of a daughter.

MARRIAGES.

CHURCHER—LANCASTER.—On Jan. 13th, at Christ Church, Westminster, Duncan Gillard Churcher, M.D., F.R.C.S., of Tarporley, Cheshire, to Nancy Thursfield Lancaster, M.R.C.S., L.R.C.P.

FELLOWS—GRIFFITHS.—On Jan. 13th, at Berhampore, Ganjam, India, Rev. B. F. W. Fellows, B.A., Baptist Missionary Society, Balangir, Orissa, India, son of late Mr. G. W. Fellows and Mrs. Fellows, London, to Alice Muriel Griffiths, M.D., B.S., Baptist Mission Hospital, Berhampore, younger daughter of Mr. and Mrs. T. L. Griffiths, of 27, Richmond-road, Cardiff. (Cabled.)

GLEN—DIXON.—On Jan. 17th, at St. Cuthbert's Church, London, S.W., Archibald Glen, L.R.C.P., M.R.C.S., to Enid Marcella Dixon, L.R.C.P., M.R.C.S.

WALKER—NICOL.—On Jan. 14th, William Wood Walker, M.B., to Rosabel, youngest daughter of Mr. and Mrs. George C. Nicol, Sarre-road, N.W.

DEATHS.

DINGLEY.—On Jan. 16th, at "St. Norberts," Sutton, Allen Dingley, F.R.C.S., aged 68 years.

DUKE.—On Jan. 17th, Maurice Smelt Duke, M.R.C.S., L.S.A., late of Kennington Park-road, aged 73.

IRVINE.—On Jan. 14th, at Westminster Hospital, the result of an accident, Lieut.-Colonel Lewis Irvine, late R.A.M.C., of Whitehall Court, S.W.

MACMUNN.—On Jan. 12th, at a nursing home in London, James MacMunn, M.D., F.R.C.S., Easkey, Co. Sligo, aged 69 years.

SHURLOCK.—On Jan. 16th, at a nursing home, Arthur George Shurlock, M.A., M.B., B.Ch., D.P.H. Camb., M.R.C.S., L.R.C.P., of Lime-avenue, Derby, and recently of Brockenhurst, Hants, aged 30.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

TOBACCO, HEALTH, AND EFFICIENCY.

A Statistical Inquiry into the Physiological Effects of Smoking Tobacco, Conducted at Antioch College, Yellow Springs, Ohio, U.S.A.

BY J. ROSSLYN EARP, M.A. CAMB., M.R.C.S. ENG.

ONE of the most sustained indictments of tobacco—sustained, that is, by number of witnesses rather than by weight of evidence—is that it injures the wind. So commonly is this believed to be true that athletic coaches the world over will prohibit use of tobacco to their teams in training. If breathlessness is really increased by the use of tobacco this must be due to poisoning either of the respiratory machinery or of the nerves or muscles of the heart or of the oxygen-carrying materials of the blood-stream itself. In the following study, endeavour has been made to evaluate by quantitative methods the actual effect on the function and efficiency of the cardiac and respiratory organs of slight, moderate, or heavy use of tobacco. No observations have been made on the effect of smoking on the chemistry of the blood.

Division of smokers into light, moderate, and heavy groups must obviously be made by arbitrary methods and can be only approximately correct. No account can be taken of the possible variations in toxicity of different brands of tobacco or in the wide variations in the size of pipes and the completeness of combustion. For the purpose of this study a man was considered to be a light smoker if he used two cigarettes, one pipe, or one cigar or less per day, a moderate smoker if he used up to ten cigarettes, three pipes, or two cigars a day, and a heavy smoker if he used more than this.

The material for this study is derived from the medical examination given to every Antioch student each year. For various reasons only records of the men are being used. The results are shown in Table A.

TABLE A.—Average for Group in—

Amount of tobacco used.	No. of cases.	1	2	3	4	5	6	7	8	9	10	11
		Stand- ing pulse- rate.	Lying pulse- rate.	Differ- ence between 1 and 2.	Pulse- rate after exer- cise.*	Differ- ence between 4 and 1.	Systolic blood pres., stand- ing.	Systolic blood pres. after exer- cise.*	Differ- ence between 7 and 6.	Diastolic blood pres., stand- ing.	Difference between 6 and 9 (pulse pressure).	Deviation from Dreyer V. C. Standard Class A.
		per minute.					millimetres.					litres.
Non-smoker . . .	172	79	69	11	120	47	120	143	23	84	38	0.154
Light smoker . . .	24	79	69	11	129	50	119	140	21	87	32	0.0809
Moderate smoker . .	38	80	67	13	126	47	112	135	24	84	31	0.186
Heavy smoker . . .	70	80	69	13	123	44	119	140	23	83	35	0.069

* Lifting the body weight through 2 feet ten times in 30 seconds or approximately 3000 foot pounds of work in 30 seconds.

It is obvious without any further statistical procedure that smoking in the degree to which it is carried on by Antioch students does not materially affect the functional efficiency of the cardio-vascular system, or capacity of the lungs as measured by stated tests. It must, however, be emphasised that these tests are not all-inclusive. It may be that the coordination between the cardio-vascular and the respiratory system is less efficient in smokers than in non-smokers, or that the oxygen affinity of the blood is materially lowered in smokers by combination of carbon monoxide with the hæmoglobin. I hope later to make some research in this regard.

In the meantime Table B is a rough indication that the prejudice of the athletic coach against smoking has some justification from experience. As will be seen from Table A, there are actually more non-smokers than smokers in the college in the proportion of 172 to 132. Since the track meet was open to all comers the prizes should have gone to non-smokers in this same proportion had habitual smoking no effect on athletic ability. It will be seen that the actual distribution of prizes was overwhelmingly in favour of the non-smokers.

TABLE B.—Showing Distribution of Non-smokers, Light, Moderate, and Heavy Smokers in Winners of Intramural Track Meet, May, 1924.

Event.	First place.	Second place.	Third place.
100 yards dash . . .	H	N	—
Shot put . . .	M	N	(H) ?
220 yards dash . . .	N	N	—
Pole vault . . .	N	N	—
Javelin throw . . .	N	L	—
Half-mile run . . .	N	N	N
440 yards run . . .	N	—	—
High jump . . .	L	N	N
1 mile run . . .	N	N	N
Broad jump . . .	L	N	N
Discus throw . . .	N	(N) ?	N
Relay team . . .	N	N	L

N = Non-smokers. L = Light smokers.
M = Moderate smokers. H = Heavy smokers.

An incidental, but very striking observation is the negative correlation shown between smoking and scholarship. Table C shows the average cumulative scholarship of the three groups

TABLE C.—Average Cumulative Scholarship.

Non-smokers . . .	4.03	Heavy smokers . . .	3.33
Light smokers . . .	3.62	All smokers . . .	3.45
Moderate smokers . .	3.39	All in this study . .	3.83
Probable error of difference, non-smokers and smokers			
Difference is . . .			
0.58 ± 0.08			

of smokers and of the non-smokers. For all smokers together this average works out at 3.45. Since the "probable error" of difference between the two groups "smokers" and "non-smokers" is only 0.08, whereas the observed difference is 0.58, the chances are about 500,000 to 1 against this difference being due to chance alone. A study of the psychological ratings of the two groups showed that there was no significant difference in intelligence, as measured by the Thurstone test. This observed difference in scholarship must, therefore, be due to one of two things: either the use

of tobacco reacts unfavourably in some way upon mental processes or else the type of mind to which smoking appeals is a type less given to mental application. It would be possible to decide between these two explanations only if the smokers could be persuaded to desist for a year or more from their habit. It is unlikely that they can be persuaded to do this as a body. Observation will be kept on the scholastic progress of those who do stop smoking for one reason or another.

Summary.

Of 304 men students at Antioch College, 172 are non-smokers, while 132 use tobacco in various amounts. Although the tests of the cardio-vascular system used in medical examinations do not indicate a superiority in the physique of non-smokers, the latter prove themselves the better athletes in practice, and show a significant advance in their record of scholarship.

I have to thank Mr. M. W. Richardson for the statistical calculations in relation to scholarship, and my assistant, Mr. Louis Harap, for the laborious detailed work involved in the compilation of the remaining tables.

POPULAR TUBERCULOSIS PUBLICATIONS.

A VERY welcome sign of the growing recognition of the value of propaganda in the campaign against tuberculosis is to be found in the increasing number of publications dealing with tuberculosis in a popular manner. We need only mention a couple of such periodicals. *Commonwealth* is issued by the Tuberculosis Committee of the Belfast Corporation in the interests of general health and the prevention of tuberculosis. The first number, which runs to eight pages, is an excellent example of a publication which aims at being educational as well as readable, and its editor, Dr. A. Trimble, has introduced so much variety into his menu, not omitting the lighter touch, that his work is sure to enjoy general appreciation. Another popular publication, which we hope deserves the term "periodical," is the *Christmas Magazine* of the Bridge of Weir Sanatorium. Like the average school magazine, it contains much that is of strictly local interest, but here and there words of wisdom, of value to every reader, are to be found. In both these publications established facts about tuberculosis are given prominence, whereas nothing is said to puff the latest "cure" or advertise some new sensational statement of doubtful veracity about tuberculosis.

THE QUACK ABROAD.

WITH all its century-old mystical medical lore, one might think that China would be proof against the vulgar wiles of upstart occidental quackery, but the reverse is the case. A Chinese contributor to the current number of *Hygeia*¹ has arranged an interesting little portrait gallery—of which we reproduce one masterpiece—of familiar Western nostrums in Chinese guise. Scientific medicine in China is trying to

九腎保製秘氏安兜
治主 驗弱症痛腎
無可起不弱
匹效矣即之
患一此治朕
者切允愈兆
盡病統較為
試症治重背
之效腎之腰

背痛 苦

An advertisement familiar to Chinese newspaper readers.

combat ignorance and disease, but there, as here, it must bear that old man of the sea—the quack—upon its shoulders. Mr. Chi-Chen Wang states that a survey of several issues of *Shun Pao*, the oldest and largest Chinese newspaper in Shanghai, reveals the startling fact that over one-third of its total advertising space is bought by patent medicine manufacturers or their agents. Some of the provincial papers derive practically all of their advertising revenue from nostrum vendors, for Chinese merchants as a whole have not yet learned to extend their business by advertising methods, and Chinese newspapers cannot afford to turn down space buyers. Patent medicine concerns, continues Mr. Wang, really introduced the art of advertising into China. With their striking illustrations and their striking claims they have lured many victims. Of late, since competition has become keener, the more enterprising have resorted to coupons and no-money-in-advance methods; others have gone so far as to offer free trial treatments. Mr. Wang points out rather ingenuously that the American public (and we presume he might include the British public) is familiar with such inducements and is wary about extravagant claims, but that to the Chinese public "such inducements seem true." There is, however, a reverse to the picture. An American writer to the *Dearborn Independent*, as quoted in a current issue of the *Bruxelles Médical*, states that there are about 2000 Chinese charlatans at present practising in the United States, under such titles as "oriental healer" and "herbalist." Their clientèle is composed

¹ Patent Medicine in China. By Chi-Chen Wang, *Hygeia*, Chicago, January, 1925.

entirely of white people, for, the writer remarks, "a Chinaman would never dream of committing himself to their tender mercies." These enterprising gentlemen work by means of "ingenious advertisements" in the newspapers, and the drugs they supply are certainly fascinating. For example, dried toads are prescribed for kidney diseases, while the hair of a lion or a tiger is claimed as a specific for heart troubles. Unfortunately, however, the origin of the latter medicament can usually be traced to a defunct cat or dog. Thus do East and West meet on the common territory of quackery.

TREATMENT OF LUMBAGO.

To the Editor of THE LANCET.

SIR,—I should like to know the opinion of other medical officers on the treatment of lumbago by subcutaneous injections in the buttocks of 2 gr. doses of sodium salicylate. In 20 cases I have so treated, the injections being given twice a week, there have been no further attacks.

I am, Sir, yours faithfully,

S. K. GANGULI, B.A., M.B.,
Lieut., I.M.S.

A CHARMING ROAD BOOK.

WE have received from the Dunlop Rubber Co. the first volume of a series of pictorial road plans entitled "On the Road," published by Ed. J. Burrow Co. Ltd., Cheltenham and London (price 6d.). This volume covers the highway between London and Brighton, Worthing, Eastbourne, Hastings, Folkestone, Dover, and Margate. A clear red road runs from the bottom to the top of each of 37 maps and on each side of it are delightful little sketches of taverns, cathedrals, bridges, fruit fields, and castles which abound in this corner of England. Regular sea-level figures show where the road-user will swoop down into a valley or skim over a hill top, and there are frequent notes and an introduction by Mr. Ed. J. Burrow, F.R.G.S.

A VERY SMALL COOLIDGE TUBE.

A PORTABLE X ray outfit recently developed in the research laboratory of the General Electric Company of America weighs only about 20 lb., and complete with its transformer and all other necessary parts occupies a box measuring 6½ by 10½ by 8½ inches. The tube operates at 56,000 volts (maximum) and 10 milliamperes, and is mounted in oil. The bulb, 1½ inches in diameter, is of glass, which contains 55 per cent. by weight of lead. The window from which the X rays emerge is of thin-walled, lead-free, lime glass. This is probably the smallest Coolidge tube on sale.

THE MEDICAL BUREAU OF LOURDES.

WRITING in the magazine of the Society of our Lady of Lourdes in December, 1924, Dr. Francis Izard criticises the views expressed by THE LANCET some four years ago on the cures reported to have been effected at Lourdes, when we implied that the cases which benefited from pilgrimages to the Shrine of our Lady were of the functional rather than the organic type. Dr. Izard claims that the work of the Medical Bureau of Lourdes is carried out with extreme care and earnestness with the object of establishing all cases of authentic cures, but we hold that a strict winnowing in the preliminary stages of the cases which come under treatment at Lourdes, the scrutiny being carried out by practitioners expert in neurological diagnosis, would materially alter the percentage of cures of organic disease achieved at the grotto.

A BOGUS DOCTOR.

MEDICAL men in London and the provinces have been victims to such an extent of late of a bogus doctor that Scotland Yard has issued a special warning to the profession. The man, who is well educated and of smart appearance, calls on doctors or Irish people of social position. He occasionally claims acquaintance with their relatives and friends living in Ireland, says he has obtained an appointment in Ireland, or for some other reason, has to cross to Ireland that evening, and has run short of cash. He asks for a loan of cash in exchange for a cheque on an Irish bank. He gives the name of Fitzgerald, Moore, Black, McCormack, O'Brien, or Murphy, and is about 40 or 45 years of age. The description of him available is: Height 5 ft. 10 in., dark hair streaked with grey, and brushed back; eyes grey or blue, clean shaven, good appearance and address. Dressed in grey lounge suit, light grey overcoat, and soft felt hat.

Clinical Lectures

ON

APPENDICITIS: ITS CAUSATION,
DIAGNOSIS, AND TREATMENT.

Delivered at the Bristol Royal Infirmary

By A. RENDLE SHORT, M.D., B.S., B.Sc. LOND.,
F.R.C.S. ENG.,SURGEON TO THE BRISTOL ROYAL INFIRMARY; LECTURER ON
PHYSIOLOGY IN THE UNIVERSITY OF BRISTOL.

PART I.

THE CAUSATION OF APPENDICITIS.

Rise in Frequency in Last Thirty Years.

At first sight the etiological problem would appear to be very simple. It is quite certain that the disease was uncommon in this country until somewhere about the year 1895, and that during the period 1895-1905 it rose to its present great frequency. As the writer has shown elsewhere,¹ the records of the Bristol Royal Infirmary prove conclusively not only that appendicitis was not diagnosed at all frequently before 1895, but that very few cases can have occurred. The physicians and surgeons of that period were on the look-out, for the notes often state, "No tenderness in the right iliac fossa." I have read carefully through all the notes, medical and surgical, for the years 1880, 1885, and 1890, and sought to force cases otherwise diagnosed into being cases of appendicitis, but only a few very dubious additional cases can be added to those actually recorded. Mr. Sherren² has shown that the rise at the London Hospital took place during the same period (Table I.).

TABLE I.—Cases of Appendicitis (Acute) at the
Bristol Royal Infirmary.

Year.	Probable or certain cases.	Additional very doubtful cases.	Total in-patients per year.	Year.	Probable or certain cases.	Additional very doubtful cases.	Total in-patients per year.
1880	4	2	2591	1910	58	—	4149
1885	2	1	3370	1915	75	—	3481
1890	4	6	2913	1917	98	—	3907
1895	15	—	2910	1918	113	—	4021
1900	23	—	2865	1923	162	—	6042
1905	64	—	3762				

Private practice shows the same scarcity. The late Dr. Shingleton Smith, who had one of the largest consulting medical practices in Bristol in the eighties and nineties, found very few cases of appendicitis among his records, as compared with other now less common abdominal diseases.

Appendicitis did not become returnable as a cause of death in the Registrar-General's statistics until the year 1901. Table II. gives the death-rate from appendicitis per million living for England and Wales:—

TABLE II.—Death-rate from Appendicitis per Million
Living for England and Wales.

Year.	Death-rate.	Year.	Death-rate.
1901	38	1911	75
1902	45	1913	68
1903	52	1915	67
1905	57	1918	72
1910	66	1920	67

At first the incidence of the disease was greater in towns and among males, but of late years there has been little difference. The case-mortality from appendicitis used to be much higher than now; in 1903, at St. Mary's Hospital, it was as high as 30 per cent.

¹ Rendle Short: Brit. Jour. Surgery, October, 1920, viii., 171 (with bibliography).

² Sherren: Practitioner, June, 1905.

It will further be observed that the privations of the war period did not alter the incidence of the disease.

It cannot be claimed, of course, that the number of operations for acute appendicitis at the Bristol Royal Infirmary is an entirely accurate register of the prevalence of the disease in the district, but that there was a big rise in the Bristol district between 1895 and 1910 is absolutely certain. In 1885 there were only three cases admitted, and they all recovered, without operation. In 1915 there were admitted 34 cases, from within the town itself, with a perforated appendix. Surely if there were a similar number of cases in the town in 1885, most of them would have been bound to seek admission to a hospital for nursing through such a severe illness. (The urban population rose from 206,503 in 1881 to 352,859 in 1915.)

Distribution of Appendicitis.

The distribution of the disease in the community brings out some points of importance. It is commonest between the ages of 10 and 30, but most fatal between 5 and 15. It is rare under 3. The oldest patient I have operated on was aged 84, and in spite of the fact that the appendix had perforated he did very well. There are families which appear to be particularly prone to the disease. During the war it seems to have been about equally common amongst soldiers and the general population. The most interesting feature, however, is the relative immunity of the inmates of such institutions as workhouses, homes for poor children, and prisons. For ten years there was only one case at Portland Prison. The writer is the surgeon usually called in for operations on the inmates of two local institutions; the one is a big public school where the boys are well fed on a modern diet, and the other is an orphan home. Although the children at the orphanage are more numerous, and are in residence all the year round, there were in a five-year period 19 cases of appendicitis at the school and only four at the orphan asylum. The difference seems to lie in the diet. At the orphanage the daily routine includes porridge and bread with margarine, dripping, or treacle, tinned meat with potatoes and greens on certain days, and fresh meat once a week, with broth or rice on the other days.

Turning to the national distribution, we find briefly that appendicitis is common in the more civilised European and American countries, rather uncommon in the more poverty-stricken countries of Southern Europe, and very rare in Asiatics, Africans, and Polynesians. If, however, individuals from these races are taken into the service or society of Europeans and eat their food, they acquire the European's liability to the disease. Indian students in this country are by no means immune. In the United States it is even commoner than here, but is seldom seen in the "black belt" of Alabama or in negro schools or institutions. A missionary from Barbados tells me that he has never heard of a case in a West Indian negro, but whites are frequently affected; the population is about 12 blacks to 1 white.

Now the characteristic difference between those peoples who do and who do not get appendicitis is that the food of the latter is much simpler, contains a larger relative bulk of coarse vegetables, and often a smaller amount of meat. In some countries where appendicitis is very rare the amount of meat eaten is considerable; for instance, in Abyssinia and in Madagascar. We have no accurate statistics of the incidence of the disease amongst populations that live very largely on meat, such as the Eskimos and Paraguayans, but as far as we know there is no great amount of appendicular trouble. A curious and interesting fact is that apes in captivity acquire the human liability to appendicitis (present in 10 out of 61 autopsies in chimpanzees).

When we come to piece together what we know about the distribution of the ailment, we shall readily conclude that it must be due to some food factor, but we shall need to tread warily in seeking to go further. So many baseless theories have been advanced that the late Dr. Charles Mercier, with characteristic playful

E

irony, maintained that the trouble is due to the abandonment of wig-wearing; there were no recorded cases from the days of Charles II., when wigs came in, till the end of the eighteenth century, when they went out, except on the heads of judges, barristers, and Victorian bishops. He knew of no cases in legal luminaries—"and who ever heard of appendicitis in a wigged bishop?"

Change in Dietetic Habits in Past Thirty Years.

Now, our significant period, 1895 to 1905, has been very important in the dietetic history of our country, because it has witnessed the passing of the older food habits of our people, and the inauguration of the modern dependence on imported articles. Up till 1895 England in the main fed herself; since that time she has paid other countries to feed her. This may be demonstrated by a study of the Blue-books relating to food imports. The principal cargoes are wheat and other grains, meat, butter, tea, coffee, cocoa, sugar, rice, bananas, oranges, currants, and raisins. Most of these may be dismissed the court with the briefest of inquiries.

There is, however, much to be said for the widely held view that meat-eating has led to an increase of the disease. Table III. shows the average annual consumption of imported beef and mutton from 1880 to 1917. Compare this with Table I., showing the number of cases of acute appendicitis at the Bristol Royal Infirmary. The correspondence is striking. O. T. Williams demonstrated that the inflamed appendicular mucosa may contain an excess of calcium soaps and other insoluble compounds of the saturated fatty acids, which he believes to have been derived from meat-fats.

TABLE III.—*Showing the Annual Consumption of Imported Meat per Head of Population, for United Kingdom, in Pounds.*

Year.	Bacon and ham.	Beef: salted, frozen, fresh.	Mutton: fresh, frozen, &c.	Beef from live cattle imported.	Mutton from live sheep imported.
1880	15.9	2.5*	—	5.8*	—
1890	13.5	6.0	4.9	11.1	0.6*
1895	14.6	6.7	7.5	8.1	1.3*
1900	19.5	11.7	9.2	9.2	0.6*
1905	17.4	13.1	9.9	9.5	0.26
1910	11.2	17.4	13.5	3.2	0
1914	14.2	18.0	12.4	0	0
1917	18.0	18.0*	6.0*	0	0

* Rough figures calculated from published returns.

As Table III. shows, the importation of beef doubled in the critical period 1895 to 1905. Imported mutton rose from a mere trifle in 1880 to 13.5 lb. per head in 1910. If this rise was the effective cause of the great increase in appendicitis which was coeval with it, the fault might lie in the preservation of the meat, or in the excessive quantity eaten.

Question of Preserved Meat.—Although the reasons for doubting the drawbacks of the preservation may not be quite conclusive, there are points which go to exonerate it. During the war the diet of the soldier and sailor, especially overseas, contained a much larger proportion of preserved meats than they were accustomed to in private life, as those of us who were in France can very well remember. Yet the incidence of appendicitis amongst the serving forces was certainly not excessive; perhaps less than in the civilian community. In institutions the meat is usually of the preserved variety, but appendix troubles are uncommon. In 1921 about 47 per cent. of the meat eaten was imported; if those numerous members of the community who always insist on having English meat were free from appendicitis, it would be a disease of the poor rather than of the well-to-do and the farming class. There is no evidence of any such class-immunity. Europeans in the tropics get very little frozen meat, yet they suffer.

Question of Increase in Total Meat-eating.—No doubt in the "hungry forties," and for many years after, meat was very seldom seen on the tables of the poor,

at any rate in towns. But it must be remembered that although many persons got very little meat prior to the advent of the meat-ship fleets, there has always been a considerable minority who got plenty. The farming fraternity, soldiers, and well-to-do families ate as much as they do to-day. Our old songs sing the praises of the "Roast Beef of Old England." There was a farmer's proverb in those days that a goose is a fool of a bird, too much for one and not enough for two. Returns to Parliament made in 1889 as to soldiers' meat rations and the meat eaten by carmen show that if meat-eating is the cause of appendicitis there ought to have been plenty of cases in 1889.

Then again, although there was such a rise in the import of meat, there was by no means such a conspicuous rise in its consumption, for the importation of live cattle and sheep for slaughter ceased, and the consumption per head of home-grown beef and mutton was falling (Table IV.).

TABLE IV.—*Showing Consumption per Head of All Imported Meats, Dead or Alive, in Pounds per Annum, also Resident Cattle and Sheep.*

Year.	Population of United Kingdom.	Resident cattle.	Resident sheep.	Consumption of all imported meats.
1885 ..	36,300,000	6,600,000	26,000,000	24.1
1890 ..	—	6,500,000	27,000,000	36.1
1895 ..	39,200,000	6,300,000	26,000,000	38.2
1900 ..	—	6,800,000	26,000,000	50.2
1905 ..	42,900,000	7,000,000	25,000,000	50.1
1910 ..	—	7,000,000	27,000,000	45.3
1914 ..	46,000,000	7,100,000	24,000,000	44.4
1917 ..	—	—	—	42.0

If we compare the rise in the incidence of appendicitis at the Bristol Royal Infirmary with the figures for the consumption per head of all forms of imported meat, dead or alive, there does not seem enough difference in the meat figures between 1895 and 1905 (and later years) to justify the theory that appendicitis is due to the increase in meat-eating. The actual figures are 38 lb. per head in 1895 and 44 lb. in 1914, and against this has to be set the rather smaller consumption of home-grown meat. And there are other difficulties in the theory. Severe meat-rationing during the war did not reduce appendicitis.

The Question of Food Preservatives.—We cannot well blame the use of boric acid, formalin, and other chemical food preservatives. They came into use too early (1880 to 1895). Since 1900 the use of antiseptics has declined, but the amount of appendicitis has greatly increased. In Denmark, where all antiseptics are prohibited in foods, the disease is common.

The Ultimate Cause of Appendicitis.

What, then, is the ultimate cause of appendicitis? Our apparently simple problem has become unexpectedly complicated, just when our wealth of data seemed about to yield up its secret. It is, of course, possible that a vitamin-defect may be responsible. But we ought not to blame the unknown before exhausting the possibilities of the known. One thing is quite certain and can be mathematically demonstrated, and that is that the older, coarser, cellulose-containing vegetables have suffered a relative elimination in our modern dietaries. When we consider that the citizen of to-day regales himself with 18 lb. of imported beef, 6 or 10 lb. of imported mutton, and an enormous quantity of imported wheat-flour, to say nothing of fruits, &c., none of which articles of diet from overseas were available for his fathers, it is clear that there has been a real increase of these food-substances in the diet of the people, and therefore a reduced proportion of the old-fashioned vegetables. We do not lose sight of the fact that when the population was smaller the British farmer could do more for his fellow-countryman in supplying him with meat and corn, but the disparity is too great to be explained entirely thus.

Summary.

Let us see how far this possible explanation will fit our facts. (1) The national distribution of appendicitis is in favour of the hypothesis. In practically all the lands where it is rare or unknown, the diet contains a large proportion of vegetables and cellulose-containing articles. If the natives desert their own food habits and take to European diet they get appendix troubles. (2) The time factor in this country is right. It was during the period 1895-1905 that England ceased to feed herself, and the modern rise of the disease coincides remarkably. (3) Institutions where the older and cheaper dietary prevails enjoy a relative immunity. (4) At first appendicitis was a disease of males and of the town. At first the breadwinner was given the best food; in the country, the home-grown produce maintained its place on the table for a while. Now there is little difference between the diet of town and country. (5) Apes in captivity are liable to appendicitis, and their cage diet no doubt contains more food of the break-and-milk variety and less coarse vegetables and roots than in the wild state.

There is some experimental evidence that deprivation of cellulose may lead to inflammation of the cæcum. Von Knierien showed in 1885 that rabbits fed on a cellulose-free diet developed inflammation of the cæcal region. In carnivores this did not occur. The effect seems to be partly mechanical, for horn-shavings will avert the trouble. It is well known, of course, that cellulose is not acted on by the ordinary digestive ferments.

Table V., from Bunge, gives the cellulose content of some foodstuffs.

TABLE V.—Percentage Cellulose Content of Some Foodstuffs.

Wheat flour .. 0.4	Spinach 8.1	Asparagus .. 17
Rice 0.7	Green peas .. 8.7	Cabbage 18
Wheat 2.9	Carrots 8.8	Strawberries .. 19
Potato 3.1	Apples 10	Melon 22
Lentils 4.1	Radish 12	Pears 25
Beans 4.1	Cauliflower .. 13	Raspberries .. 47
Onion 5.0	Cucumber .. 14	

THE DIAGNOSIS OF ACUTE APPENDICITIS.

A consecutive series of personal cases, including 400 operations for acute appendicitis and many others for interval cases and for appendicular gastralgia, all falling within a ten-year period, have been analysed for the purpose of these papers. (The records of a number of cases operated on whilst overseas on war service are not available.)

In the majority of cases there is no difficulty in making a diagnosis, but as every man of experience knows, it may be very hard to arrive at a correct opinion. One may be deceived, first, into thinking the case is not one of appendicitis when it is, or second, a diagnosis of appendicitis may be incorrectly made. Only such difficulties as the writer has actually encountered will be discussed.

It may be taken as a general rule that so long as the pulse and temperature, evening and morning, are normal, and the pain and tenderness in the abdomen not very marked, it does not matter seriously even if a genuine appendicitis is undiagnosed and let alone for a few days. The cases which one has seen in which the appendix has been allowed to perforate and become really dangerous, have all been due either to an abnormal position of the appendix or to the coincidence of diarrhoea.

Sources of Diagnostic Error.

Abnormal Position.—The most dangerous "miss," in my experience, is when the patient has an appendix lying deep in the pelvis. The error can only be avoided, first, by bearing it constantly in mind, and second, by making a rectal or vaginal examination in all doubtful cases. Zachary Cope's sign—pain and resistance on internal rotation of the thigh due to stretching of the obturator internus—may help in late but not often in early cases. Another error due to position, which I once made in consultation with a distinguished physician, arose from the inflammation occurring at the tip of a long retrocaecal appendix.

In this case we thought the duodenum was at fault, on account of the tenderness being so high up. The gall-bladder, too, may be wrongly suspected. Sometimes the signs may be far out in the loin.

Appendicitis accompanied by diarrhoea is very likely to give rise to difficulty in recognition. To know that it may occur is a considerable safeguard. One gets fever, pain, and tenderness, of course, with a simple diarrhoea, but the tenderness will not be *constant* in the appendix region. It is surprising sometimes how badly inflamed an appendix, even if normally situated, may become, and yet the physical signs in the way of tenderness and resistance be very slightly marked. It is wise to use as a working rule, that pain with vomiting and with fever, and even *slight* tenderness and resistance in the right iliac fossa, if these are constant, demand an exploration, unless some definite diagnosis besides appendicitis can be made.

Turning to the other class of error, every surgeon must confess that he has removed a certain number of appendices which did not deserve the suspicion cast upon them. The simple though unsatisfactory fact is that we badly need a reliable sign of early appendicitis. The various signs suggested are not very helpful in the really difficult type of case, and the same applies, in my experience, to Zachary Cope's signs, the obturator test already referred to, and the psos test—pain on over-extending the thigh.

The most frequent error, in my experience, has been the removal of the appendix when no abnormality whatever could be found in the abdomen and no evidence of disease ever came to light elsewhere. These cases may be very puzzling, and it may be impossible to discover on analysis afterwards any difference either in quality or degree between the signs and symptoms in one of them and in a case of badly inflamed appendix. I have been impressed by the fact that these pseudo-appendicitis cases are very uncommon in children under the age of 15. They are most often seen in women over 30. In cases of the colic and wind troubles so often met with in the course of an attack of influenza the careless diagnostician will fall into the trap. But under these circumstances *pain is not the first symptom*, as it almost invariably is in genuine appendicitis, and although there may be quite marked pain and tenderness in the right iliac fossa, they keep shifting about, one may feel wind rolling round, and an enema gives prompt and effectual relief.

Persons suffering from the condition shortly to be described under the title of "mobile cæcum," which is so confusing in the diagnosis of chronic appendicitis, may have a rise of temperature occasionally, from some totally disconnected cause, and this may lead to error.

Sometimes the operator has qualms as to his diagnosis when a careful examination of the interior of the appendix will show the true cause to have been the presence of oxyurides. On 15 occasions I have made a diagnosis of acute febrile appendicitis, and removed an organ apparently normal, but inspection showed that it contained threadworms. One will usually find the nearest lymphatic nodes swollen in these cases, and it seems beyond question that the pain, fever, and vomiting are due to the presence of the worms.

The next most frequent error in the series has been the failure to distinguish between appendicitis and *tuberculous mesenteric glands in children*. On three or four occasions within my memory the abdomen has been opened on a confident or tentative diagnosis of acute appendicitis, and nothing found but tuberculous glands, few or many, either in the mesentery, or retroperitoneal in the angle between the termination of the ileum and the cæcum. In one case the appendix was also slightly inflamed, probably not enough to give rise to a temperature, and the lymphatic glands in the area draining the appendix showed some swelling and redness superadded to an old-standing enlargement due to tuberculosis, in which many other mesenteric glands shared. This suggests that the cause of the fever and pain in other children with tuberculous mesenteric glands whose appendices are

normal, may be some absorption of toxins or bacteria from the bowel, which the damaged lymphatic nodes are unable to arrest without suffering. It is difficult at present to give directions for avoiding this mistake. The pain and tenderness and resistance may be much less definitely located to the right iliac fossa than is usual in true appendicitis, but, on the one hand, the symptoms of the latter condition are not always typical, and, on the other, the inflammation of the tuberculous glands may be confined to the neighbourhood of McBurney's point. There may even be a tender palpable lump, which is nearly certain to be taken for an abscess, but in this case the tuberculous lymph-gland may be single, and it may be in the patient's interests to remove it, whereas if the lymph-nodes are widely involved nothing can be done, and the operation was therapeutically useless.

Other sources of error have been very infrequent, and are represented in my series by only one or two of each. The catalogue includes *B. coli* pyelocystitis, puerperal sepsis, pneumonia, gonorrhœal peritonitis, carcinoma of the cæcum, solitary ulcer of the cæcum, and tuberculous peritonitis. On a few occasions there has been confusion between appendicitis and perforated duodenal ulcer, pneumococcal peritonitis, pyosalpinx, or cholecystitis, but here, as well as in the case of several of the conditions already mentioned, no harm is done, because operation is the proper treatment.

Confusion with Pneumonia.

It is a very serious mistake to operate on a patient with pneumonia and one which demands constant vigilance if it is to be avoided. I remember one such being sent 20 miles in an open car in January; needless to say, this proved not to be good treatment for the pneumonia, and she died. It is usually stated that if it is pneumonia there will be an alteration of the pulse-respiration rate, and if this sign is present it is, of course, very valuable evidence, but it is far from constant. Table VI. gives the diagnostic features, but the final opinion must be based on the whole clinical picture and not on any one so-called infallible sign.

TABLE VI.—*Early Pneumonia and Appendicitis: Diagnostic Table.*

<i>Early pneumonia.</i>	<i>Appendicitis.</i>
Pain may not be the first sign.	Pain always the first sign.
Pain severe, constant, widespread.	Pain not so severe, paroxysmal at first, more localised.
Vomiting rather uncommon.	Vomiting usual.
Diarrhoea common.	Diarrhoea uncommon.
Facies anxious; alae nasi may be working; herpes common.	Nothing special.
Pulse-respiration rate quickened.	Normal relationship (1 to 3½).
Temperature 102°–104° F.	Temperature 98°–101° F.
Pulse under 100.	Pulse over 100, if temperature is raised.
Tenderness diffuse over right side.	Tenderness over appendix region.
Respirations mostly abdominal, "catchy."	Respirations mostly costal.
Sticky crepitations may be heard.	No.
Rectal examination nil.	Rectal examination perhaps tenderness.

It ought to be remembered that in those cases where violent symptoms come on within 24 hours and the patient is in great pain and distress, with high fever and diarrhoea, it will probably prove to be pneumonia with pneumococcal peritonitis, and the prognosis is grave. If in real doubt, it is better to wait 24 hours in a case of appendicitis than to operate for incipient pneumonia. At the end of that time the diagnosis has nearly always clarified itself.

Patients who are pregnant, or have recently been delivered, are veritable traps for the unwary, and it is wise to approach them with a bias against operation, unless the signs are crystal clear. During pregnancy an attack of right-sided abdominal pain, with vomiting, fever, and tenderness about the appendix, is much more likely to be *B. coli* pyelocystitis, which ought not to be operated on. Occasionally the same mimicry

is seen in unmarried women, or just after marriage. A rigor, the very high temperature, and in some cases (not all) some frequency of micturition will put us on our guard. A bacteriological examination of the urine clinches the diagnosis.

Shortly after a confinement, a very accurate imitation of appendicitis can be given by puerperal (uterine) sepsis, as well as by parametritis. The second mistake does not matter seriously; the former does, as the laparotomy will be useless and the patient may very likely die. In young women with what appears to be appendicitis, especially if the tenderness is rather diffuse over both sides of the lower abdomen, we should consider the possibility of gonorrhœal peritonitis, and it is a moot point whether one ought to operate if the evidence points to that diagnosis. A useful clue may be given by inspection of the vagina and cervix, and by a rectal examination.

As my old teacher Prof. C. A. Morton has recently pointed out, it may be difficult to distinguish between carcinoma of the cæcum and appendicitis, and I have seen a case or two in which the error has been made in each direction when a tender mass was palpable in the right iliac fossa. It is not well known that there is a solitary ulcer of the cæcum or ascending colon, of which I have seen two examples within the past year, in which there is a painful lump which was diagnosed as appendicitis, once by myself and on the other occasion by another surgeon. It is cured by excision.

Appendicitis and the Specific Fevers.—There may be an authentic appendicitis coming on coincidentally with measles or with typhoid fever. I have had two examples of the first and one of the second under my care, and in each case the appendix was acutely inflamed, swollen, and buried in exudate. The combination of measles with this disease is a very serious one. My first case was operated on one Christmas day at a country farm-house. The other children had measles. Perforation of the appendix had taken place; next day the measles rash came out and the boy died of pneumonia and peritonitis. In the second case there was no reason to suspect measles; immediately after the operation the lad had great difficulty in breathing and became dusky, and the next day the right lung was solid with pneumonia. It was supposed that he must have aspirated some vomit, but on the third day a measles rash appeared and the lung suddenly cleared up and the alarming symptoms passed away. No doubt the ether had converted a latent bronchitis, which had given no evidence of its presence, into a severe pneumonia, albeit of brief duration.

THE DIAGNOSIS OF CHRONIC APPENDICITIS.

It is now widely recognised that the diagnosis of chronic appendicitis has been far too frequently made, and that removal of the organ when the patient has not been seen in an acute attack has often failed to relieve the symptoms. Some American writers go so far as to say that there is no such thing as chronic appendicitis, but this is an over-statement. Given wise selection, the number of useless operations need be very small.

The main factor in arriving at a correct diagnosis of chronic appendicitis is to get a reliable history of a definite acute attack. When this is lacking one must proceed cautiously. The most prominent symptoms will be, of course, pain and tenderness in the right iliac fossa. One must first exclude those numerous conditions which may give rise to pain in the right iliac fossa, which give definite evidence of their presence when carefully looked for. Here belong mucous colitis, renal aching, gynaecological troubles, growths of the cæcum, solitary ulcer of the cæcum, psosas abscess, tuberculous spine, nerve-root pressure, &c. But when these have been excluded, there is a large residuum, especially in women, which must not all be labelled and treated as chronic appendicitis if one wishes to avoid much useless operating. This residuum includes a majority group, suffering from the ailment variously described as "mobile cæcum," visceroptosis,

or Lane's chronic intestinal stasis, and a minority group who have an authentic chronic appendicitis. The cause of the pain and tenderness in the first or majority group is dragging and distension of a large, loose, dropped cæcum. On exploration one may also find Lane's ileal kink, an appendix looped up in retention bands (which ought not to be called adhesions), extensive Jackson's pericolic membrane, and general visceroptosis. The pain in such cases is due to a combination of ptosis of the cæcum and adhesions or bands about it, giving rise to kinking or to a concertina arrangement of the cæcum and ascending colon. Obviously it is useless to remove the appendix if the pain is due to such a cause, and here is the main reason for the unsatisfactory surgery we have just referred to.

A careful history will generally help us to distinguish between this condition and true chronic appendicitis. The pain of mobile cæcum is continuous day after day for weeks, months, or years; now better, now worse, but seldom entirely absent. It is often (not always) relieved by recumbency, and especially by taking meals lying down. (This avoids the kinking or concertina-deformation of the cæcum, which occurs when that organ prolapses into the pelvis but is held up here and there by bands. Taking food leads to cæcal peristalsis, which is painful under such circumstances.) The costal angle is narrow and often the kidney is movable. This type of patient is suffering from the virginal form of visceroptosis, not the maternal, so one must not expect to see marked sagging of the lower anterior abdominal wall. Very valuable evidence will be given by a barium meal, showing general visceroptosis, a distended cæcum, perhaps prolapsed and tied by bands, and marked delay in its emptying time.

In genuine chronic appendicitis, on the other hand, the usual history is of periods of pain and periods of freedom from pain. The patient may be able to count the attacks, although there may never have been any rise of temperature. The above-mentioned signs of visceroptosis are absent, and recumbency does not give relief. Sometimes, it is true, one sees a patient with never-ceasing pain due to the appendix, completely and permanently cured by removal thereof, but it requires considerable circumspection to pick these out from amongst the merely cæcal cases.

Patients suffering from pain of cæcal origin ought not to be operated on until good trial has been made of a Curtis belt, liquid paraffin, recumbency for meals, a diet rich in vitamins, &c. If one is driven to operate, or finds the condition during an exploration for appendicitis, my practice, in addition to removing the appendix, is to perform a cæcoplication, not so much to narrow the cæcum as to shorten it, and the results have been very good. Others perform Waugh's operation. In a very few very extreme cases I do a hemicolectomy and have had a few failures and a number of striking and lasting successes. Some surgeons excuse the recurrence of pains after removal of the "chronic" appendix by alleging that adhesions have formed. This must be very rare. In my experience, if the diagnosis of chronic appendicitis is only made in accordance with the principles just described, there will be few if any patients coming back again for recurrent pains after removal of the organ.

LATENT APPENDICITIS.

Chronic inflammation of the appendix may be responsible for symptoms quite different from those already described. These cases of latent appendicitis fall into three groups at least: (1) Irregular attacks of fever, perhaps vomiting, and vague abdominal pains in children and boys and girls of school age, but with no signs localised in the right iliac fossa; (2) symptoms like those of gastric or duodenal ulcer, but usually atypical in some respect (= appendicular gastralgia); (3) profuse hæmatemesis with or without dyspeptic symptoms, associated with a small atrophic impervious appendix.

(To be concluded.)

THE BASAL METABOLIC RATE: ITS DETERMINATION AND INTERPRETATION.

By HENRY F. MOORE, M.D., D.Sc.,

VISITING PHYSICIAN, MATER MISERICORDIÆ HOSPITAL, DUBLIN;
FORMERLY ASSISTANT, HOSPITAL OF THE ROCKEFELLER
INSTITUTE FOR MEDICAL RESEARCH, NEW YORK.

(From the Wards and Metabolism Laboratory of the
Mater Misericordiae Hospital.)

IN his book, "The Science of Nutrition," Lusk¹ says: "In each mammal there is a basal metabolism." By the term "basal metabolism" or "basal metabolic rate" is meant the minimal heat production of an organism, measured from 12 to 18 hours after the ingestion of food (post-absorption state) and with the organism at complete muscular rest in a comfortably warm environment. This minimal heat production may be determined *directly* by actual measurement by means of a calorimeter, or *indirectly* by calculating the heat production from determination of the amount of oxygen used within the organism and the corresponding amount of carbon dioxide produced, together with the total nitrogen eliminated.

Francis G. Benedict² states that the level of vital activity may be inferred from the amount of heat produced; whilst heat is the end-result of glandular and muscular activity, oxidative processes are essential factors in these transformations. Thus, the intake of oxygen is essential to combustion, while the production of CO₂ makes up a very large part of the total oxidative processes of the body. Therefore, if one can measure accurately the carbon dioxide produced, or, better still, the oxygen consumed, a very close estimate of the total heat production, and consequently of the end-results of glandular and muscular activity, may be secured. Thus, by determining the oxygen consumption under suitable conditions in a given time the basal metabolic rate may be calculated.

THE BASAL METABOLIC RATE IN RELATION TO THYROID DISEASE.

The essential function of the thyroid gland is the elaboration and delivery to the organism of thyroxin, a substance which was isolated in crystalline form in 1915³ by Kendall. According to Plummer,⁴ the following statements hold true: (a) Thyroxin is active directly or indirectly in the cells throughout the body and, acting as a catalyst, it hastens the rate of formation of a quantum of potential energy available for transformation on excitation of the cell; (b) hyperthyroidism is the physiological or pathological status of an individual, otherwise normal, when the thyroxin in the tissues is sufficiently increased to hold the basal metabolism above normal; (c) all the phenomena in pure hyperthyroidism are those that attend a sustained elevation of the basal metabolism above normal; (d) the status of the hyperfunctioning adenomatous goitre is the result of pure hyperthyroidism, while that of exophthalmic goitre is not accounted for by a pure hyperthyroidism (possibly here the thyroxin formed is chemically different in a slight way from normal thyroxin); (e) adequate intravenous administration of thyroxin to thyroidless patients, who invariably have a low basal metabolic rate, always restores the basal metabolic rate to normal; (f) the average daily exhaustion of thyroxin by the tissues is from 0.75 to 1 mg.

Boothby⁵ states that by the term hyperthyroidism is meant the clinical syndrome resulting from the action in the body of an excess of thyroxin. From 12-14 mg. of active thyroxin must be present in the body to maintain the basal metabolic rate at the normal level; excess of thyroxin in the organism increases the rate.

A decrease of the basal metabolic rate is characteristic of myxœdema or cretinism, and is due to the inability of the thyroid gland to furnish sufficient thyroxin to the body.

Thus, it is seen that the determination of the basal metabolic rate may be of significance in the study of disease of the thyroid gland. The possible increased basal metabolic rate in active acromegaly and the decreased rate in hypopituitarism suggest that the alteration in the activity of the pituitary gland may change the metabolic rate, but there is little evidence that the secretion of any part of the pituitary gland is concerned with the normal rate of cellular combustion in the sense that its secretion acts, like thyroxin, as a calorogenic agent. There are certain other diseases in which an increased basal metabolic rate is occasionally observed—e.g., severe anæmias and leukaemias; the cause of the increased metabolism in these instances is not known. Du Bois⁶ has shown that increase of the basal metabolic rate in fevers follows Van't Hoff's law of the velocity of chemical reactions with temperature change—i.e., the basal metabolic rate is about doubled for an increase of temperature of 10° C. It is interesting to note, in passing, that in 1919 Kendall⁷ stated that 33 g. of thyroxin had been separated from 6550 lb. of fresh thyroid material. Thyroxin is stated to be 4-5-6-tri-iodo-2-oxy-beta-indole-propionic acid; it is closely related to tryptophane; it is a white crystallisable substance and heat-stable.⁸

METHODS OF ESTIMATING THE BASAL METABOLIC RATE.

The methods available for the estimation of the basal metabolic rate fall under two main categories:—

1. *Direct Calorimetry.*—The heat produced in the metabolic processes is determined in a respiration calorimeter chamber. The apparatus needed is extremely expensive and complicated, and necessitates a number of highly-trained technicians. This method is altogether outside the resources of hospitals, and it is used only in a few institutions especially equipped for research on metabolism.

2. *Indirect Calorimetry.*—Here either the oxygen absorbed or the carbon dioxide liberated in a given time, or both, are measured. From these figures the respiratory quotient can be calculated, and if the nitrogen eliminated in the urine is estimated at the same time it is possible to apportion the oxygen used for the burning of protein, carbohydrate, and fat. The determination of the respiratory quotient and nitrogen elimination are, generally speaking, not necessary in clinical work. "The validity of the method has been established beyond a doubt by the simultaneous measurement of heat by physical means, and of the gas exchange in a respiration calorimeter."⁹

There are two chief methods of indirect calorimetry:—

1. *The Open Circuit Method.*—The external air is breathed and the expired air trapped in a spirometer bell or bag, from which samples can be removed for analysis, and their oxygen and carbon dioxide content determined. The disadvantages of the use of this method in clinical medicine are that it is time-consuming, that the apparatus may be comparatively expensive, and that gas analyses are required, the technique of which is not sufficiently simple for general clinical use.

2. *The Closed Circuit Method.*—Principle: F. G. Benedict of Boston¹⁰ has developed a portable respiration apparatus which measures the oxygen consumption of human beings directly, accurately, and rapidly. A relatively simple technique for the measurement of the oxygen consumption of man has been evolved which necessitates neither large respiration chambers, complicated valves, weighings, nor gas analyses; this is based on the observation that when a subject breathes pure oxygen the amount of oxygen taken up by the blood and used is the same as when ordinary air is inspired. This apparatus measures the oxygen only, for it has been shown that in ordinary work the oxygen consumption is of prime significance in the vast majority of pathological cases. Carpenter and Emmes make the statement that when the measurement of basal metabolism is desired, it is waste of time to attempt any other measurement than that of oxygen consumption supplemented by the controls they have recommended.¹¹ These observers with Hendry¹¹ state that when the oxygen

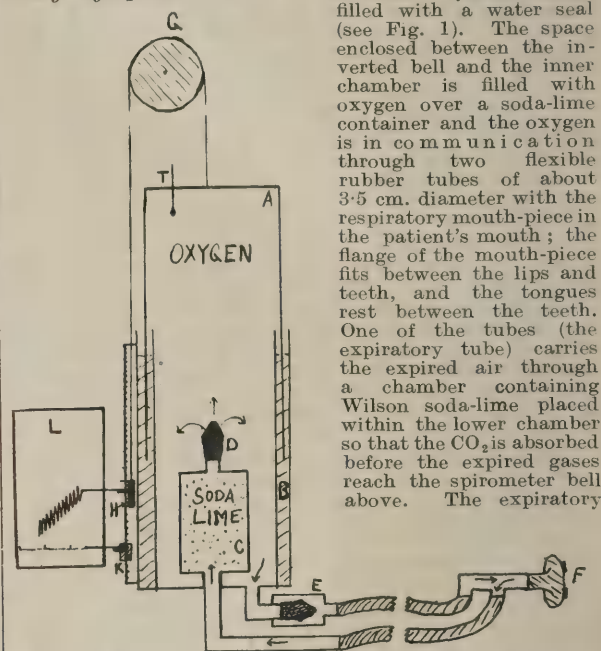
consumption alone is desired the Benedict apparatus is the best apparatus for short period measurements. Again, where one gas is measured the absorption of oxygen is less affected by abnormalities of respiration than is the production of carbon dioxide.

In the original apparatus and modifications an electric fan (impeller) was placed within the spirometer bell in order to drive the gases within the closed circuit through a soda-lime container so that the carbon dioxide might be absorbed and the gas sent in respirable condition to the mouth of the patient. This electric impeller is apt to get out of order, to heat the circuit at times, and its noise is apt to disturb the patient; it is omitted in the Roth-Benedict apparatus¹² and the original electric impeller and face-mask are replaced by simple rubber valves and a mouth-piece.

The Roth-Benedict Apparatus.

The Roth-Benedict apparatus consists of a spirometer bell, cylindrical in shape (bearing a thermometer at the upper closed end), accurately counterpoised over a pulley

FIG. 1.—Diagram of the Roth-Benedict Apparatus with Kymograph Attachment.



A, spirometer bell; B, water seal; C, soda-lime container; D, expiratory valve; E, inspiratory valve in its housing; F, mouth-piece; G, pulley; H, counterpoise weight, pointer, and kymograph pen-writing tracing; K, time-marker; L, kymograph; T, thermometer.

valve (which shuts at inspiration) is placed on top of the soda-lime chamber, and the inspiratory valve (which shuts on expiration) is situated in a special housing at the end of the inspiratory tube below the body of the apparatus. In this way, when the nose is closed with a nose-clip and the patient connected up with the apparatus, he expires into the spirometer chamber (the spirometer bell rising) through soda-lime where the CO₂ is absorbed, and he inspires pure oxygen from the bell (the bell falling) with a minimum of frictional resistance. Thus, the oxygen consumed over a given time can be measured accurately by a scale adjacent to the counterpoise weight which carries a pointer running on the scale—the pointer falls and rises as the bell rises and falls; or, if a pen is attached to the weight or pointer and allowed to write on a revolving drum with a suitable time-marker (Roth) the test can be recorded and the oxygen consumption measured graphically.¹³ The volume of the oxygen consumed in a given time is then corrected to normal temperature, pressure, and for relative humidity (80 per cent.) according to the laws of Charles or Gay-Lussac, Boyle and Dalton. The Roth-Benedict apparatus is used by the present writer. Prof. Krogh of

Copenhagen has also independently devised a clinical apparatus similar in principle to the Roth-Benedict.*

Having determined the oxygen consumption, this must be compared with standards of oxygen consumption of normal persons of the same size, shape, age, and sex, in order to estimate whether the oxidation processes of the organism, and therefore the basal metabolic rate, are greater or less than normal. Rubner¹⁴ suggested that the heat production of an individual was proportional to his surface area, and E. F. and D. Du Bois¹⁵ devised a linear formula based on height and weight, after the most careful measurements, whereby the body surface could be calculated with an average error of under 2 per cent. Later D. Du Bois devised a simple though slightly less accurate (± 5 per cent.) formula which is:—

Surface area = $W^{0.425} \times H^{0.725} \times 71.84$,
where W = weight in kilogrammes and H = height in centimetres.

On the basis of this formula Du Bois then constructed a height-weight chart by means of which the surface area could be estimated at a glance, and, by using such a chart in conjunction with his standards of normal basal metabolism for age and sex, Du Bois showed that the metabolism of normal adults per square metre of body surface could be predicted with an accuracy of 10 per cent. The height-weight chart of Boothby and Sandiford† is convenient to use; a straight-edge joining the weight and height figures cuts the centre line at the figure for body surface. Benedict¹⁶ criticised this method on the ground that the heat output of the body at rest does not depend on Newton's law of cooling and is therefore not proportional to body surface; consequently Harris and Benedict¹⁷ compiled standards based on weight, age, sex, and height, but the results obtained by using both sets of standards do not differ very markedly (6.5 per cent. higher by Harris-Benedict method). Other standards were devised by Dreyer,¹⁸ and Benedict and Talbot¹⁹ have compiled standards for boys and girls based on weight, and Benedict and Hendry²⁰ for girls at the age of puberty based on age and weight. Boothby and Sandiford²¹ conclude that the Aub-Du Bois standards give the best method available at present for predicting the normal heat production. The best standards for boys and girls ranging in weight from 2.5 to 38 kg. seem to be those of Benedict and Talbot (see Table I).

TABLE I.—Basal Heat Production Standards.²²

(A) Benedict-Talbot Standards for Boys and Girls.

Calories per kilogramme per hour predicted from body-weight.

Weight (kilos.).	Boys (cal.).	Girls (cal.).	Weight (kilos.).	Boys (cal.).	Girls (cal.).	Weight (kilos.).	Boys (cal.).	Girls (cal.).
1	—	—	21	36.9	34.6	41	—	51.2
2	—	—	22	37.9	35.6	42	—	51.3
3	6.3	6.3	23	39.2	36.7	43	—	51.4
4	8.8	9.2	24	40.2	37.5	44	—	51.6
5	11.3	11.9	25	41.3	38.8	45	—	51.7
6	13.8	14.6	26	42.5	39.6	46	—	51.8
7	16.3	16.9	27	43.5	40.6	47	—	52.0
8	18.5	19.2	28	44.6	41.7	48	—	52.1
9	20.6	20.8	29	45.4	42.5	49	—	52.3
10	22.7	22.5	30	46.5	43.5	50	—	52.4
11	24.6	24.2	31	47.5	44.6	51	—	52.5
12	26.0	25.4	32	48.3	45.4	52	—	52.7
13	27.5	26.7	33	49.2	46.4a	53	—	52.8
14	29.0	27.7	34	50.0	47.3a	54	—	52.9
15	30.2	28.8	35	50.8	48.3a	55	—	53.1
16	31.5	29.6	36	51.7	49.2a	56	—	53.2
17	32.5	30.6	37	52.3	50.1a	57	—	53.3
18	33.5	31.7	38	53.1	50.7	58	—	53.5
19	34.6	32.5	39	—	50.8	59	—	—
20	35.8	33.5	40	—	51.0	60	—	—

(a) = Figures based on general trend of table. Not in original.

* The Roth-Benedict apparatus may be obtained from Mr. Warren E. Collins, 584, Huntington Avenue, Boston, Mass., U.S.A., and it and the Krogh form from H. E. Kendrick, 3, Morley Avenue, Higham's Park, London, E. 4. The Sanborn Company have a modification on the market also obtainable through Mr. Kendrick.

† Given in the author's reprints.

(B) Aub-Du Bois Standards.

Cal. per sq. m. of body surface (height-weight formula) per hour.

Age.	Males.	Females.
8 to 9	54.0	54.0
10 to 11	51.5	50.0
12 to 13	50.0	46.5
14 to 15	46.0	43.0
16 to 17	43.0	40.0
18 to 19	41.0	38.0
20 to 29	39.5	37.0
30 to 39	39.5	36.5
40 to 49	38.5	36.0
50 to 59	37.5	35.0
60 to 69	36.5	34.0
70 to 80	35.5	33.0

(C) Benedict-Hendry-Baker Standards for Girls 12 to 17 years of age.

Cal. per kilogramme per hour predicted from age.

Age.	Cal.
12	1.29
12½	1.25
13	1.20
13½	1.15
14	1.11
14½	1.07
15	1.02
15½	0.98
16	0.94
16½	0.90
17	0.88

(D) Harris-Benedict Standard Formulas.

For Males (applicable to boys back to 10 kilos. in weight).

$H = 66.473 + 13.752 w + 5.003 s - 6.755 a$.

For Women (for ages not under 21 years).

$H = 655.096 + 9.563 w + 1.850 s - 4.676 a$.

H = heat production, cal. per 24 hrs. w = weight in kilos.
s = stature in centimetres. a = age in years.

Graphic Method (Roth, see Figs. 2, 3, and 4).—The mouth-piece and conducting tubes having been cleansed and sterilised, the apparatus is assembled. The sealing chamber is filled with water to within a few inches of the top. The absorbing chamber is filled with suitable granular soda-lime (Wilson brand is recommended). The charge of soda-lime can usually be used for several tests, and should be changed when it ceases completely to absorb CO_2 , as shown by bubbling a sample of the air in the spirometer at the end of a test through baryta water by means of a tube connected to a small stopcock placed in the bottom of the respiration chamber. A test thus showing unabsorbed CO_2 should be discarded. After filling the soda-lime container its cover is sealed with a rubber band, and the rubber flutter valve on the cover is examined to see that the lateral slits come barely in contact with each other. This may be regulated by

FIG. 2.—Multiple Thyroid Adenomata (Non-Toxic).



Case H. B.—Female, aged 44. P., 86; T., 98.5° F.; R., 20 (B). P., 73; T., 98.6°; R., 20 (E). Spiro. T., 11.5° C. (B), 11.5° C. (E). Wt., 151 lb. = 68.6 kg.; Ht., 63 in. Bar., 754 mm. Hg. O₂ line = calcs. per hr. = 184 - 106 = 78 mm.; corrected calcs. per hr. = $78 \times 0.952 = 74.2$ (N.T.P.). Area body surface = 2.02 sq. m. (= 2); calcs. per sq. m. per hr. = 36.7 (= 37). Average normal calcs. per sq. m. per hr. = 36 (Aub and Du Bois). B.M.R. = -2.7% (= -3%).

B = just before test.

E = just after test.

drawing the valve more or less over the metal tube. If properly adjusted the rubber valves are almost noiseless and never stick if clean. The soda-lime container is then tightly screwed in position within the inner chamber. The inspiratory valve is also examined prior to the test. Any water of condensation that collects in the lower expiratory tube should be drained away after the test as necessary for so doing arises. The respiration chamber is filled to the required degree with oxygen with a cork blocking the mouth-piece, and the apparatus is tested for leaks by placing a weight on the spirometer bell and noting whether the pointer rises after a few moments. The operator should himself use the apparatus before the test for a few moments—the connexions can be cleansed before use with the patient or a fresh set used. The fasting (15 hours) patient is reclining and resting comfortably, fully relaxed, for at least

half an hour on the couch beside the apparatus before the test; he should not smoke on the morning of the test; he is protected from the cold or visitors, and kept as quiet as possible. He is instructed beforehand as to the nature and requirements of the test in order to gain his confidence and ensure coöperation. His pulse and respiration rates are noted several times during the half-hour rest and his temperature taken. When all is ready the cork is removed, and the mouth-piece is inserted in the patient's mouth with the two lugs between the teeth and the oral flange between the lips

in the measurements. It is better to base the calculation on a short undisturbed period of only four or five minutes than on a larger one which includes vitiated sections. For example, consciousness of the patient of his own respirations, often intensified by his effort to breathe correctly, may cause the degree of expansion of the lungs to vary considerably; such a source of error will generally be revealed by the kymograph, but might readily otherwise pass undetected and introduce a considerable error.

Roth states that further advantages of his graphic method are as follow:—

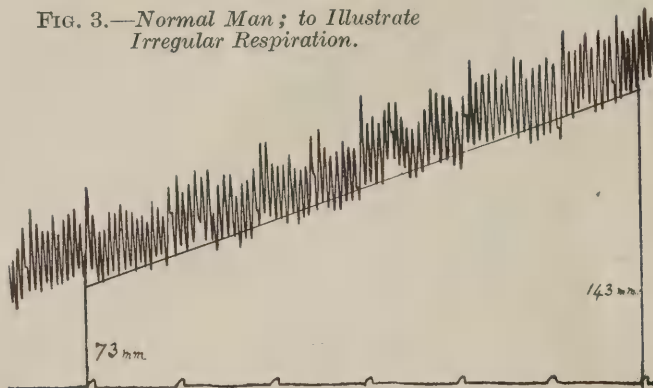
"It simplifies the technique. It reduces to a minimum the necessary procedures. There are no spirometer readings to be made. Stop-watches can be dispensed with. The kymograph automatically records the time, the oxygen consumption, and, to a large extent as well, the working condition of the apparatus and the behaviour of the subject. The average respiration count per minute is most conveniently obtained from the tracing. One operator only is needed to supervise the entire operation, including the counting of the pulse, to observe the spirometer temperature and the barometric pressure, while at the same time an occasional glance at the kymograph keeps him informed as to whether the test is progressing under desirable conditions. The computations, as ordinarily carried out, are naturally reduced if based on the graph which, furthermore, allows the full advantages presented in the considerably simplified system of calculation presented."

It is to be noted that direct readings from the scale when no graph is used make the test more laborious.

Calculations.

The object desired is the determination of the percentage increase or decrease of the metabolic rate of the subject as compared with the accepted average normal standards which are expressed (Du Bois) in terms of calories used per square metre of body surface per hour. In clinical work the calories elaborated by the patient are calculated from the amount of oxygen he has absorbed during the time of the test; one litre of oxygen absorbed = 4.825 calories; this figure varies slightly according to the proportion of fats, proteins, and carbohydrates oxidised by the subject, but in practical clinical tests the average calculated calorific value of oxygen is

FIG. 3.—Normal Man; to Illustrate Irregular Respiration.

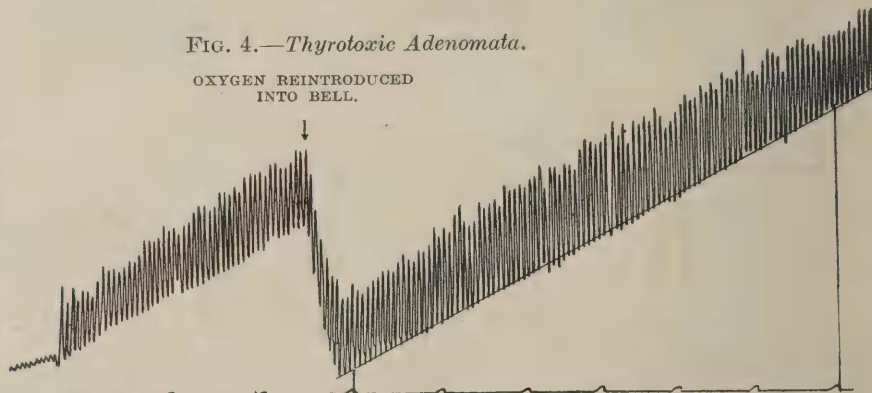


Aged 42 yrs. P., 70; T., 97.4° F.; R., 20. Spiro. T. at B = 10° C.; at E = 11° C. (10.5° C. = av.). Bar., 771 mm. Hg; Ht. = 66 in.; Wt. = 168 lb. O_2 line = calcs. per hr. = 143 - 73 = 70 mm.; corrected calcs. per hr. = $70 \times 0.977 = 68.39$ (= 68.4). Body surface = 1.85 sq. m.; calcs. per sq. m. per hr. = 36.97 (= 37). Average normal calcs. per sq. m. per hr. = 38.5 (Aub and Du Bois). B.M.R. = -4.16% = -4%. If O_2 line = 70 + 4, B.M.R. = +1. If O_2 line = 70 - 4, B.M.R. = -9.

and the nose-clip is applied. Then, after a few minutes, the kymograph is brought into contact with the recording pens, and the respiratory movements of the bell are recorded above the time tracing on the paper of the revolving drum. The upward tendency of the tracing denotes oxygen consumption. The spirometer temperature is noted at the beginning and end of the tracing, and a tracing of about ten minutes' duration is recorded. After a rest the test can be repeated if desired.

Roth states that a kymograph record of the movements of the spirometer bell taken during a test simultaneously with a graphic time record (see Figs. 2 to 4) is the most accurate basis for the measurement of the oxygen consumption of the subject by the method of indirect calorimetry. Further, not only is a permanent record of the test secured, but the oxygen consumption can be more easily and accurately measured by the graphic method than by the method of direct readings indicated by the moving pointer against the millimetre scale, especially with subjects who breathe irregularly. Again, no disturbance of any significance for the interpretation of the test can occur to the patient during the test without affecting the respiration in a manner readily detected from the tracing. Not infrequently, also, the test is started before the patient has returned to the basal condition which a 30-minute preliminary rest period is intended to ensure, but which is apt to be more or less disturbed in the process of starting the test; if, as a result, the metabolic rate has been temporarily increased the respiration curve will readily show it, and any portion of the tracing which does not represent the probable basal metabolic rate of the subject can be disregarded

FIG. 4.—Thyrotoxic Adenomata.



Aged 37 yrs. Wt., 51 kg.; Ht., 169 cm.; Bar. = 768 mm. Hg. Temp. of spiro. 14° C. Temp. of patient: Before, 97° F.; after, 97.4°. Pulse: Before, 84; after, 82. Respir.: Before, 24; after, 22. O_2 line = 157 - 40.5 = 117 mm. = calcs. per hr.; corrected = $117 \times 0.941 = 110.1$ calcs. per hr. Body surface = 1.57 sq. m.; calcs. per sq. m. per hr. = 64.3. Average normal calcs. per sq. m. per hr. (Du Bois) = 36.5. B.M.R. = +76 per cent.

sufficiently accurate—i.e., 4.825 calories per litre of oxygen—assuming 0.82 as the average respiratory quotient.

For very accurate measurement of the heat production the measurement of both respiratory gases is necessary, because the heat value of the unit quantity of oxygen or carbon dioxide varies according to the nature of the foodstuff oxidised. When fat is burned

the heat value of one litre of oxygen is 4.686 calories; when carbohydrate is oxidised the heat value is 5.047 and the protein value is 4.485. Thus, the heat generated as calculated from oxygen consumption or carbon-dioxide production varies with the non-protein respiratory quotient which normally lies between 0.71 for fat and 1.0 for carbohydrate, and to determine the respiratory quotient both gases must be measured. The non-protein respiratory quotient is derived by calculation from a knowledge of the urinary nitrogen excretion over a given period.

The actual oxygen consumption is determined from the fall in the spirometer bell in millimetres as indicated by the pointer on the scale or the rise of the tracing. To shorten the calculation (Roth) a section of the tracing of one-tenth of an hour (six minutes) is taken and the bell is constructed with a volume of 20.73 c.cm. per mm. of its height. Thus, each millimetre fall of the bell or rise of the tracing (rise of the O_2 line) in a six-minute period represents one calorie per hour:—

$$\begin{aligned} 1 \text{ mm. in 6 minutes} &= 20.73 \text{ c.cm.} \\ \therefore O_2 &= 207.3 \text{ c.cm.} = 0.2073 \text{ litre per hour.} \\ 0.2073 \times 4.825 &= 1 \text{ calorie per hour.} \end{aligned}$$

The consumption of oxygen is measured by drawing an average line along the base of the respiration curve, dropping two perpendiculars to the base line at the beginning and end of the six minutes period and measuring the height of the perpendiculars; the difference in mm. represents calories per hour. This figure, which represents the volume of oxygen used by the subject in six minutes, is next corrected for the spirometer temperature, barometric pressure, and humidity (80 per cent., using Wilson soda-lime) by multiplying by a factor obtained from a table.^{22†} The average spirometer temperature is taken from temperature readings recorded at the beginning and end of the test. A change in temperature of less than 1°C . can be ignored, but if a rise of more than 1°C . is noted allowance is made by adding for each degree centigrade of rise of temperature 0.5 millimetre to the total rise of the O_2 line in six minutes.

The next step is the calculation of the calories produced per square metre of body surface; the body-surface area is read directly from the Boothby and Sandiford chart²³ by laying a straight-edge across the figure joining the weight in kilogrammes and the height in centimetres. The figure representing calories per square metre of body surface per hour is compared with the average normal number of calories per square metre per hour obtained from the tables of normal standards (Table I.), and the percentage increase or decrease noted. The latter is given as the basal metabolic rate.

The normal zone of basal metabolism for male adults and non-pregnant women is usually taken to lie between ± 10 per cent., but with ambulatory patients it may be taken to lie between ± 15 per cent. The basal metabolism of children probably varies within a still wider range.

CONDITIONS NECESSARY FOR A SUCCESSFUL TEST.

The following conditions on the part of the patient are necessary for a successful test: (a) Complete coöperation and absence of apprehension concerning the test—the test is often 10 per cent. higher than it should be when the patient is nervous and apprehensive; (b) the test should be performed in the morning with the patient in the post-absorption state—that is, having had a light supper the previous night and no food for at least 14 hours prior to the test; (c) muscular relaxation; (d) a preliminary rest period of at least 30 minutes in a comfortably warm room with the subject in the reclining position on the test couch; (e) body temperature within normal limits; (f) the respirations should be reasonably

regular during the test, but irregularity of the respiration rhythm or depth is more apt to affect the CO_2 excretion than the oxygen absorption.

Interpretation.

The test should be interpreted in relation to the history, clinical condition, and physical examination of the patient and it cannot and should not be evaluated by itself alone. McCann⁹ writes:—

"If the basal metabolism is determined by the most accurate technique, under rigidly controlled conditions, a deviation from the average normal can be properly interpreted only in the light of the most thorough and painstaking clinical study of the case. In the last analysis a diagnosis must rest upon the clinical observations. As an unbiased objective method of evaluating the results of therapeutic measures in thyroid disease, especially as a means of controlling the treatment of hypothyroidism, basal metabolism determinations are invaluable. . . . Metabolism determinations are unsurpassed as an objective means of measuring the severity of hyperthyroidism or hypothyroidism and the response to various forms of treatment."

Du Bois²³ writes:—

"There seems to be a striking unanimity of opinion that the level of the basal metabolism is the best guide to the activity of the thyroid gland. This has a sound physiological and clinical basis. We must remember, however, that we are dealing with a laboratory test, and that it must not be accepted blindly. There are certain limitations which should be emphasised at this point. The technic is difficult, and errors of 10 or 20 per cent. may be made, especially by beginners. Even in the best hands there is a possible error of 2 or 3 per cent. In addition to this there are rather wide fluctuations in the daily metabolism of certain individuals. The first few tests with a thyroid patient may be 10 or 20 per cent. too high. Some normal individuals consistently show rates 10 to 15 per cent. or even more above or below the normal. The chances are that these various sources of error will partially neutralise each other, but if they all happen to fall in the same direction the result will be far from the truth.

"In every disease there is a tendency to variation from the typical which occurs in certain individuals, and there are few hard-and-fast rules in diagnosis. It is very seldom that we should allow any single symptom or laboratory test to outweigh a mass of evidence. A slavish adherence to the basal metabolism test as an index of diagnosis may lead the physician to trouble, first because the test does not always give the true basal metabolism, and second because even the true basal metabolism is not always the indication of the correct diagnosis. God forbid that we make our diagnoses by machinery!"

The basal metabolism may be notably increased in fevers, hyperthyroidism (Graves's disease, thyrotoxic adenomata, and some cases of malignant tumour of the thyroid and thyroiditis, overdose of thyroid substance or thyroxin), many cases of severe anæmias, many cases of chronic leukæmias, after food ingestion, from muscular work and in some cases of hyperpituitarism. The administration of insulin and suprarenal extract usually causes some increase in the basal metabolic rate. The basal metabolic rate may be notably decreased below the normal limits in hypothyroidism, in the clinical conditions myxedema and cretinism, in traumatic shock, and in chronic inanition.

It is in diseases of the thyroid gland that the determination of the basal metabolic rate is of most value in clinical medicine. From an analysis of over 6000 thyroid cases Boothby and Sandiford²⁴ state that 98 per cent. of cases of exophthalmic goitre have a basal metabolic rate of over 10 per cent. above the average normal values of Du Bois and Aub, and only 7 per cent. were within the limits of ± 15 per cent.; 56 per cent. of cases of thyroid adenomata showed evidences of hyperthyroidism with a basal metabolic rate of more than 10 per cent. above normal; the vast majority of colloid goitre cases showed a normal rate and a few showed an increase up to 20 per cent. above normal.

According to Kessel, et alia,²⁵ cases which show the "sympathomimetic" symptoms of Graves's syndrome (tachycardia, tremor, exophthalmos, asthenia, diarrhoea, sweating) without increase of the basal metabolic rate and without goitre are to be considered not cases of hyperthyroidism but

† Given in the author's reprints.

⁹ Grafe studied various forms of tremor and concluded that the metabolism is increased only if the tremors are very marked and that emotion increases the metabolic rate (quoted by Du Bois²³).

of "autonomic imbalance." These cases are called "border-line" cases by Means.

DIAGNOSTIC VALUE OF BASAL METABOLIC RATE.

The use of the determination of the basal metabolic rate in the diagnosis of thyroid disease is stated as follows by Means and Burgess²⁶ :—

"Patients with an outspoken picture of hyperthyroidism invariably show increased metabolism, and those with definite clinical pictures of hypothyroidism invariably show decreased metabolism. Those with goitres, but no signs or symptoms of abnormal thyroid function, for the most part show normal metabolism.

"By inference from the indirect evidence we believe that in these border-line thyroid cases, provided that in the first place a true basal rate is secured, and, provided that certain well-recognised causes for increased metabolism, such as fevers, acromegaly, leukæmia, and severe anæmia, are excluded, the finding of increased basal metabolic rate is strong presumptive evidence of hyperthyroidism. In a similar way, provided that such conditions as starvation, hypopituitarism, and hyposuprarenalism are excluded, a low metabolic rate is strong presumptive evidence of hypothyroidism.

"To that extent, then, the metabolism test is distinctly useful in differential diagnosis. Like all other laboratory tests it should only be interpreted with due regard to all other clinical and laboratory findings, and with due regard for its limitations and pitfalls."

From our own limited experience and from a study of the literature on the subject we have concluded that the test gives useful information for estimating the degree of thyroid deficiency, of thyrotoxicosis and the results of treatment, that it gives considerable information in the differential diagnosis of mild and doubtful cases suspected to have hyper- or hypothyroidism, but that it is not of great value in the diagnosis of frank cases of hyperthyroidism, myxœdema, or cretinism.

A summary of illustrative cases and cases of special interest are given in tabular form (Tables II. and III.).

TABLE II.—Summary of Illustrative Cases.

No. of cases.	Clinical type.	Basal metabolic rate—per cent.		
		Max.	Min.	Aver.
8	Normals.	+11	-3	+3
9	Adolescent and non-toxic parenchymatous or colloid goitres.	+21	-3	+5
2	Non-toxic thyroid adenomata.	+4	-3	—
4	Toxic thyroid adenomata.	+96	+18	+56
5	Frank cases of Graves's disease.	+67	+23	+49
2	Diabetes mellitus.	+11	+10	—
1	Cerebellar disease (with asynergia)—poor coöperation at test. Suggestion of myxœdema disproved by test.	+23	—	—
1	Obesity, "essential" vascular hypertension, imperfect carbohydrate utilisation, tremor, very "nervous."	+8	—	—

In addition to the cases studied from my own wards I desire to thank my medical and surgical colleagues of my own and other hospitals for sending cases for the test.

REFERENCES.

1. Lusk, G.: The Science of Nutrition, Philadelphia, 1917.
2. Benedict, F. G.: Jour. Amer. Med. Assoc., 1921, lxxvii., 247.
3. Kendall, E. C.: Ibid., 1915, lxi., 2042; Jour. Biol. Chem., 1919, xxxix., 125.
4. Plummer, H. S.: Jour. Amer. Med. Assoc., 1921, lxxvii., 243.
5. Boothby, W. M.: Ibid., 1921, lxxvii., 252.
6. Du Bois, E. F.: Ibid., 1921, lxxvii., 352.
7. Kendall, E. C.: Jour. Biol. Chem., 1919, xxxix., 125.
8. Kendall, E. C., and Osterberg, A. E.: Ibid., 1914, xl., 265.
9. McCann, W. S.: Calorimetry in Medicine, Baltimore, 1924.
10. Benedict, F. G.: Amer. Jour. Physiol., 1909, xxiv., 345; Boston Med. and Surg. Jour., 1918, clxxxviii., 667; 1920, clxxxii., 243; 1920, clxxxiii., 449.
11. Carpenter, T. M., Hendry, M. F., and Emmes, L. E.: Boston Med. and Surg. Jour., 1919, clxxxi., 285, 334, 368.
12. Roth, P.: Ibid., 1922, clxxxvi., 457.
13. Roth, P.: Ibid., 1922, clxxxvi., 491.

(References continued at foot of opposite page.)

TABLE III.—Summary of Additional Cases of Special Interest.

	B.M.R. per cent.		B.M.R. per cent.
CASE 1.—Male, aged 18. Non-toxic parenchymatous goitre with colloid cysts	+12	CASE 8.—Female, aged 46. Frank case of Graves's disease. Marked exophthalmos, moderate thyroid enlargement; slight tremor. Moist skin and says she perspires too easily; pulse averages 86, no diarrhoea or constipation and no menstrual disturbance. Clinically mild thyrotoxicosis	+68
After 0.2 mg. thyroxin by mouth for ten days showed fine tremor, nervousness, moist skin, and pulse of 92 to 96 per minute	+41	After 15 days of liq. iodi co., M xv. t.i.d., by mouth, and partial rest in bed. Clinically much improved; exophthalmos only slight and tremor very slight (see below (a))	+1
CASE 2.—Female, aged 17. Tremor; tachycardia (120); thyroid appears "full"; slight lag of upper lid; no exophthalmos; heart normal	+19	CASE 9.—Male, aged 23. Clinically, prior to tests, looked on as an "effort syndrome" or "autonomic imbalance" case. Tires easily; palpitation on exertion; pulse at rest averages 80, but goes up to 110 or 120 on moderate exercise and does not return to normal rate for several minutes afterwards; can feel his heart beating forcibly on slight exertion; hands and feet cyanotic and show loss of tone of skin vessels; marked tremor of hands and legs, especially on left side; periodic diarrhoea; can concentrate on mental work for short periods only; no abnormal thyroid enlargement and no accessory thyroids discovered (thyroid appeared slightly full at last examination); blood-sugar normal; very "nervous." Cerebro-spinal nervous system normal except for brisk tendon reflexes. Had no treatment during the ten months of observation except sedatives and change to the country. No evidence of thymus enlargement by X rays or otherwise. The case is evidently one of hyperthyroidism.	+32 (b)
CASE 3.—Male, aged 30. Slight uniform enlargement of thyroid, tires easily, some palpitation on effort; some tremor; moist skin; heart, lungs, and abdominal organs normal; constipation; polyuria, urine and kidneys normal; blood-sugar normal; loss of weight; rather "nervous"; no hyperthyroid eye signs. Tendon reflexes brisk. B.P. 120/80; pulse 70 at rest, 90 to 100 after moderate exertion—does not return to normal rate for several minutes. Apparently, a "border-line" case—"autonomic imbalance"	+0.5 normal	After 30 minims of Lugol's solution by mouth for 25 days (see below (a)); improved	+33
CASE 4.—Male, aged 22. Uniform thyroid enlargement, tremor on excitement, occasional diarrhoea, moist skin; pulse averages 80, but goes up to 90 on slight exertion; slight exophthalmos (?); moist cyanotic hands. Clinically very mild thyrotoxicosis (perhaps in remission) or "autonomic imbalance"	-6	CASE 10.—Male, aged 17½. Fröhlich's syndrome (hypothyroidism) with diminished glucose tolerance (by courtesy of Dr. Leonard Abrahamson)	Exactly normal
CASE 5.—Female, aged 47. Exophthalmic goitre. Frank case of thyrotoxicosis. Her local physician had been giving her thyroid substance by mouth for three weeks.	+133	CASE 11.—Female, aged 50. Paralysis agitans with pronounced tremor. Patient very apprehensive owing to psychical disturbance	+30
After stopping thyroid medication and rest for ten days	+47	Second test with patient calm	+11
CASE 6.—Male, aged 35. Exophthalmic goitre; frank case, heart enlarged; marked eye signs	+61	CASE 12.—Female, aged 19. Intellectually deficient; dry scaly skin, hair of head has been falling out; partially deaf; some pigmentation of skin of forearms. Question of hypothyroidism in diagnosis disproved by test	+13
After nine months' treatment (rest, general hygiene, X ray) is clinically much improved and able to work but still has thyroid swelling; exophthalmos slightly improved	+18	(a) It is not intended to convey the impression that the effect of iodine, in benefiting cases of Graves's disease, is permanent.	
CASE 7.—Female, aged 39. Frank case of Graves's disease	+97	(b) Tests given in order during the ten months of observation.	
After rest in bed for two weeks and a few X ray exposures	+64		
After a further 13 days' rest in bed and 30 minims of liq. iodi co. (U.S.P.) by mouth per day, patient was clinically much improved; exophthalmos greatly reduced (see below (a))	+48		

PARA-SMALLPOX¹

(SYNONYMS ALASTRIM, AMAAS), AN ACUTE SPECIFIC INFECTIOUS DISEASE DISTINCT FROM SMALL-POX.

By R. P. GARROW, M.D. ABERD., D.P.H.,
MEDICAL OFFICER OF HEALTH, CHESTERFIELD.

It is a matter of common knowledge that there has prevailed during the last few years in certain districts in England, chiefly in the Midlands and north, a disease notifiable as "small-pox." This disease presents clinical and epidemiological features which distinguish it from virulent small-pox as commonly observed in England in recent times and as described in standard English text-books of medicine and in Ricketts and Byles' classical monograph the "Diagnosis of Small-pox."

The features which distinguish the prevailing disease from classical small-pox are so numerous, so striking, and so constant, and their practical significance to physician, epidemiologist, public health administrator, and public is so important that in the following clinical description I have adopted² "para-smallpox" as its name in order to facilitate comparison and contrast between it and the graver disease small-pox.

The disease is, in all probability (?), the same as that known in South Africa as "amaas" (the Kaffir word for sour milk), and in South America as "alastrim" (from the Portuguese *alaster*, meaning "to strew over"), but inasmuch as these foreign names have no obvious meaning in English, I prefer "para-smallpox"—a name which at once conveys the meaning "a disease closely allied to small-pox." The coining of a new name is not intended to suggest the discovery of a new disease, but merely to indicate its recognition as a definite clinical entity—an acute specific infectious disease separate and distinct from small-pox—a disease, moreover, which is fixed in type and does not tend to assume virulence and acquire the death-dealing and disfiguring properties of small-pox.

Personal Experience.

The clinical description of para-smallpox which follows and its contrast with small-pox are based entirely on personal observation of 500 cases occurring in the borough of Chesterfield between October, 1923, and July, 1924, before and during their isolation at Spital and Morton small-pox hospitals. The data were all collected by myself from these patients and their relatives. Any personal error involved therefore is mine, and not that of the ambulance nurse or

¹ A paper read to the Fever Hospital Group of the Society of Medical Officers of Health, London, Nov. 28th, 1924.

² See Brit. Med. Jour., May 13th, 1922.

BASAL METABOLIC RATE: REFERENCES.

(Continued from previous page.)

14. Rubner: Zeitschr. f. Biol., 1883, xix., 549.
15. Du Bois and Du Bois: Arch. Int. Med., 1915, xv., 868; 1916, xvii., 863.
16. Benedict, F. G.: Jour. Biol. Chem., 1915, xx., 263.
17. Harris, J. A., and Benedict, F. G.: Carnegie Inst. Wash., 1919, Pub. No. 279; Jour. Biol. Chem., 1921, xli., 257.
18. Dreyer, G.: THE LANCET, 1920, ii., 289.
19. Benedict, F. G., and Talbot, F. B.: Carnegie Inst., Wash., 1921, Pub. No. 302; Talbot, F. B.: Amer. Jour. Dis. Child., 1921, xxi., 519.
20. Benedict, F. G., and Hendry, M. F.: Boston Med. and Surg. Jour., 1921, clxxxiv., 217 et seq.
21. Boothby, W. M., and Sandiford, I.: Jour. Biol. Chem., 1922, liv., 767.
22. Roth, P.: Bull. Battle Creek Sanatorium and Hospital Clinic, January, 1923.
23. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, 1924.
24. Boothby, W. M., and Sandiford, I.: Jour. Biol. Chem., 1922, liv., 783.
25. Kessel, L., et alia: Jour. Amer. Med. Assoc., 1922, lxxix., 1213; Arch. Int. Med., 1923, xxxi., 433; Amer. Jour. Med. Sc., 1923, clxx., 387, 513.
26. Means, J. H., and Burgess, H. W.: Arch. Int. Med., 1922, xxx., 507.
- Boothby, W. M., and Sandiford, I.: Laboratory Manual of the Technique of Basal Metabolic Rate Determination, London, 1920.

sanitary inspector or other person concerned with the outbreak. Thanks to the kindness of colleagues in Derbyshire and elsewhere, I had opportunities for studying para-smallpox for two and a half years previous to its appearance in the borough of Chesterfield. For example, I am indebted to Dr. Herbert Peck, medical officer of health, Chesterfield rural district, for the opportunity of observing cases from North-East Derbyshire. I have also visited Ilkeston, Long Eaton, Doncaster, Gloucester, Middlesbrough, and other towns where the same or a similar mild disease has prevailed, and I am grateful to medical officers of health and medical superintendents of small-pox hospitals in these towns for permission to see their patients.

My experience of classical small-pox is confined to cases seen in the East during the war, but owing to the kindness of Dr. A. F. Cameron, medical superintendent, small-pox hospital, Dartford, I was enabled to refresh my memory of that loathsome disease by a visit in 1922 to the patients from the Poplar epidemic.

Brief Clinical Description.

For brevity and, so far as it goes, accuracy, I cannot better the description of his disease given by a patient in three words: "pimples following influenza." In these words he brought out the three most remarkable clinical features of the disease—first, the primary toxæmia which was almost universally regarded by both patient and doctor as an ordinary attack of influenza; secondly, the focal lesion, which, smaller and more superficial in the skin than the eruption of small-pox, is accurately described as "pimples"; thirdly, the word "following" signifies one of the most striking features of the disease—namely, the fact that frequently the eruption appears after—it may be several days after—the patient has completely recovered from the initial illness.

Analysis of Clinical Signs and Symptoms of Para-smallpox with Special Reference to Comparison and Contrast with those of Small-pox.

1. *Onset.*—The onset of an average case of para-smallpox is gradual, with headache, dizziness, aches and pains in body and limbs, and weakness of legs. These are the commonest symptoms complained of. In addition, there may be shivering, nausea, vomiting, abdominal pain, backache, and sore-throat. No case in this series gave the classical onset of small-pox with rigor, vomiting, lumbo-sacral pain, and rapid prostration. Although not prostrated, the para-smallpox patient usually lies down to recover from what he calls influenza. His temperature in this stage is 100° to 103° F., and subsides by rapid lysis. The recovery from this initial illness is rapid and complete, and in the average case the patient feels perfectly well for the remainder of his attack, including the stage of eruption and convalescence. The influenzal illness leaves behind no feelings of physical weakness or mental depression such as frequently follow ordinary influenzal attacks.

2. *The Pause.*—Whereas in small-pox the eruption appears fairly constantly in the middle of the primary toxæmia—i.e., about the third or fourth day of the

TABLE I.—Showing the Duration of the Prodromal Illness.

Days from onset to eruption	No illness.	2	3	4	5	6	7	8	9	10
No. of cases	51	13	60	110	93	81	47	35	7	3
						173				

illness—in para-smallpox its appearance is frequently delayed till the patient has completely recovered, and in about one-third of the cases an interval of one to four days of complete intermission of all symptoms occurs between illness and rash. In this

quiescent period or pause patients have returned to school or to work for days. This change in the chronological relationship of the primary toxæmia and the eruption is one of the most striking differences between para-smallpox and small-pox. (Table I.)

In 173 cases, or rather more than one-third, the interval between onset and eruption was six to ten days.

3. *Eruption*.—The eruption of para-smallpox corresponds exactly with that of small-pox in one important respect—*distribution*. Every detail of observation made by Ricketts and Byles on small-pox in regard to the distribution of the rash may be confirmed in the case of para-smallpox. The skin lesions of para-smallpox are, however, on an average, smaller and more superficially situated, not so shotty, and more rapid in their evolution through the stages of macule, papule, pustule to crust than those of small-pox. The final stage usually referred to as scabs or crusts in small-pox may be more aptly called "amber beads" in para-smallpox. Instead of the opaque brown crusts formed of inspissated pus and blood seen in small-pox, the skin of the para-smallpox patient will be found studded with small round translucent bodies varying in size from pin's head to split pea, and in colour from pale straw to dark amber. These amber beads take their size and shape from the pustules which precede them, and may be perfectly dome-shaped or slightly flattened on the top. Their translucency indicates that the contents of the pustule was scarcely pus, but little more than clear or only slightly turbid serum. This *amber bead phenomenon* is best seen about the end of the first week from the appearance of the eruption, and lasts throughout the second week, when it is of great diagnostic help. A few amber beads of perfect shape and correct distribution have frequently been the only objective sign of an attack, and when supported by a history of "flu" a week or two before, are absolutely diagnostic. I have not seen similar skin lesions in any other condition. When the amber beads are shed from the skin there remain small, round, glistening reddish-brown areas which lose their pigmentation slowly and may be still visible some months after recovery from the attack. But pitting is rare, and when it occurs it consists of a fine foveation on the nose, cheeks, and forehead.

4. *Secondary Fever*.—When the eruption is profuse and the pustules are large and deeply situated in the skin as in small-pox (as they sometimes are), there is mild suppurative fever (100° – 101°) in the second week, but this is rare, and the majority of patients never have an ache or a pain or a temperature above 99° after admission to hospital.

5. Other features associated with small-pox of great toxicity were not observed once in this series—namely, prodromal rashes; hæmorrhages. Further, newborn or very young infants, unprotected by vaccination, had hardly any constitutional disturbance, even when the rash was fairly copious. Infants on the breast never missed a feed, and the first thing noticed by the mother was the appearance on the infant of the characteristic spots.

Complications.

Apart from secondary infections of the skin like impetigo, &c., the only complications observed in this series were connected with the eyes. The ophthalmic complications are of great interest and importance. Three inflammatory conditions were seen.

1. *Blepharitis and Conjunctivitis*.—In quite a number of cases lesions occurred in the palpebral and ocular conjunctivæ. In some the margins of the lids were the seat of numerous pocks. These infected or irritated the conjunctiva, giving rise to acute purulent inflammation with considerable discomfort, but in every case recovery was complete without any permanent damage.

2. *Ulceration of Cornea*.—Three cases occurred in which a pustule formed at the corneo-scleral margin.

When this pustule ruptured an ulcer formed at the periphery of the cornea and spread centripetally. This seriginous ulcer was extremely slow in healing and left a small triangular opacity in the outer third of the cornea with its apex towards the centre and base on the periphery. There was no damage to vision.

3. *Keratitis Profunda*.—Two cases of this rare condition provided the most interesting and important of the eye complications of para-smallpox. Both occurred in the right eyes of very young infants—one 12 days old when the eruption appeared, the other aged 9 weeks.

CASE 1.—Female infant, born Dec. 6th, 1923. No prodromal illness. Rash appeared on the 18th—i.e., aged 12 days. Infected from the mother whose eruption appeared on the 10th. Baby successfully vaccinated on the 15th. The infant had a profuse eruption, but was not ill. It had some pustules about the eyes, and there was acute conjunctivitis of both eyes—more especially the right—with some pus. This cleared up under treatment, and mother and infant left hospital well on Jan. 9th, 1924. Three months later my attention was called to the baby's right eye. The upper half of the right cornea was ground-glass-like. There was no conjunctival or ciliary injection, and the pupil was normal in size, shape, and reactions. The baby was referred for treatment to the Royal Hospital.

CASE 2.—The interesting feature about the second case was that there was no indication of anything wrong with the infant's eye during its period of hospital isolation. It was not till a week after discharge from hospital that the mother noticed "a film over the baby's right eye." Male infant born on June 6th, 1924, rash appeared on August 9th without any prodromal illness. Admitted to hospital on August 12th. Discharged on the 30th after an ordinary attack without any eye trouble of any kind. A week after discharge from hospital the mother noticed a film coming over right eye and took the infant to me at the Health Office. The condition found was very similar to that described in the first case—upper half of right cornea steamy and ground-glass-like. My brother, Dr. A. Garrow, ophthalmic surgeon, Glasgow Royal Infirmary, happened to be with me in September, and I am indebted to him for the diagnosis of keratitis profunda in these two cases. Both cases are now under treatment by Mr. H. H. Emmerson, ophthalmic surgeon, Chesterfield Royal Hospital, who has kindly furnished me with the following reports, dated Oct. 14th, 1924.

Oct. 14th, 1924. 1st case. (Under ether.) Right eye; no ciliary or conjunctival injection; under atropine pupil dilates well and evenly; well-marked central opacity of cornea, definitely in the deeper layers; no vascularisation of cornea; fundi normal.

Oct. 14th, 1924. 2nd case. (Under ether.) No conjunctival or ciliary injection; under atropine pupil dilated well and evenly; upper two-thirds cornea cloudy, opacity in the deeper layers of the cornea; no vascularisation of cornea; fundi normal.

Mortality of Para-smallpox.

The mortality of para-smallpox in otherwise healthy subjects is nil. It does not convey an adequate impression of the mildness of this disease to say that no patient in this series of 500 cases or in the 2000 in the county of Derby died of para-smallpox. No case was sufficiently ill from para-smallpox to cause the slightest anxiety as to the issue.

In descriptions of the disease the mortality is usually stated as 1 or 2 per cent., but these deaths are frequently in very young infants or feeble old people, or result from some condition unconnected with para-smallpox. For example, although no case in this series died of para-smallpox, two of the patients died while in hospital—one from uræmic coma occurring in the course of chronic interstitial nephritis, the other from encephalitis lethargica. Another infant, aged 10 days on admission, died about a week after discharge from hospital from a cause unconnected with para-smallpox.

So far as I have been able to ascertain from the literature and from other sources of information, the 1 to 2 per cent. mortality attributed to this disease appears to be made up of similar deaths. My

own opinion is that the case mortality of para-smallpox is nil, or for all practical purposes nil—e.g., same as in mumps, rubella, varicella, &c. Extensive epidemics of this disease have been recorded running into thousands of cases without a death, and in other outbreaks the mortality figure amongst those attacked (including the deaths from prematurity, senility, &c., not properly attributable to para-smallpox) has actually been lower than the general mortality-rate from all causes amongst the population from which the cases were isolated.

From such statistics emerges the amazing paradox that this disease, far from being a cause of death, is actually to some extent a protection against the fatal issue! The suggestion is not so silly as it sounds, for if persons suffering from a harmless disease, never in itself fatal, are taken from overcrowded houses and bad hygienic conditions where they are ill-clad and poorly fed, to a place of safety where they are well fed and cared for, they are at least protected from some forms of death—e.g., death from violence—which in these days of rapid transport and crowded streets contributes materially to the general mortality-rate. It is not surprising therefore that the death-rate should be lower in para-smallpox than in the healthy.

Vaccination Statistics.

Table II. shows the influence of vaccination in the prevention of para-smallpox. No person vaccinated in infancy was attacked under the age of 17 years. No person recently vaccinated was attacked. No person vaccinated in infancy and revaccinated at any age was attacked.

TABLE II.—Borough of Chesterfield. Vaccination State of Patients.

Vaccinated and re-vaccinated: No person attacked.
Vaccinated recently: No person attacked.

Age-groups ..	0-5.	5-10.	10-15.	15-20.	20-25.	25-30.	30-40.	40-50.	50-60.	60 and over.	Total.
Vaccinated in infancy only..	—	—	—	3	5	5	8	38	25	5	89
Unvaccinated ..	65	82	95	72	51	20	17	5	3	1	411

Thirty cases vaccinated successfully after exposure to infection developed the disease. The number of days between successful vaccination and the appearance of the eruption is shown in Table III.

TABLE III.—Showing Days Elapsing between Successful Vaccination and the Appearance of Eruption in 30 Cases developing Disease who were Vaccinated after Exposure to Infection.

Interval (days).	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No. of cases..	1	1	—	3	4	4	8	5	2	1	—	—	—	1
					21									

There are many who believe that the identity of this mild disease with small-pox is settled by this prophylactic influence of vaccination alone. In dissenting from this view I would remind them that even the discovery of the virus of small-pox and para-smallpox as identical organisms does not necessarily settle the question. A simple analogy will explain what I mean. The so-called *Micrococcus melitensis* (in reality a short bacillus), discovered by Bruce as the cause of Malta or Mediterranean or undulant fever in man, is quite indistinguishable to bacteriologists from the *Bacillus abortus* of Bang which causes contagious abortion in cattle. Yet nobody would think of suggesting that undulant fever and contagious abortion are the same disease.

Similarly, no discovery which the sciences of bacteriology and immunology may make in regard

to small-pox and para-smallpox can bridge the wide clinical gulf between the two diseases.

Fixity of Type.

Granted that under the name small-pox there exist two diseases clinically distinguishable, the virulent disease commonly known as small-pox and this other mild avirulent and comparatively harmless disease which I have called para-smallpox, there still remains for discussion the crucial question: *Do these two diseases breed true to type indefinitely under all conditions? In other words, can the mild disease, para-smallpox, be trusted implicitly to remain mild and relatively harmless, and never under any circumstances, known or unknown, assume the virulence of small-pox?*

It is unnecessary to emphasise the practical importance of a correct answer to this question. Upon the answer depends administrative action influencing the lives of thousands of sufferers from the disease and involving the expenditure of large sums of public money. It is necessary to examine the evidence with an unbiased mind, and, above all things, to avoid confusing the issue with the vexed question of vaccination. So far as experience in Derbyshire goes, the answer is in the affirmative. During four summers and three winters the disease has preserved the same average level of virulence. The cases in hospital to-day are exactly the same as those seen three and a half years ago. The same fixity of type has characterised other extensive outbreaks of this disease at home and abroad.

Under these circumstances how does it come about that the view of the majority, and more particularly the official view, is that this disease is merely small-pox of depressed virulence which may and does, under largely unknown circumstances, revert to a virulent type and become classical small-pox? Let us examine the evidence on which this view is based—i.e., the occasions on which the mild disease is alleged to have acquired the virulence of small-pox.

Criticism of the American Evidence.

Those who believe in the power of mild disease to acquire the virulence of small-pox frequently point to the course of events in America, where small-pox is stated to be resuming its severe form after a period of extreme mildness and low mortality. It seems to be forgotten that this change is readily explained on the hypothesis of a change in the relative incidence of two diseases, one of which is mild with a mortality of nil, and the other severe with a mortality of anything up to 40 per cent. By mixing these diseases in varying proportions you can obtain a total case-mortality-rate of any figure from nil to 40 per cent. This explanation of the American experience is just as reasonable as the hypothesis that the increasing mortality from small-pox in America is due to the enhanced virulence of a single disease.

Let us examine more closely a specific instance in the American epidemiology of small-pox of "the mild type suddenly assuming virulence"—namely, the outbreak at Windsor, Ontario, in the early part of 1924. The English journal, the *Medical Officer*, of April 5th, 1924, devotes an editorial article to a commentary on the official circular of the Provincial Board of Health of Ontario, issued to the medical officer of health of the province. The article says:—

"It appears that in the last quarter of 1923 there was a mild epidemic of small-pox in Detroit, on the other side of the boundary between Canada and the United States, whence cases were traced to the Canadian border towns, including Windsor, where there occurred in February a fatal case of hæmorrhagic small-pox in an unvaccinated man, which was not, however, definitely diagnosed as such until after his death, and when persons who had been in contact with him were taken ill with the disease in a particularly virulent form. Up to March 3rd there were 40 cases with 12 deaths in Windsor, and in the adjoining districts there were 20 cases, 6 of which proved fatal. As many as 42 cases were traced to the undiagnosed case, the origin of which, however, it was not found possible definitely to determine; in all probability it was due to the Detroit outbreak, an instance of a mild type suddenly assuming virulence."

The official circular from which this description is culled mentions an alternative source of infection—namely, “the northern part of the province where irregular types of small-pox are often seen.” This is omitted in the *Medical Officer's* commentary. Another significant fact, inadvertently omitted from the article referred to, is mentioned in the official circular in giving a classification of the Windsor cases, viz. :—

(a) Mild cases in individuals with a history of an old successful vaccination over 12 years ago; also an occasional unvaccinated case who had been infected in Detroit (the italics are mine).

(b) Severe confluent and semi-confluent cases all in unvaccinated persons.

(c) Haemorrhagic cases all in unvaccinated persons and all fatal.

From this classification the interesting fact emerges that, far from being an instance of a mild type of small-pox suddenly assuming virulence, this was actually an example of the mild Detroit disease preserving its mild type, even in unvaccinated persons in Windsor, in the midst of an outbreak of small-pox of overwhelming severity and high mortality.

South African Evidence.

Let us turn now to the South African evidence. In THE LANCET of Oct. 14th, 1922, Dr. J. A. Mitchell, Secretary for Public Health and Chief Health Officer, Union of South Africa, contributes an important article on Small-pox and Amaas in South Africa. He states emphatically that the mild disease commonly called “amaas” in South Africa “is merely a form of small-pox ordinarily mild and with low mortality, but capable, under largely unknown conditions, of taking on virulent characters and causing the severe disfiguring and highly fatal type of classical small-pox.” He further asserts that: “Here, in South Africa, the belief amongst some medical men and a large section of the public that the disease is not small-pox, and that it is of permanently mild type and comparatively unimportant, has repeatedly led to unfortunate results.” According to Dr. Mitchell, “every Government health officer in South Africa during the past 25 or 30 years has come to the same conclusion.”

This opinion coming from such high authority calls for the most careful examination of the evidence upon which it is based. Dr. Mitchell, in the course of the article quoted, gives four instances where a mild strain of infection, causing disease of the type commonly known as amaas, has become virulent, the later cases being severe and in all respects typical small-pox with a high mortality-rate. These were :—

1. In 1898 Port Elizabeth had 96 cases with 29 deaths (case mortality 30 per cent.) following infection introduced from Graaff-Reinet, where there was an outbreak of the ordinary mild type.

2. Early in 1904 cases of the disease “of remarkably mild type” occurred in the Ixopo district of Natal, the disease subsequently spreading to Estcourt, where, “owing to the mildness of its manifestations, it escaped early detection under the assumed garb of chicken-pox.” The infection later became disseminated throughout the greater part of Natal and took on very virulent characters. The final statistics of the epidemic show a total of 1238 cases with 361 deaths—a case-mortality of 29 per cent.

3. An instance of a similar kind has occurred under Dr. Mitchell's own observations and is described by him in these words: “In 1900 I was research bacteriologist to the Robben Island Leper Asylum. There was at the time some sporadic prevalence of mild small-pox or amaas in the southern suburbs of Cape Town and the Malmesbury district adjoining, and people from these areas daily came to the island to visit friends in the asylum. The first two cases were very mild, but a large percentage of the subsequent ones were typical small-pox of disfiguring and dangerous type. Twenty-one cases in all occurred with eight deaths, a case-mortality of 38 per cent. The patients, all coloured female adults, were lepers, but most of them were strong and in good general health.”

4. “Again, in 1903, whilst I was at Port Elizabeth dealing with an outbreak of plague, cases of small-pox of the

usual mild type occurred amongst natives of the Sunday's River Valley south of Graaff-Reinet. The disease spread down the valley and eventually to the town of Port Elizabeth. The earlier cases were very mild, but later the type became much more severe. The final figures for the outbreak show 222 cases with 17 deaths—a case-mortality of 7·6 per cent.”

Criticism of Dr. Mitchell's Evidence.

This South African evidence is entirely unsatisfactory for the reason that in none of these four instances are we furnished with an analysis of the statistics giving the number of cases and the number of deaths before and after the alleged change in the virulence of the disease.

The evidence required to satisfy a critical mind on this “change of type of disease” is :—

(a) The occurrence of a considerable number of cases of the mild disease of the character described in this article without a death (deaths from other causes excepted). The larger the outbreak of the mild disease without a death, the better is this evidence because it establishes more firmly the mild pedigree.

(b) Reasonably convincing evidence that direct infection from this mild source caused small-pox of virulent type with high mortality amongst a sufficient number of patients to exclude constitutional disease or infancy or senility as contributing factors in the fatal result. To make this evidence reasonably convincing, the possibility of another source of infection of virulent small-pox in the vicinity should be excluded.

As already indicated, Dr. Mitchell's evidence does not satisfy these requirements. In each instance all we are told is that the early cases were “of mild type” or “of remarkably mild type.”

In order to ascertain precisely what Dr. Mitchell meant by the “sporadic prevalence of mild small-pox or amaas in the southern suburbs of Cape Town and the Malmesbury district adjoining,” which he suggests was the origin of an outbreak of virulent small-pox with a case-mortality of 38 per cent. amongst the lepers on Robben Island, I asked the medical officer of health, Cape Town, if he would be good enough to furnish me with information about the cases occurring in Cape Town and district in 1900. Dr. T. Shadick Higgins has very kindly sent me a copy of such descriptions of the cases as were actually recorded in the register of cases treated at the Cape Town Small-pox Hospital.

The Robben Island outbreak commenced in October, so that the group of 13 cases recorded in the register for August and September, 1900, would appear to be the cases involved. Of these 13 cases—

2 are described as fatal.

3 “ “ “ severe confluent (one with loss of one eye).

1 is “ “ confluent.

1 “ “ mild confluent.

1 “ “ medium discrete.

4 are “ “ mild discrete.

1 is not described.

I venture to submit that, had Dr. Mitchell consulted the records before writing his article, he would not have described these cases as a “sporadic prevalence of mild small-pox or amaas.” I further submit that his opinion that mild small-pox or amaas becomes virulent small-pox, is not supported by any evidence which will bear looking into.

Conclusions.

(1) Para-smallpox is a disease sui generis. (2) It is distinguishable clinically from small-pox on the one hand and chicken-pox on the other. (3) It preserves its type as rigidly as does small-pox or chicken-pox or any other of the acute specific infectious diseases. (4) Its mortality amongst healthy subjects is nil, and there is no good evidence to show that the disease ever assumes virulence. (5) Vaccination with the calf lymph used to protect against small-pox is equally protective against para-smallpox. (6) Administrative measures for the control of the disease could with advantage be modified in the light of these conclusions.

BONE IN THE EYE.

By PERCY DUNN, F.R.C.S. ENG.,

CONSULTING OPHTHALMIC SURGEON, WEST LONDON HOSPITAL;
LATE LECTURER ON OPHTHALMOLOGY, WEST LONDON
POST-GRADUATE COLLEGE.

SCATTERED within the realm of human disease are problems in pathology of special and speculative interest, and undeniably among these is the formation of bone in an atrophied eyeball.

This change is not a pathological freak, occurring with a rarity suggestive of an exceptional environment, but one which for many years has been known, more or less exclusively, to ophthalmic surgeons as the natural sequence of degenerative processes. The presence of the bone and the source of its development have led many observers to investigate the problem. In regard to the broad outlines of the pathology there is a general agreement, but upon the question of detail much room exists for the expression of divergent views—views which still belong to the sphere of speculation. In this category is included the source of the osteoblasts which remains, among other details, a matter of uncertainty.

Atrophy of Eyeball and Phthisis Bulbi.

Incidentally an atrophied eyeball may be described as an eye which is soft, shrunken, and commonly flattened, following an attack of irido-cyclitis, such as may be caused by penetrating wounds or intra-ocular operations which have proved unsuccessful, by which the nutrition of the eye has been arrested by the inflammatory changes in the ciliary body.

It may be noted here that Fuchs draws a distinction between an atrophied eye and one the condition of which is known, ophthalmologically, as "phthisis bulbi."¹ In his view phthisis bulbi, so called, implies destruction of the whole of the intra-ocular tissues, such as occurs after complete suppuration of the eye. In this case the eye contracts to the size of a hazelnut or less, whereas an atrophied eyeball retains some semblance to its original formation. Except for cosmetic reasons, in the former case no interference is necessary; on the other hand, in the latter, in the course of time enucleation is expedient.

The Ossification Process.

A period of years is required for the development of the ossification process in an atrophied eyeball—12 years or more. Cases of much earlier dates have been recorded at which ossification has developed. But these are exceptional; nevertheless, the possibility of their occurrence has to be borne in mind.

The mode of detecting the presence of the osseous plates is by means of palpation. Firm backward pressure is needed, and this gives rise to tenderness, which is at once recognised by the patient. At the same time there may not be any sense of hard resistance to the surgeon's fingers, indicating the presence of bone. Again, a patient may make no complaint of an eye in which bone has developed until tenderness is revealed by palpation. The tenderness is probably due to the pressure of what remains of the ciliary body upon the hard bony substance. Palpation of slight degree is not to be relied on; it may elicit no sensation of tenderness, especially as the ossification usually begins at the back of the eye, first developing around the optic disc. The bone also is thickest in this situation, and in the bony plate there is commonly to be seen a round hole, marking the entrance of the optic nerve (vide figure).

Upon reflection it is strange that bone, incidentally of the periosteal type, true bone with definite

Haversian systems, should be evolved out of the degenerated inflammatory products of an eye in an atrophied state. This ossification has been defined as "the final stage of degeneration of the organised inflammatory products of plastic choroiditis" (Parsons). Possibly the eye occupying a confined and isolated space provides the conditions necessary for the development of the ossification process. That bone has been said to have been found in structures of the eye other than the choroid, such as the lens and retina, would seem to lend support to this possibility.

Whether the inflammatory changes in an eye, which are ultimately followed by the formation of bone, can give rise to an infective plastic uveitis in the other eye has not been established. No case of the kind has been proved. Modern observation must concede that so-called "sympathetic ophthalmitis" is not a "sympathetic" but an infective disease, and Hill Griffith has recorded that he has never met with bone in eyes removed for "sympathetic ophthalmitis." Furthermore, this disease is not known to follow pus infections of an eyeball. Its infective origin must, therefore, depend upon some organism, still to be discovered, in common with other infective diseases, the micro-organic source of which has so far defied the efforts of the bacteriologist to determine.

Record of Case.

Appended are the notes of a case of bone in the eye which recently came under my observation.

Mr. X., aged 62, came on Oct. 8th, 1924. His previous history was one of many years of articular rheumatism, for which at intervals he had received treatment at Harrogate, Bath, Buxton, and other centres of hydro-therapeutics. Gradually he made a good recovery, and has now for some years been free from his former symptoms. Suddenly, about 15 years ago, the vision in the right eye failed and blindness ensued. I was unable to gather from him the cause of this beyond the fact that he sought advice and followed the treatment recommended. Since then, at various intervals, his left eye has suffered from severe attacks of iritis. In the course of one of these the right eye became inflamed, and the symptoms suggested glaucoma. An iridectomy was performed by an ophthalmic surgeon. Subsequently the eye gradually became atrophic, and at the time of his visit to me it was shrunken, soft, and flattened. Such, I was told, had been its condition for approximately 12 years. No complaint was made of the shrunken globe; palpation at first revealed no response to tenderness, but when firm backward pressure was made a slight sensation of tenderness was admitted.

Examination of the left eye showed atropine irritation of the lower lid. For some considerable time drops of a 1 per cent. atropine solution had been instilled daily in an attempt to dilate the pupil. But the iris was contracted and adherent throughout, the condition present being one of complete posterior synechia. The anterior capsule of the lens was fairly clear in the central pupillary space. The tension was good; ophthalmoscopic examination was not possible. The vision admitted was 6/nil; improved to 6/18, nearly, with -7 sph. Apart from the defective vision, the complaint made of the eye was an inability to face a bright light, occasional lacrymation, and a sensation of discomfort. The last attack of iritis occurred four years ago; it persisted for six weeks. Since then the eye has been free from any recurrent reaction.

I enucleated the right eye on Oct. 15th, Dr. S. H. C. Air being present and administering the anaesthetic. The figure illustrates the plate of bone found in the eyeball. One or the other of the openings in the back part of the plate would indicate its position around the entrance of the optic nerve.



Actual size.

That these cases are of clinical importance will be inferred from the above, but added to this is their general pathological interest. Having regard thereto, the fact is somewhat strange that it should have escaped the notice of examiners in pathology. The subject suggests a question in an examination paper. For example: "Under what pathological conditions does bone develop in the eye? Describe the pathology of the process. Of what type is the bone? Discuss the views of the origin of the osteoblasts."

¹ Text-book of Ophthalmology. By E. Fuchs. Eighth English edition. P. 340.

THE DICK TEST FOR SUSCEPTIBILITY TO SCARLET FEVER.

BY CLAUDE B. KER, M.D., F.R.C.P. EDIN.,
MEDICAL SUPERINTENDENT, EDINBURGH CITY HOSPITAL;

J. E. MCCARTNEY, M.D., D.Sc. EDIN.,
LECTURER ON BACTERIOLOGY, EDINBURGH UNIVERSITY;

AND

J. MCGARRITY, M.D. EDIN., D.P.H. EDIN. & GLASG.,
MEDICAL SUPERINTENDENT, ISOLATION HOSPITAL, CARDIFF.

ALMOST a year ago Drs. George and Gladys Dick¹ described a skin test for susceptibility to scarlet fever on the analogy of the well-known Schick test for diphtheria. The reliability of this important reaction has been verified by, amongst others, A. Zingher² and by C. F. Branch and F. G. Edwards.³ It may be remembered that Dr. and Mrs. Dick⁴ succeeded in producing scarlet fever in human volunteers by infecting the nasopharynx with a hæmolytic streptococcus obtained from a case of scarlet fever, and evidence has been accumulating in favour of this micro-organism being the specific cause of the disease. An admirable discussion of the whole question will be found in a paper by Dr. Abraham Zingher,⁵ who gives not only an excellent summary of the literature, but also his own results with the test and his experience of the immunisation of 1400 children with scarlet fever toxin. Dr. Zingher believes the test to be "a reliable index of immunity and susceptibility to scarlet fever," and it would appear that in the United States the question of detecting susceptibles and of protecting them by inoculation is being taken up with the same thoroughness which has characterised American work on the Schick reaction and toxin-antitoxin inoculation.

We commenced investigating this interesting reaction about six months ago, and our results have been distinctly encouraging, although, no doubt owing to the use of too weak a toxin, they have not been as consistent as those obtained by Zingher. Nevertheless, they distinctly point to the general reliability of the test, and it is hoped that their publication may stimulate interest in this question in this country.

The toxin, as used by the Dicks, consists of a soluble toxic filtrate obtained from a culture of the specific hæmolytic streptococcus recovered from the throats of scarlet fever patients. A dilution of approximately 1:1000, but varying in accordance with the strength of the filtrates employed, is introduced intradermally, as in the Schick test, in a dose of from 0.1 to 0.2 c.cm., the former amount being considered sufficient. At present, unfortunately, it would appear that the only practicable method of standardisation consists in testing a known human reactor with the filtrate under investigation and comparing the results with those of a filtrate already found reliable.

Strains of Streptococci Employed.

In all, filtrates were obtained from seven strains of hæmolytic streptococci isolated from the throats of seven early typical cases of scarlet fever.

Case.	Sex.	Age.	Day of disease.	Case.	Sex.	Age.	Day of disease.
1	M.	14	3rd.	5	M.	5	3rd.
2	F.	12	2nd.	6	M.	9	2nd.
3	F.	21	2nd.	7	F.	3	1st.
4	M.	16	2nd.				

Secretion from the pharynx and tonsils was obtained by means of a throat swab and immediately spread on 5 per cent. rabbit-blood agar plates, which were then placed at once in the incubator. After 24 hours' incubation a large number of colonies of a hæmolytic streptococcus was found in every case, the zone of hæmolysis round each colony being well marked. Typical colonies were transferred to blood-agar slopes and re-plated on blood agar three times to

ensure purity. Each strain was tested for its fermentative reactions in Hiss's serum-water medium. All strains gave the same result—namely, acid production in lactose, glucose, and salicin, and no action on mannite, raffinose, and inulin. The stock cultures of these streptococci are subcultured at four days' interval in rabbit-blood broth.

Preparation of the "Toxin."

Flasks containing 100 c.cm. lab.-lemco broth pH 7.5, with 0.5 c.cm. defibrinated rabbit blood, were incubated overnight to test for sterility. They were then inoculated from a 16-hour culture of the streptococcus on blood agar, and incubated for five days at 37.5° C. The growth was profuse and the red blood corpuscles completely hæmolyzed. Films were made from each broth culture to ensure that a pure culture of the streptococcus was present. The broth cultures were centrifuged at high speed for 30 minutes, and the clear supernatant fluid then filtered through a tested Berkefeld V filter, using a negative pressure of 200 mm. Hg. The resultant filtrate was carefully tested for sterility on blood-agar plates incubated both aerobically and anaerobically. In no instance did contamination occur. The filtrate was then stored in the ice-box, and when required diluted 1 in 100 with normal saline. This 1 in 100 dilution was sent out in 10 c.cm. rubber-stoppered bottles, each batch of diluted toxin being again examined to ensure its sterility. These toxins are referred to as Nos. 1 to 7, denoting the case of scarlet fever from which the hæmolytic streptococcus was derived. The more recent batches of toxin have been made from 2 per cent. rabbit-blood broth.

It may be mentioned that a hæmolytic streptococcus was obtained at the first attempt from all the seven cases examined. Most of the work was done with filtrates Nos. 3, 4, 5, and 6. Of these No. 3 appeared to be weaker than the others and is chiefly responsible for lowering the general percentage of positive results. Ultimately it was used in lower dilution, 1:750 and 1:500. The other three filtrates were tested only, and while all gave consistent results, one of them, No. 2, gave a lower percentage of positive results than the other two, and may be considered analogous to No. 3.

The Reaction.

The technique is identical with that of the Schick test, and the diluted toxin must be introduced into the skin with the same precision if reliable results are to be obtained. A control with heated toxin should always be employed as pseudo-reactions are liable to occur, particularly as age advances. The toxin is much more resistant to heat than that of diphtheria and requires boiling for one hour before it can be used as a control. A positive reaction resembles very closely that of Schick, an inflammatory area about the size of a shilling appearing at the point of inoculation, varying in intensity from a deep red with some induration to a faint pink with none. An interesting difference, however, is that the Dick reaction appears much earlier and may be recognised at from four to six hours after inoculation. It is probably at its best within 24 hours; indeed, we found that the results given by a 12-hour reading had seldom to be altered on subsequent inspections, and that in some subjects the reaction was less intense at the 24-hour reading. Nearly all our reactions, moreover, had completely disappeared in 48 hours and pigmentation was not observed. Zingher, however, reports that the reactions may be sufficiently pigmented to be visible after six or seven days, and it is quite probable that our filtrates have been too weak. He explains the rapid appearance of the Dick reaction by the fact that the local action of scarlet fever toxin is primarily on the capillary blood-vessels.

Pseudo-reactions have not been very common, a fact readily explained when it is considered that the tests were made chiefly in children. Owing to the usual lack of pigmentation of the true reaction it is practically impossible to distinguish them unless control tests are used.

Results.

We have tested at the Edinburgh City Hospital 883 individuals in all, 441 of whom were scarlet fever

patients at different stages of the disease, and 442 were either patients with other diseases, chiefly diphtheria, measles, and whooping-cough, or members of the staff and their children. Our first observation was certainly impressive. It was thought advisable to make the first trial of the reaction on the medical staff, numbering six. Of these three had had scarlet fever and all were negative. The other three had not had the fever and two were positive. The third was negative, but it was already known that his blood serum gave a positive Schulz-Charlton reaction, blanching a scarlet fever rash, and that he was therefore almost certainly immune.

Table I. shows the percentage of positive results obtained at different ages in the 442 individuals not suffering from scarlet fever. In the last column we have taken the liberty of showing Dr. Zingher's percentages, obtained from a very much larger number

TABLE I.—Showing Percentage of Positive Dick Tests in 442 Individuals not Suffering from Scarlet Fever.

Age-period in years.	Total.	Negative.	Positive.	Positive percentage.	Dr. Zingher's positive percentage.
0- $\frac{1}{2}$	4	4	0	0	44.8
$\frac{1}{2}$ -1	14	13	1	7.1	64.2
1-2	35	21	14	40.0	70.7
2-3	28	9	19	67.8	67.8
3-4	45	20	25	55.5	59.4
4-5	45	15	30	66.6	46.4
5-10	129	53	76	58.8	35.4
10-15	57	27	30	52.6	25.4
15-20	26	16	10	38.4	26.3
20-30	39	20	19	48.7	17.9
30-40	12	10	2	16.6	
40-50	4	2	2	50.0	
50-	4	4	0	0	—
Totals ..	442	214	228	51.5	—

(4570) of cases. Our own numbers, of course, are too small to give reliable results. The figures suggest, however, that, as in the case of diphtheria, immunity to scarlet fever is not acquired as early in Edinburgh as it is in New York. Our percentages, moreover, seem to show that susceptibility to scarlet fever is highest just at those ages at which the fever is found most frequently to occur. Of the persons included in Table I., 45 gave a definite history of a previous attack of scarlet fever. Of these only eight gave positive reactions, the remainder, 80 per cent., being found to be negative. When it is considered that histories are not always accurate, this result may be regarded as reasonably satisfactory.

Table II. refers to the 441 scarlet fever patients examined and shows the percentage of positive and negative reactions at different stages of the disease. It will be noticed that 73 per cent. of the patients tested in the first three days of their fever gave

TABLE II.—Showing Results of Tests in 441 Scarlet Fever Patients in Different Stages of their Illness.

Stage of disease.	No. tested.	Positives.	Positive percentage.	Negatives.	Negative percentage.
In first 3 days ..	23	17	73.9	6	26.0
From 3rd-6th day ..	103	60	58.2	43	41.6
6th to 14th ..	78	19	24.3	59	75.6
Third week ..	68	16	23.5	52	76.4
Fourth ..	44	4	9.0	40	90.9
Fifth ..	60	10	16.6	50	83.3
Sixth ..	24	1	4.1	23	95.8
Over six weeks ..	41	3	7.3	38	92.6

positive reactions. This we admit to be a very unsatisfactory result as Dr. Zingher reports 100 per cent. positive at this early stage, and on the analogy of the Schick test his experience is what would naturally be expected. Our comparative failure points to a

probable weakness of our toxin, and it is obvious that faint or doubtful Dick reactions have very little chance of being detected against the background of a brilliant scarlet fever rash. It is not improbable that many slight reactions were missed.

On the other hand, allowing for slight irregularities in the table due, no doubt, to the small number of cases, the decline in susceptibility in successive weeks is demonstrated satisfactorily enough by our figures, and certainly suggests the general accuracy of the test. One hundred patients who had been found positive before the eleventh day of illness were re-tested. Sixty-four re-tests were made before the sixteenth day and 81.2 per cent. were negative. Thirty-six re-tests made between the thirtieth and fortieth days of illness gave a negative percentage of 75, the difference suggesting that a higher proportion of these late tests were made with a weak filtrate. Combining these groups it was found that 79 per cent. of 100 patients, originally positive, became negative by the fortieth day.

Two other experiments were made. Eleven individuals, all positive, were re-tested with a toxin, diluted not with saline solution, but with convalescent scarlet fever serum, which was known to produce a Schulz-Charlton blanching reaction on scarlet fever rashes. All were found to give completely negative results. Five positive susceptibles were protected with subcutaneous doses of from 3 to 5 c.cm. of convalescent serum and 48 hours later tested with an active filtrate. It was expected that the reaction would be prevented. Unfortunately this experiment failed completely, and all five patients gave good positive reactions. The failure in this case might be held to depend either on the weakness of the convalescent serum, although it gave a positive Schulz-Charlton test, or on an insufficiency in the amount of the dose injected.

Conclusions.

There appears to be no difficulty in obtaining from the throats of early cases of scarlet fever hæmolytic streptococci from which may be prepared filtrates which, when suitably diluted, may be safely injected intradermally and which cause a local reaction in persons who are presumably susceptible to scarlet fever or who are actually suffering from its early manifestations. This reaction is not liable to occur in the vast majority of persons who have already had scarlet fever, and in scarlet fever patients tends to become negative as convalescence advances. As regards those individuals who, not having had scarlet fever, nevertheless give negative reactions, it may be assumed that they have, as in the case of diphtheria, acquired immunity by exposure to subinfective doses of virus at some previous period of their existence. The chief difficulty at present is to standardise the toxin. If it is too weak the results will be unreliable the proportion of positive reactions being unduly low, as we are convinced is the case in this series of observations. One of us had, in the early days of the Schick reaction, equally unsatisfactory results, the commercial toxins then supplied giving perhaps 10 per cent. or 15 per cent. of positive results at age-periods at which nowadays 70 per cent. or 80 per cent. may confidently be expected. This difficulty can to some extent be overcome by carefully comparing the results of different filtrates on known human reactors. It is probably wise, when a satisfactorily acting filtrate is obtained, to use it exclusively, and we have no doubt our findings would have been much more consistent if we had done this from the first. Our work is still being carried on, and with the experience already gained we hope to obtain better and more convincing results.

References.

1. Dick, G. F., and Dick, Gladys H.: Jour. Amer. Med. Assoc., Jan. 26th, 1924.
2. Zingher, A.: Proc. Soc. Exper. Biol. and Med., March, 1924, xxi, 293.
3. Branch, C. E., and Edwards, F. G.: Jour. Amer. Med. Assoc., April 19th, 1924.
4. Dick, G. F., and Dick, Gladys H.: Ibid., Oct. 6th, 1923.
5. Zingher, A.: Ibid., August 9th, 1924.

A STUDY IN INFANT FEEDING.

FOOD REQUIREMENTS OF INFANTS.

By DONALD PATERSON, M.B. EDIN.,
M.R.C.P. LOND.,

PHYSICIAN FOR DISEASES OF CHILDREN, WESTMINSTER HOSPITAL,
HOSPITAL FOR SICK CHILDREN, AND THE INFANTS
HOSPITAL, WESTMINSTER;

AND

RUTH DARBY, M.B., CH.B. BIRM.,
SENIOR HOUSE PHYSICIAN, THE INFANTS HOSPITAL.

In this study an attempt has been made to reduce to some sort of order the clinical experience of ourselves and others in regard to infant feeding and to formulate some rules which may act as a "stepping off" place for those about to undertake the direction of feeding infants.

From the first it must be understood clearly that the healthy normal infant and the under-weight infant present different problems, and therefore separate rules have been laid down for each group. We consider that the first essential for anyone practising infant feeding is to think in terms of the amount of food required in 24 hours rather than in the individual feeds. A rough guide obtained by the study of 50 normal or overweight thriving infants is given below. It will be noted that the amounts mentioned are the amounts of the different foods per pound of body-weight per day. Although not strictly accurate in all cases, it is much nearer the truth than feeding infants by their age. The fatter and more above average weight the infant is, the less food he requires per pound of body-weight per day. Some infants are active, cry a lot, and require more food to make them thrive. These are more often than not male infants. Other infants sleep well, are inactive, and thrive on very little food, and most often these are girls. In warm weather all infants require less food than in a cold, stimulating atmosphere.

The individual infant, then, must be studied, and there is no rule, nor can there ever be any rule, applicable to all infants. It cannot be emphasised too strongly that the infant itself is the final judge in this most important point in infant feeding.

Guide for Normal Infants.

We believe that the following is near the truth in most cases of infant feeding and worth recording:—

Breast Milk.—The average full term breast-fed infant gets from $2\frac{1}{2}$ – $2\frac{1}{2}$ oz. of breast milk per pound of its body-weight in the day. That is, the average infant weighing 10 lb. requires from 22–25 oz. of breast milk in 24 hours. If fed five times in 24 hours each feed would consist of 5 oz. of breast milk.

Whole Cow's Milk (Boiled or Unboiled).—Since to cow's milk both sugar and cream (as dairy cream or emulsion of cod-liver oil) have to be added, the amount of cow's milk is found to be $1\frac{1}{2}$ oz. per pound of body-weight in the day. Enough water must be added to bring the total of the feed out to $2\frac{1}{2}$ oz. per pound of body-weight in the day. Sugar should be added in the quantity of one level teaspoon ($\frac{1}{2}$ dr.) per pound body-weight per day. A teaspoonful of cream or emulsion of cod-liver oil should be given three times in the day.

Dried Milk (Full Cream) (Glaxo, Cow and Gate, Ambrosia, &c.).—Two heaped teaspoons (2 dr.) per pound body-weight per day with sugar added—one level teaspoon ($\frac{1}{2}$ dr.) per pound body-weight per day. This should be dissolved in $2\frac{1}{2}$ oz. of water per pound body-weight per day. That is, a 10 lb. baby fed four-hourly (five feeds) would be given 20 dr. of dried milk and 5 dr. of sugar dissolved in 25 oz. of water in the day. That would be five feeds of 5 oz. of the mixture.

Dried Milk (Humanised) (Prescription Glaxo, Humanised Trufood, and Allenburys No. 1).— $2\frac{1}{2}$ dr. dissolved in $2\frac{1}{2}$ oz. of water per pound body-weight per day.

Guide for Wasted Infants.

In dealing with under-weight infants the problem of infant feeding presents many difficulties. Having excluded those cases of organic disease and gross congenital malformation, and decided that the case is one of the so-called idiopathic type, an examination of the hygiene and management of the child will, as a rule, reveal the source of error. Just as when dealing with premature infants the intake of food must be increased greatly per pound body-weight per day, so the same rule applies in dealing with the under-weight full term infant. The same difficulty, which is fundamental, also arises—namely, the ability of the under-nourished infant to digest a sufficiently large quantity of food to make it thrive without upsetting its digestive system.

It is stated by some authorities that when calculating the feed of an under-weight infant it should be calculated on the weight it should be for its age (the expected weight) rather than the weight which the infant actually is. We have never found this to be the case. The actual amount required lies somewhere between the amount calculated on the actual weight and the expected weight. To simplify matters, we have analysed 50 cases of malnutrition in infants who were doing well although grossly under weight. The following are our findings:—

Sweetened Condensed Milk (Nestlé's).—3–4 dr. (teaspoons) per pound body-weight in the day with a teaspoonful of emulsion of cod-liver oil three times daily.

Dried Full Cream Milk (Glaxo, Cow and Gate, Ambrosia, &c.).— $2\frac{1}{2}$ dr. (heaped teaspoons) per pound body-weight per day with sugar $\frac{1}{2}$ dr. per pound body-weight per day, and emulsion of cod-liver oil as before.

Dried Humanised Milk (Prescription Glaxo, Humanised Trufood, Allenburys No. 1).—3 dr. (heaped teaspoons) per pound body-weight per day.

Cow's Milk (Unboiled, Boiled, or Peptonised).—2 oz. per pound body-weight per day with emulsion of cod-liver oil, sugar, and water added as before.

Conclusions.

The following are the amounts per pound body-weight per day of various foods which should be given to—

(a) **Thriving Infants.**—Breast milk, $2\frac{1}{2}$ – $2\frac{1}{2}$ oz.; whole cow's milk, $1\frac{1}{2}$ oz. with sugar $\frac{1}{2}$ dr.; dried full cream milk, 2 dr., with sugar $\frac{1}{2}$ dr.; humanised dried milk, 2 dr.

(b) **Wasted Infants.**—Sweetened condensed milk, 3–4 dr. plus emulsion of cod-liver oil; dried full cream milk, $2\frac{1}{2}$ dr., with sugar $\frac{1}{2}$ dr.; dried humanised milk, 3 dr.; cow's milk, 2 oz., with sugar $\frac{1}{2}$ dr.

To each infant a teaspoonful of cream or cod-liver oil emulsion should be given three times daily before its feed, and the total of the feed, whether cow's milk, dried milk, or condensed milk with water added, should not exceed $2\frac{1}{2}$ oz. of fluid per pound body-weight per day.

A NEW nursing home for patients of limited means has been recently opened in the suburbs of Liverpool in connexion with the Liverpool Stanley Hospital. As the result of a large legacy by the late Mr. Robert Davies a mansion house with extensive grounds has been acquired some three miles from the centre of the city in open country, and has been converted into an up-to-date private hospital with 30 beds. There is an admirable operating theatre, and it is hoped shortly to provide an X ray department. The rooms are attractively panelled and of lofty proportions, and are arranged on two floors connected by an electric lift. Although in close association with the Stanley Hospital, the home is intended to be open to all persons of limited means. It is proposed to charge 3 guineas a week for beds, curtained off in rooms of two, three, or four each, and 4 guineas for single-bedded rooms. Professional fees will be reduced proportionately.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society took place on Jan. 23rd, when Colonel L. W. HARRISON, the President, delivered an address on the

Value of the Scientific Outlook to the Worker in Venereal Diseases.

The President said that in the course of his work, which brought him into contact with many specialists in venereal diseases, he had formed the opinion—which he would be glad to have grounds for changing—that many clinicians worked too much on empirical lines. They were content to follow along paths recommended by some enterprising author without any clear idea of the principles which should govern their line of action. Often also he found clinicians and pathologists working in compartments, entertaining some little mutual suspicion of one another, when the fact was that coöperation between these two classes of workers was essential to progress. Much of the criticism which had been levelled at the reliability of serum tests of syphilis sprang from a lack of knowledge on the part of many clinicians of the scientific principles and technique of the tests, and consequent inability to understand the point of view of the pathologist. He had heard clinicians criticise particular results as contrary to the clinical findings when it was clear to anyone with a knowledge of the tests in question that the pathologist most probably never intended the interpretation of his report which had been made of it by the complaining clinician. Sometimes, for example, a pathologist spoke of a "weakly positive" reaction, and the clinician, suspecting that the patient was suffering from syphilis, seized upon the word "positive" and used it as his justification for making the diagnosis of syphilis. A little knowledge of the technique and a little conversation with the pathologist would have prevented his acceptance of a "weakly positive" report as justifying anything more than a suspicion, and would have made it clear to him that between the plainly syphilitic reaction and the clearly negative there was a zone into which some non-syphilitic serum now and then wandered.

It would be a great gain, Colonel Harrison continued, if clinicians would study more closely the pathological processes and have more sympathy with laboratory work. Workers in venereal diseases, perhaps more than in any other branch of medicine, had occasion to be grateful to laboratory research. He need only mention a few examples. The arsenobenzol compounds were largely the product of pure research. The bismuth treatment owed its existence to a surmise by a chemist that from its chemical structure bismuth should be anti-spirochætal. To the laboratory were due the serum tests of syphilis and the discovery of the micro-organisms of that disease and of gonorrhœa. Histologists had shown the pathological processes at work in both these diseases, and from them much had been learned of the real problem in treatment as well as something of the lines on which to solve the problem. The histologist also had shown intimately the toxic effects of the anti-syphilitic treatment, and the biochemist had indicated some of the ways in which the toxic effects might be avoided. These were only a few of the debts which the clinician owed to the laboratory worker. Colonel Harrison also spoke of the value of a laboratory training to the clinician. Habits of thought which were developed in laboratory research assisted him greatly in solving his clinical problems. The laboratory worker had the advantage over the clinician that his observations could be more exact, he obtained his results much more quickly, and wrong processes of thought were sooner corrected. Many pitfalls would

be avoided if such methods of thought were adopted more extensively by clinicians. He illustrated his remarks by a reference to criticisms of the vaccine treatment of gonorrhœa. Many of these criticisms were based merely on desultory observations, without any exact computations of results as to complications, period of infectivity, or the possibility of the vaccine employed in a particular case being an anti-immuniser. There was too much generalisation from the mere impression that in a given set of cases the non-vaccinated did as well as the vaccinated.

The pathologist, Colonel Harrison concluded, as well as the clinician, had much to gain from closer coöperation. The pathologist made up his vaccines from such strains as came to him, but everyone knew that strains of micro-organisms varied in their immunising power. The pathologist had no means of knowing whether he was putting a majority of good immunisers or the reverse into his vaccine, and there was little wonder that the clinician gained a bad impression. The clinician might help a little, at any rate, by his observation of the immunising powers of different strains on the patients who provided them. Two workers by coöperation could at least work out the problem in a way which would be impossible to either of them singly.

Vaccine-therapy of Gonococcal Infections.

Dr. P. N. PANTON then opened a discussion on the Vaccine-therapy of Gonococcal Infections. His remarks were limited to a description of some original experimental work not yet completed which it was desired should not be published at the moment.

Dr. ARNOLD RENSHAW said that in the treatment of gonococcal infections by vaccine-therapy there were four things to be considered: (1) Specific vaccine-therapy for the gonococcus; (2) specific vaccine-therapy for associated organisms; (3) non-specific vaccine-therapy; (4) general conclusions. The significant facts with regard to gonorrhœa were its great tendency to relapse, its tendency to become chronic, and, when cured, the ease of reinfection. This indicated poor immunity response, and supporting views were the variable ocular resistance to infection, one eye often showing more reaction than the other, and also the length of time the organisms could remain alive in the prostate, as evidenced by Cobbledick's investigations. A further difficulty with regard to vaccine treatment when using stock vaccines was the number of strains of gonococci which existed. Torrey, in 1907, claimed at least seven different strains, and after further work, which was still proceeding, this investigator believed that it was not possible to demonstrate definite groups such as occurred amongst pneumococci and even meningococci. A study of 50 strains had shown that certain general strains existed possessing antigenic properties common to a considerable part of the "whole" species. There were, however, amongst recently isolated organisms a large number of variants which showed no specific agglutination towards each other, but which quite often showed some specific relationship to one or more of the specific strains. These variants overlapped in such a way that it was not possible to divide them into special groups. After many references to literature, the speaker's general conclusion was that too much attention had been focused upon opsonins, &c.—namely, on the molecules surrounding the gonococcus—and not enough on those molecules which would "bang their way through the bacterial envelope." In other words, chemo-therapeutics must be developed. Too much attention had been paid to a study of gonorrhœa, and too little to a study of the gonococcus. The chemistry of this organism must receive adequate attention. Vaccine-therapy of gonococcal infections must ultimately give way to something better, more vigorous, more decisive in action, and the diagnosis of gonococcal complications must be neater, more precise, and more generally applicable. Until that time came it behoved bacteriologists not to blind themselves to the deficiencies of the methods now available, but to look ahead to more

precise methods and to more adequate means, and to assist the clinician by studying other means of dealing with this organism. The sooner one admitted this position, and the earlier one became completely and entirely dissatisfied with the state of affairs, the sooner would efforts be launched along newer lines of attack.

Discussion.

Mr. T. P. BEDDOES agreed with the President that what was needed was greater harmony between the clinician and the pathologist. The individuality of the Englishman was rather a barrier. As shown by the papers read that evening, clinical work on this subject was capable of very great advance.

Major A. T. FROST said that, with regard to a remark by the President in his address earlier in the evening, he really thought the pathologist would have to take the bull by the horns and give the clinician an idea of what he had got to do to confirm a diagnosis if it was not strongly positive or negative. With regard to the particular point at issue—namely, the gonococcus—there he thought the pathologist was to blame, for he made a vaccine, labelled "gonococcal vaccine," and left the clinician to find his own way with regard to dosage. This Society, he thought, might be very well occupied in trying to standardise dosage. The gonococcus appeared to him to be a very fickle and dangerous organism. A good many stock vaccines prepared in large quantities were probably not of much value, and yet those vaccines were used for the purpose of drawing conclusions. The question of local immunity also should be followed up.

Major W. DE M. PEYTON believed that the vaccines had hitherto been given at too short intervals, and said his experience was that the interval between each dose ought to be lengthened out. A very excellent adjunct to vaccine-therapy, he thought, was the protein shock method which had recently been discussed, and he described his experience of this method, which he believed to be superior to the too frequent repetition of the vaccine. It had been his experience during the past few years that vaccines given at very frequent intervals were rather liable to destroy immunity, and perhaps workers had been rather encouraging the gonococcus to digest its own antibodies.

The PRESIDENT said that many new points had been raised that evening, but the discussion had made at least one thing clear—namely, that team work was essential, and that, as he had suggested in his address, the pathologist must collaborate with the clinician, and vice versa.

Dr. PANTON, in replying on the discussion, referred to the point raised by Dr. Peyton as to the frequency of dosage. He had often felt, in his own limited experience of giving vaccines, that one was in danger of breaking down immunity rather than of increasing immunity if vaccines were given over too long a space of time.

Dr. RENSHAW agreed that vaccines could be given too often. It was rather a question of over-sensitisation, so that one got a too vigorous tissue response to a very weak dose.

LISTERIAN SOCIETY.

At a meeting of this Society, held at King's College Hospital on Jan. 21st, Mr. C. P. G. WAKELEY being in the chair, Sir BERKELEY MOYNIHAN delivered a lecture on

Some Aspects of Cholelithiasis.

He began by giving a few statistical figures and then went on to explain the possible modes of infection of the gall-bladder, and illustrated this part of the lecture by a series of very beautiful lantern slides of microscopic sections of the entire thickness of the wall of the gall-bladder. These slides showed round-celled

infiltration beginning either in the submucosal or subperitoneal coats of the gall-bladder according as to whether the infection was conveyed either by the bile-ducts or by the blood-stream. Typhoid fever was always blood-borne, never bile-borne. The lecturer then laid emphasis on the fact that gall-stones were evidence of preceding gall-bladder disease, with the one exception of the single cholesterol stone, which gave rise to but did not follow inflammation of this viscus. He was at present engaged in research work on the cholesterol content of the blood, finding that in all cases of gall-stones there was a hypercholesterolaemia, and he showed charts comparing this with a similar condition found in infections of the urinary tract, during pregnancy, and in the premenstrual cycle. It was possible in every case of multiple stones to arrange the stones into three and sometimes four groups, and he considered that this fact indicated that the gall-bladder had been subjected to waves of infection. The lecturer cut out what he regarded as a pathological gall-bladder; one where its walls were thicker and less resilient than normal; where the typical blue colour was wanting; where the peritoneal covering had lost its normal sheen; and, most important of all, where there was a deposit of fat under the peritoneal coat of the gall-bladder. Such a viscus should invariably be removed whether it contained stones or not.

Sir Berkeley Moynihan went on to describe some of the difficulties in diagnosis by X rays, pointing out the fallacies which might arise in all but those cases where the gall-bladder gave a denser shadow than the gall-stones. It was important in all cases to employ the barium meal radiography, for by this means it was possible to show pressure displacement of the stomach, duodenum, and colon by a large distended gall-bladder or traction displacement by a shrunken adherent gall-bladder.

Finally, the lecturer urged his audience to cease regarding gall-bladder surgery as anything but the most difficult branch of abdominal surgery. It was not sufficient to be a good abdominal operator; long and uninterrupted experience of this particular branch was the all-important essential.

MANCHESTER MEDICAL SOCIETY.

A MEETING of this Society was held recently, Prof. G. R. MURRAY, the President, being in the chair.

Dr. G. J. LANGLEY read a paper on the

Use and Abuse of Digitalis.

He pointed out that abuse might be heaped upon the drug for two reasons: (1) its use under erring conditions, or (2) the use of an ineffectual preparation. The reputation of the digitalis group appeared to rest upon its power to increase the force and effectiveness of the cardiac stroke, but unequivocal evidence in the field of experimental pharmacology was difficult to find. The great complexity of cardiac problems made the interpretation of experimental results very difficult. Four or five factors determining the force of a cardiac stroke at once arose to the mind—e.g., slowing, increased intake, raised peripheral pressure, myocardial nutrition, carbon dioxide exchange. When the results obtained in undoubted cases of auricular fibrillation were considered, the whole aspect of the matter changed, and it was in this group that brilliant results were almost always obtained. Yet here again for complete success two factors were essential: (a) auricular fibrillation and (b) adequate dosage. The dosage of the drug necessary to produce effect, the various methods of physiological assay, and the toxic effects were discussed by Dr. Langley. Reasons were given for the belief that the optimum therapeutic dose and the toxic dose lay very near together, that the most important effect of the drug was the delay caused in bundle conduction, but that some effect was produced on the ventricular muscle,

as indicated by the inversion of the electrocardiographic T-wave. Eggleston's massive digitalis method was next discussed. A strong reason for the wider adoption of this method was that by its adoption it was possible to save the patient much time and discomfort. The method was reserved for fibrillation at high speed with relative or absolute cardiac failure, and the dose was calculated in terms of cat units. Particulars of 16 recently tested cases were given. The response in all cases except one was most successful and the rapidity of action saved much suffering. Eight hours after the dose the patient was relatively comfortable, and the pulse-rate in nearly every case was 80 per minute or less. In one case the drug appeared to have a definitely toxic effect upon the heart, the pulse speed being raised and the form of the electrocardiogram entirely changed. It was finally submitted that digitalis was specific for the control though not for the cure of auricular fibrillation, that it was likely to be useless and possibly dangerous in other diseases, that the therapeutic and the toxic dose lay very close together, and that massive digitalis dosage was both reasonable and desirable in suitable cases.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

A CLINICAL meeting of the Society was held at the Miller General Hospital, Greenwich, recently, Dr. H. S. KNIGHT, the President, being in the chair.

Exhibition of Cases and Specimens.

Mr. C. A. JOLL showed: (1) A woman, aged 52, who suffered from dyspepsia. She was unable to take solids, and had pain after food. At operation there was no trace of ulcer. For the visceroptosis the ascending colon was fixed and the appendix removed. The futility of colopexy was shown by her return recently when at operation an ulcer of the posterior wall of the stomach was excised. (2) A man, aged 34, who suffered from indigestion for seven years. He had flatulence and pain three to four hours after food. Vomiting relieved pain. The stomach was atonic. An ulcer was found on the posterior wall of the lesser curvature and there was much hypertrophy of the pylorus. Half the stomach was removed as Mr. Joll was of the opinion that the ulcer would not heal with posterior gastro-enterostomy. (3) Specimen showing a perforated gastric ulcer from a girl, aged 12 years, who died soon after admission. (4) A patient who had an operation two years ago for appendicitis. As he had a swelling he was operated on and a gangrenous and perforated appendix was removed; he developed a faecal fistula, now healed.

Mr. H. DAVIES showed: (1) A man, aged 78, from whom he removed a tumour, the size of a foetal head, from the biceps cruris. The tumour was painful, adherent to the skin but not to the bone, and proved to be a spindle-celled sarcoma. (2) A man with a Charcot knee-joint of sudden onset. There were loss of knee-jerks and Argyll Robertson pupils. He was treated by a walking calliper.

Dr. M. DAVIDSON showed: (1) A young man, a stoker, with wasting of the muscles supplied by the median and ulnar nerves of the left hand. He was otherwise healthy. There was no cervical rib nor evidence of progressive muscular atrophy. (2) A boy suffering from bronchiectasis and paresis of the orbicularis oris muscle and wasting of shoulder girdle muscles. (3) A woman with fibrosis of both lungs, who developed enlargements of the ends of the bones, fingers, wrists, and ankles.

Dr. H. PRITCHARD exhibited specimens from a case of infective endocarditis showing vegetations and infarcts in the spleen. The man had no fever and only complained of fainting attacks. Mitral regurgitation was present.

Reviews and Notices of Books.

ST. ANDREWS INSTITUTE.

Reports of the St. Andrews Institute for Clinical Research. Vol. II. London: Humphrey Milford, Oxford University Press. 1924. Pp. 190. 10s. 6d.

EVEN the busiest practitioner should spare the time necessary to study reports issued by this Institute. In the first place the workers there have his interest particularly at heart and are concerned to produce work whose clinical application shall follow as closely as possible behind its academic interest, and in the second place they have the habit of putting forward their results in an attractive way. The second volume maintains the high standard of the first; it contains ten papers of great interest on physiologico-clinical matters, centring mainly around the problems of the reflex arc and cellular action.

The late Sir James Mackenzie, until recently Hon. Director, was responsible for the first two papers, the substance of which has been published. In the first of these the various forms of irregular pulse are considered, sphygmographic and venous tracings being shown parallel with diagrams which display the processes at work in the heart substance. In the second there is a further elaboration of the principle enunciated in the first volume of "Reports"—viz., that the great majority of the symptoms of disease are of the nature of a disturbance of a reflex process. In the succeeding paper Dr. A. Walker briefly cites two cases of tremor and fibrillation in muscle supporting the view that nerves of supply exert control on the muscles innervated.

Most practitioners have learned by now that the old academic signs of heart failure are not the best clinical tests of the efficiency of myocardium. Dr. James Orr, in a previously unpublished paper entitled "Cardiac Pain in its Relation to the Response to Muscular Effort," discourses further on this subject. The criterion of inefficiency is the prematurity of onset of symptoms of over-taxation, applied to the daily round and common task, not to any standard test or special exercises. Dr. Orr quotes, with excellent illustrations, 13 cases showing that an impaired heart which is able to maintain an adequate blood-supply to the body manifests its condition by pain, while breathlessness supervenes when the output is inadequate. Prof. P. T. Herring writes on the Regulating and Reflex Processes, and reviews the present opinions of the Institute with regard to the general principles underlying reflex action and their application to abnormal functioning. He also reprints his paper on the Law of Fluctuation, previously published in *Brain*, in which it is suggested that the multiplication of receptors and branches of the neurone at the periphery and of dendrites at the synapse is due to the need to supply relays of the readily fatigable units to serve the indefatigable nerve fibre. He also illustrates the conception of relays of fibres, working alternately under the "all or nothing" law, in continuously acting muscles, such as the diaphragm and heart.

Next Prof. David Waterston records an investigation into the sensory activities of the skin for touch and temperature, as a result of which he concludes that deformation of the skin is the effective stimulus for touch sensation, the epithelial cells themselves acting as the receptors. The baffling variations in temperature-spots noted by other observers are explained by the law of fluctuation, only a few spots being active at any one time, as, being readily fatigued, they are soon replaced by others not previously active. Drs. J. H. P. Paton and A. Rowand publish a report on 15 radiograms of normal infants' chests in which they found considerable shadowing around and radiating from the roof of the lung, probably due to blood-vessels, and much variation in the shape of the heart shadow. This is another reminder of the necessity for knowing more about

the normal before we begin to dogmatise on the pathological in X ray work. Dr. Paton also contributes a clinical study of a mild influenza epidemic in the same school as that which formed the subject of his paper in the first volume of reports. He concludes that the incubation period is normally 48 hours and the period of infectivity at least six days, that acquired immunity is of short duration, and that prophylactic vaccination does not seem likely to be of value.

The concluding paper in the volume is a reprint of the observations of Prof. Herring and Dr. F. G. Macnaughton on the lymphatic system, with special reference to tuberculosis. In the introduction the references to previous appearance of certain of the contributions in medical journals have not been checked.

DYSPEPSIA: ITS RELATION AND TREATMENT.

Second edition, revised. By W. SOLTAU FENWICK, M.D., B.S. Lond., late Physician to the Evelina Hospital for Sick Children. London: W. B. Saunders Company, Ltd. 1924. Pp. 515. 24s.

THIS book cannot be called representative of the views held by modern observers of the phenomena of dyspepsia; indeed, the author ignores recent research completely, his general views diverging from those which to-day are accepted either as authoritative or as replacing former ones. But there is, we hasten to say, no pretence whatever in the volume to cover grounds unsurveyed by the author. Of the mass of references given in the bibliography but a small proportion has reference to work published during the present century, and as far as we have been able to see there are only four allusions to work which was done during the last 15 years, while of these three concern contributions from the author himself. There is no reference we think to the work of A. J. Carlson, B. B. Crohn, M. E. Rehfuess, J. C. Roux, A. Alvarez, C. Moutier, P. Le Noir, A. F. Hurst, C. Bolton, T. I. Bennett, or D. Hunter, and only a few of the many distinguished surgeons whose activity all over the world has thrown a flood of light on the problems of dyspepsia are mentioned. The author does not attempt to give the impression that he has sorted and evaluated this mass of modern work, and some doubt must arise as to the meaning of the statement that this, the second edition of the treatise, is revised. The first edition was published 14 or 15 years ago, and our review of it indicated that it contained helpful advice both in classification and therapeutics, and how could it be otherwise considering the author's experience? But a re-issue taking little or no account of the progress that has taken place in the interval following a first imprint requires more justification than can be found in the survival of popularity. We doubt if Dr. Fenwick has been wise to sanction the second edition without bringing the work more up to date either personally or through collaboration.

CHEMICAL DYNAMICS OF LIFE PHENOMENA.

By Prof. OTTO MEYERHOF, Kiel. London: J. B. Lippincott Company. 1924. Pp. 110. 12s. 6d.

THIS little book consists of five separate lectures by Prof. Meyerhof, published together as one of the monographs on experimental biology issued under the general editorship of Jacques Loeb, T. H. Morgan, and W. J. V. Osterhout. The first lecture, entitled "On the Physico-chemical Mechanism of Cell Respiration," was delivered in Cambridge in the summer of 1922 and was printed in its original form in THE LANCET (1923, i., 322). The remaining lectures were delivered at several places in America, including the Rockefeller Institute of New York. In the second lecture, entitled "Autoxidations in the

Cell," the author expresses the opinion that "the more closely we study the machinery of life in the isolated cell, the clearer it becomes that the chemical and physio-chemical processes predominate in it." In support of this he reviews the evidence for the continued respiration phenomena in unfertilised sea-urchins' eggs after destruction by grinding with sand, and in other autoxidisable systems such as glutathione, and comes to the conclusion that the unsaturated linolenic acid "represents the most essential oxygen acceptor of muscle in presence of SH." The lecture ends with the statement that "only the collection of a large number of data will complete the task of tracing the oxidation mechanism in the cell back to the events of inanimate nature." The second lecture, entitled "Chemical Relations between Respiration and Fermentation," is concerned with the demonstration of the fact that the dialysable thermostable "respiratory substance" contained in boiled extract of muscle can replace the co-enzyme of yeast in restarting the fermentation of yeast, from which the co-enzyme has been removed, and consequently that the same body can serve both for respiration and for fermentation. A further link between the two processes of carbohydrate metabolism is furnished by the demonstration of the occurrence of hexose phosphate esters in both cases and the remarkable fact that arsenates which accelerate fermentation by stimulating the cleavage of hexose phosphate, also increase the respiration of muscle, presumably by the same process of stimulating the hydrolysing enzyme hexose phosphatase. From these facts it is concluded that the co-enzyme common to respiration and fermentation may be concerned in the esterification of organic compounds with phosphoric acid, whereby such compounds become more unstable or susceptible to attack; the suggestion is indeed put forward that such esterification is a preliminary to the respiratory oxidation of fats as well as of carbohydrates. The lecture concludes with the significant remark that "it may indeed be considered a success of general physiology, and its mode of experimenting, that the chemical dynamics of a highly differentiated organ like the muscle could be partly revealed by the study of alcoholic fermentation of yeast."

The two remaining lectures on the "Transformation of Energy in Muscle" and the "Energetics of Cell Processes" form rather difficult reading and will only be appreciated by those who have some acquaintance with thermodynamical reasoning. The author expresses his indebtedness to others for the revision of the English text. This revision would appear to have been somewhat perfunctory; the style frequently betrays evidence of a too literal translation, which does not necessarily convey the exact meaning of the original.

BOOKS FOR NURSES.

Elementary Anatomy and Physiology for Nurses. Third edition. By H. CLIFFORD BARCLAY, M.D., F.R.C.S. Edin.; late Major R.A.M.C.; Examiner in Forensic Medicine, New Zealand University. London: Baillière, Tindall and Cox. 1924. Pp. 411. 12s.

THIS book is a remarkable one, its title giving no hint of its scope or worth. It is intended as an introduction for nurses to the scientific foundations of their work, and to the principles underlying the work of physicians and surgeons. The author premises that some knowledge of anatomy and physiology are essential for an intelligent comprehension of a nurse's duties, but he goes further and treats of these subjects as branches of the wider subject of biology. In his hands the result is a logical and orderly review of life, its origin, its conditions, and its meaning, commencing with the vague movements of an amoeba in search of food and ending with what are, perhaps, the equally vague efforts of the human psyche after happiness. The first half of the book is devoted to a

brief but clear sketch of human anatomy, but it is in the second half that the author really finds himself. A sketch of evolution and of the nature of protoplasm leads up to a series of short chapters on the physiology of the various organs and vital processes. This is followed by a very complete discussion on embryology in its relation to defects, one of the best chapters in the book. Last comes a series of chapters on modern aspects of psychology.

The author has succeeded in an ambitious undertaking. Writing in an easy and simple style he manages to elucidate various difficult conceptions by homely illustrations, and to carry his reader with him throughout. For the purpose for which it is intended the book could scarcely be surpassed, but it ought to appeal to an even wider circle. No better introduction to medical work could well be placed in the hands of a student, and we venture to think that there are few medical men who might not read it with profit.

Text-book for Fever Nurses. Revised edition. By GRACE H. GIFFEN DUNDAS, F.R.C.S.I., D.P.H. Camb. Edinburgh: William Bryce. 1924. Pp. 228. 4s. 6d.

THIS little book can hardly fail to be useful to fever nurses. It is divided into two parts, the first of which is devoted to anatomy and physiology and the second to the principles of fever nursing and to the characteristics of the infectious diseases. It supplies the information required by the syllabus of the Fever Nurses Association, and as the examinations have now been transferred to the General Nursing Council appendices have been added to this edition designed to meet the requirements of that body. The section on hygiene introduced with this object appears to us to be somewhat meagre; what little information is given about food stuffs and values might well be expanded in another edition. Information that the incubation periods of rubella, measles, and chicken-pox are "about a fortnight" is hardly adequate. Surely the possible limits of the incubation period in each case should be laid down with more exactness with a view to quarantine. Until the General Nursing Council has held more examinations it is difficult to know what standard is required. So far as we can judge, the fever nurse with a good knowledge of the contents of this little book should not fear the result, and many teachers may feel that the author's estimate of what a nurse should know is more reasonable than that suggested in the syllabus of the Council.

Dr. Dundas in her preface emphasises the need of careful study of the diagrams and models which all hospitals nowadays provide. Otherwise, if this opportunity were not available, the nurse would have little chance of profiting from the study of a book without illustrations. But to supplement hospital lectures and for the purpose of revision the book seems admirably adapted, and it has the advantage of being simply and clearly written.

The Care of Tuberculosis. A Treatise for Nurses, Public Health Workers, and all those who are interested in the care of the tuberculous. By J. A. MYERS, Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health, Graduate and Medical Schools, University of Minnesota. With an Introduction by RICHARD OLDING BEARD, M.D., Associate Professor of Physiology, University of Minnesota. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 229. 10s.

LIKE many other authors of popular books on tuberculosis, Prof. Myers found, after teaching nurses the elements of tuberculosis, that it was desirable to summarise his teachings in a book. It seems almost inevitable that lecturing on tuberculosis for a certain number of years should culminate in this manner, and though few of the books belonging to this class

are likely to enjoy a wide circulation for this reason, among others, that they are so numerous, they are calculated to be most useful to the tuberculosis workers in the author's sphere of influence. Some of us can best acquire information by the ear, and others by the eye; and the teacher most likely to transfer his knowledge successfully to others is he who employs both means. Of the book it is necessary only to say that it gives a perfectly sound and impartial account of the most salient features of our present knowledge of tuberculosis. There are few specialists in tuberculosis whose knowledge thereof is not impaired by fads and foibles. The author may not be bereft of these afflictions, but he certainly does not impose them on his readers. In his account of artificial pneumothorax he mentions a fact, not generally known, that Dr. E. L. Trudeau, "after having suffered at intervals for nearly 40 years from pulmonary tuberculosis, was entirely relieved of symptoms from the date of the collapse of the diseased lung, two years before his death, resulting from other causes, at the age of 67 years."

ADVENTURES IN TRIPOLI.

A Doctor in the Desert. By ERNEST H. GRIFFIN, D.S.O., M.C. London: Philip Allan and Co. 1921. Pp. 298. 10s. 6d.

FEW men have greater opportunities for indulging their tastes, should these lie in the direction of travel and adventure, than the doctor. Explorers, prospectors, and hunters are always prepared to include medical men in their parties, and when the nations are at variance the demand is so great from all branches of the fighting services and their allied organisations that even the naturally stay-at-home doctors find themselves pitchforked into queer places.

Dr. Griffin, being very far from a stay-at-home, seized the opportunity offered by the Italian annexation of Tripoli. In the autumn of 1912 he took service under the British Red Crescent Society, and his book records his experiences during the months in which he served with the Turks and Arabs. Like some others who have lived among them, Dr. Griffin is full of sympathy and admiration for the Turk. He does not see him as the blood-stained monster of the Gladstonian tradition, but as a courteous and humane gentleman; and whether or no personal bias has coloured his narrative in this direction it would be well if those who allude always to the Turk as unspeakable would read of the distress caused among the Turkish officers on hearing of the atrocities committed by the invading Italian troops in the frontier Turkish villages. But in writing well of the Turks, Dr. Griffin does not fail to do justice to the way in which the present Italian Government are treating the inhabitants of the new Italian colony, which enjoys due civic and political liberties.

The many episodes of a long adventure which form the contents of this easily flowing narrative are well written as well as exciting, owing much of their interest to their diversity and the suddenness of their occurrence. And interspersed with these, with political reflections, and with detailed descriptions of medical work, we have notes on the geography, climate, and natural history of Tripolitana, which may be neither new nor profound, but which bring the scenes into the reader's eye with vividness, some good and well-selected pictures helping to the same end. When the Turks evacuated the country, Dr. Griffin remained behind to minister to the wants of the Arabs, among whom he made many close personal friends, but the closing chapters, which are among the most stirring in the book, show that his interest in Arab civilisation nearly cost him his life, and that his final escape was a hair-breadth one.

The book is one that should be read widely, for in every line it breathes that spirit of comprehension and tolerance which, if it infused the governments of

the world, would clear up many of the situations which now eventuate in war. There is one side of Dr. Griffin which would hold that such a consummation is worth all the effort that mankind can put out; and there is another side of him, equally revealed in his book, which would find a world without wars a colourless and dull affair.

JOURNALS.

JOURNAL OF PHYSIOLOGY. Vol. LIX., Nos. 4 and 5. 1924.—Twenty-four Hours' Observations on the Metabolism of Normal and Starving Subjects, by I. Cohen and E. C. Dodds. The urine of five normal men, three taking food and two starving, was examined at half-hourly intervals for 24 hours in order to determine the half-hourly variations of the urinary constituents, and if possible to assign some cause and also to determine to what extent exogenous factors operate. The majority of the blood constituents remained remarkably constant over a given period. There seems to be no material change in the urea-concentration of the blood because of changes in the level of the nitrogenous metabolism. The only blood constituent showing any marked variation is glucose. An alkaline tide is, it seems, associated with meals, and more particularly with gastric secretion. After breakfast there was a rise in the alveolar CO_2 tension, which corresponded with the secretion of HCl from the stomach, a slight rise in the pH of the urine, a fall in the A+N value, a fall in the ammonia coefficient, and a rise in the nitrogen coefficient. These changes were all reversed a little later when pancreatic secretion began to flow. This evidence supports very strongly the original contention of Bence Jones. The evidence of acidosis was present even after so short a period of starvation as 24 hours. The marked variations in the urinary diastase could not be attributed to meals, since variations occurred in the starvation controls. The urinary diastase content would seem to be quite independent of the intake of food. All the results emphasise the uselessness of analysing isolated specimens of urine, and of basing conclusions on short-time observations without rigid starvation controls.—Influence of CO_2 on the Absorption of Alcohol by the Gastric Mucosa, by Nora Edkins and Margaret M. Murray.—Influence of the Ovary on Pituitary Secretion, by W. E. Dixon and F. H. A. Marshall. (See Annotation, p. 243.)—Influence of Insulin on the Blood-sugar in the Heart-Lung Preparation, by F. Plattner. The experiments were made on dogs, 1 g. of glucose being added to the circulating blood. On the subsequent addition of insulin to the blood there is no increase in the rate of disappearance of blood-sugar so long as the heart-rate is not increased, but if the heart-rate increases after the addition of insulin the sugar disappearance is found to increase in the same ratio.—Mechanism of the Splenic Reaction to General CO Poisoning, by S. de Boer and D. C. Carroll. In animals poisoned with CO there are differences in the COHb content between the hæmoglobin of the splenic pulp and the arterial blood. The experiments were made on anaesthetised cats with a mixture of air and CO of known composition, and the B.P. and splenic volume recorded. In cats poisoned with CO the spleen volume decreases, the B.P. falls if the rate of poisoning is rapid, and either falls slightly or remains constant if the CO is slowly absorbed. The mechanism is very sensitive and responds to as low a percentage of COHb in the blood as 8 per cent. The decrease in volume of the spleen is independent of the B.P. changes, and is due to an active contraction of the spleen musculature. CO poisoning does not cause any vaso-constriction in the spleen. The excised surviving spleen does not contract, but dilates, when poisoned with CO, an effect due to oxygen-want. The spleen does not contract in response to general CO poisoning of the animal when it is removed from nervous connexion

with the body, either by nicotine poisoning or by decentralisation, although in each case the spleen itself is poisoned with CO. The contraction is not due to an effect on the adrenals or on the pituitary body. The spleen perfused with oxygenated Ringer but in normal nervous connexion with the body contracts when the animal is poisoned with CO. The spleen of the decerebrate cat contracts in response to general CO poisoning. It is concluded that the spleen contracts owing to the effect of CO in producing an oxygen-want in the spinal cord, and it is suggested that a function of the splenic contraction is to expel unpoisoned red cells into the blood, and so reduce the proportion of COHb to HbO_2 in the general circulation.—The Action of Pituitrin on the Splenic Volume. The same authors find that pituitrin does not cause a contraction of the excised spleen. The decrease in splenic volume which follows the intravenous injection of pituitrin in the intact animal is due to vaso-constriction. Pituitrin is without action on the plain muscle of the spleen.—Migration of Ova in the Rabbit, by A. S. Parkes. Ovariectomy on one side and salpingectomy on the other side make breeding conditional upon external migration of ova. Six rabbits operated on in this manner were successfully mated for three to four months without becoming pregnant, and showed no signs of pregnancy when killed. Ovarian excision and salpingectomy on the same side was found not to prevent pregnancy. It is concluded that external migration of ova is very rare.—Effect of Certain Changes in the Perfusate upon the Isolated Auricles of the Rabbit, by E. Cowles Andrus.—The Heart Output During Respiratory Obstruction, by A. St. G. Huggett. The method employed on intact urethanised cats is described. The minute-volume and stroke-volume were measured during inspiratory, expiratory, and combined expiratory and inspiration obstruction (against a measured water pressure). Inspiratory obstruction increases the minute- and stroke-volumes of the heart. It causes an increase in oxygen consumption and a fall in the utilisation. Expiratory obstruction causes the exact reverse in all respects. Combined inspiratory and expiratory obstruction causes a decrease in the oxygen consumption and in the minute- and stroke-volumes. The oxygen utilisation is increased. The pulse-rate undergoes only a slight change. The circulation-rate is approximately proportional to the output per beat.—Action of Adrenalin on the Central Nervous System, by A. St. G. Huggett and J. Mellanby.—Latent Glandular Hermaphroditism: New "Unbolting" Experiments, by Alexander Lipschütz. The author has shown that the hormonal effect of an ovarian graft in the male is favoured when the testicular mass is reduced experimentally. With intra-testicular or intra-renal ovarian transplantation, in all cases in which one testicle was removed, a feminine hormonal effect was produced and the time of latency shortened. There was never a feminine hormonal effect when both testicles remained untouched in the body of the engrafted animal. These results give support to the view that there is an antagonism between the graft and the sex glands *in situ*. In a male guinea-pig with one ovary engrafted, both testicles being retained, the results were negative for seven weeks. Then both testicles were removed, and in less than ten days the feminine hormonal effect on the teats became manifest. It is like an obstacle or bolt being removed which so far inhibited the manifestation of the feminine hormonal effect. This is why the author uses the word "unbolting" to such experiments. The author regards those cases in which an ovarian graft "takes"—i.e., becomes implanted and vascularised—in the male, notwithstanding the presence of both testicles, as "latent glandular hermaphrodites," in which the hermaphroditism becomes somatically manifest after the antagonistic influence is suppressed. The simplest method of rendering manifest somatically the intersexual condition of similar cases is testicular castration (the "unbolting" experiment).

THE LANCET.

LONDON: SATURDAY, JANUARY 31, 1925.

THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.

MEMBERS of the medical profession throughout the country have been invited to consider during the present month the draft of the memorandum proposed to be placed before the Royal Commission on National Health Insurance by the appropriate Committee of the British Medical Association. This memorandum was summarised in our issue of Jan. 10th. It is evident from its scope that questions of far-reaching importance to the whole profession will come under the review of the Commission. It would be an idle and inappropriate figure of speech to say that the medical profession is at the parting of the ways. This was true in 1912, when the decision was taken to accept the national health insurance system on trial, and a majority of the general practitioners of this country were, in effect, enlisted in a vast new branch of public service. A system which for 13 years has provided medical treatment for practically the whole wage-earning population, now numbering 15 millions, and which, as appears from the evidence, enrols 12,000 out of the 18,000 general practitioners engaged in actual practice, has clearly come to stay.

The vexed question of remuneration which has unfortunately occupied far too prominent a place in the picture in the past is, for the time being, at rest, although new manifestations of it may arise if some of the developments discussed in the British Medical Association's memorandum should materialise. It is these developments to which, at their local meetings, the members of the profession have been applying their minds, and we think it wise that those who are not engaged in panel practice should have been invited to consider with their colleagues the whole of the vital questions of policy raised in the memorandum. These embrace such enormously important matters as the desirability of including the dependants of insured persons within the insurance scheme, the future position of patients now under the Poor-law, the question of the extension of the scope of the present medical scheme so as to include specialist and consultant services, and the possible disappearance of insurance committees and Poor-law guardians and the transfer of their functions to a new local health authority. Before the views put forward by these local gatherings of the profession are considered in council by a central body of representatives in March, we hope to lay before our readers a summary of the evidence given on behalf of the Minister of Health and the Scottish Board of Health as to what the insurance scheme—and not merely the medical benefit provisions—really comprises and how it has worked. This evidence gives us for the first time a comprehensive picture of the insurance system which can be summarised in a fairly short compass, and we get a considered and responsible expression of opinion of the working of that system. The official view as to possible developments will, it is understood, come later when the evidence of the medical profession and of the societies and other bodies working under the Act has been heard by the Commission.

We hope, following the first instalment of evidence in this issue which deals with the general scope of National Health Insurance, to give rather more fully, in perhaps three or four instalments, the official evidence as to the medical benefit system. This will be followed by a concise account of the evidence of the more important approved societies, of special points of interest in the working of the scheme in Scotland, and by a short review of the financial structure of the Insurance Acts and of the cost of their administration. In this way, while avoiding matters of detail too remote from their daily work to be of interest to medical practitioners, we shall hope to have placed our readers in possession of the more interesting features of the whole of the evidence given by the time the witnesses on behalf of the profession appear before the Commission in April. Thereafter each instalment of evidence will be summarised as it appears.

THE ACTION OF GOLD ON TUBERCULOUS TISSUES.

THE efforts to enlist gold in the therapy of tuberculosis have extended over many years. Hopeful results have been claimed by certain observers and others have been baffled and discouraged by the sharp reaction that has followed the administration of this metal. During the last year there have been persistent rumours from Denmark that the long awaited specific has been found and the full account of the preparation of gold synthesised by Prof. HOLGER MOLLGAARD has been eagerly looked for. His recently published book¹ sets out at some length the observations on which his claim is based. Sanoerysin, a white crystalline solid originally prepared in 1845 by FORDOS and GÉLIS, is a double thiosulphate of sodium and gold with the formula $3\text{Na}_2\text{S}_2\text{O}_3 \cdot \text{Au}_2\text{S}_2\text{O}_3 \cdot 4\text{H}_2\text{O}$. By the original method only some 15 per cent. of the gold employed emerged in the finished product, but Dr. MOLLGAARD and his collaborators speak of a new synthesis which utilises 95 per cent. of the gold and gives a pure product after a single crystallisation. The right of producing this compound, registered under the name of "Sanoerysin," has been vested in the Danish Chemo-Therapeutic Company, of Copenhagen, and it will then be supplied, as we learn from the *Northern News Service*, to hospitals either directly or through some special institutions nominated by the Government. It is unfortunate that Dr. MOLLGAARD gives no indication in his book how the synthesis is achieved, for he cannot be willing for others to use an expensive and inferior method of synthesis when he knows of a better.

The chemical and physical properties of sanoerysin are dealt with in the book in great detail. One important property of the substance is that it does not ionise into true Au ions; metallic gold is only found on slow oxidation, and the authors believe that this process, if it were to take place in the body, should be of therapeutic value. The next section is devoted to what are called the "bacteriostrophic" properties of sanoerysin. Sanoerysin in dilution of

¹ Chemotherapy of Tuberculosis: Experimental Foundation and Preliminary Clinical Results. In collaboration with Prof. Dr. V. Bie, Blegdams Hospital, Copenhagen; Dr. O. Chievitz, Finsens Lysinstut, Copenhagen; Dr. J. Gravesen, Vejlefiords Sanatorium, Vejle; Dr. G. E. Permin, Frederiksberg Hospital, Copenhagen; Dr. K. Secher, Bispebjerg Hospital, Copenhagen; Dr. Strandgaard, Boserup Sanatorium, Roskilde; Dr. C. H. Würtzen, Øresunds Hospital, Copenhagen. By Holger Mollgaard, Prof. of Physiology, Physician, Royal Veterinary and Agricultural College, Copenhagen. Nyt Nordisk Forlag: Arnold Busck, Copenhagen. 1924. Pp. 419 and many plates. 25s.

one in a million and under is found to inhibit the growth of the tubercle bacillus in vitro, but the proof of actual bactericidal properties is rather vague. After washing inhibited cultures (method not given, nor any proofs that all the heavy metals had been removed) growth did not take place in bouillon, but if the cultures were injected into guinea-pigs, generalised tuberculosis developed. The further guinea-pig experiments do not carry us very far. The method adopted was to inject living culture and immediately to follow this by an injection of sanocrysin at the same site. The pigs were thereby protected from generalised tuberculosis in the majority of cases. The authors themselves evidently realise the fallacies attending this method, since they state (p. 31): "Owing to this fact and further because preventive experiments, where the therapeutical stuff is injected direct into the infected place, are of minor interest, many other chemical stuffs probably being able to kill tubercle bacilli when directly applicated on them. I have made only few experiments of this kind." The next chapter is devoted to the effect of sanocrysin on non-tuberculous animals. The general conclusion arrived at is that it is non-toxic in doses of 0.2 g. per kilo of body-weight. Slight albuminuria may result. Renal function was judged by the excretion of administered iodine, an unfamiliar test in this country. If the test animal has any infection other than tuberculosis, the administration of sanocrysin is often followed by marked renal change; the authors remark that for the present "Sanocrysin should never be injected into organisms affected with other infectious diseases than tuberculosis." This observation, if confirmed, would restrict the use of the remedy considerably, since secondary infections in tuberculosis are extremely common. The authors then deal with the results of sanocrysin injections upon tuberculous animals. To put it briefly, these were followed by shock and rash, similar to tuberculin shock, which could be prevented, in most cases, by the administration of serum from a tuberculous animal. The authors assume that these results are due to the bactericidal effect of the sanocrysin, endotoxin being liberated, but other explanations might be advanced. Tuberculin shock may be produced, for example, by purely physical means, such as massage and exercise, and the sanocrysin might act by merely damaging the tissues and washing out bacteria and toxins. LYDIA M. DE WITT, writing² of the significance of these tuberculin reactions following the injection of gold salts, says: "From all experiments, we may conclude that the use of gold salts is not without danger. When active, the actions seem associated with marked hyperæmia and possible hæmorrhage in the neighbourhood of the tubercles." The most hopeful experiments recorded by Dr. MOLLGAARD are those with calves which were infected by intravenous injection of cultures, one animal being selected as a control and the remainder being treated with sanocrysin. The latter failed to develop tuberculosis, whilst the sole control died.

The literature of gold therapy being what it is, it is hardly surprising to find Dr. MOLLGAARD'S historical outline incomplete in some particulars. Thus there is no reference to the work of J. B. WHITE,³ who used a double chloride of sodium and gold, together with manganese chloride, and described promising clinical results, nor to that of MAYER,⁴ and many other workers, such as BETTMANN, JUNKER, POOR, and

GEBER, who have made similar investigations. Perhaps the most serious omission is that of the important paper by DE WITT, CADWELL, and LEAVELL,⁵ who studied the effect upon tuberculous animals of gold administered by mouth, intravenously or subcutaneously. They controlled their experiments by analysis of the tissues, and found that there was more gold in the tuberculous areas. Later DE WITT and SHERMAN extended these observations and their paper contains the following highly-important statements: "The stimulation of growth of tubercle bacilli by solutions of gold too dilute to kill or to inhibit is an important consideration in treatment, since it is difficult to keep the concentrate of gold in the animal body at or above the point required for inhibition." It may be that Dr. MOLLGAARD and his collaborators have not given full consideration to the case against gold therapy, and it is therefore the more disappointing that the product was not passed on at an earlier stage to other experimental workers for trial and confirmation. We have not been considering here the clinical trial of the remedy, with which more than half of the book deals. Clinical trial in tuberculosis, as experience has shown, is a ticklish affair.

SIR JAMES MACKENZIE.

THE death of Sir JAMES MACKENZIE removes from the ranks of medicine one of its greatest figures, one of the men who make medical history, and who, while accomplishing much themselves, provide a firm platform from which future researches can be carried forward. He regarded his work mainly as an illustration of what the well-equipped general practitioner of the future might do, and was never tired of pointing out what a mine of knowledge was here left unquarried. At a time when he was a recognised authority all over the world on the manifestations of heart disease, their significance, and their treatment, he acclaimed himself as a development of the general practitioner, inasmuch as all his working life up to that date had been done in general practice; and looking back at that work he would express his belief that to the men in general practice the whole field for future discovery was open. His own history supported the force of his words. His results were the direct outcome of the minute observation of groups of patients under his personal care in circumstances where their conditions could be followed up, and where, as analogous symptoms appeared, definite research along indicated lines could be made. The first subject to which he would direct his attention while taking these exhaustive notes was pain, and his investigation into the character of pain in a large number of cases of visceral disease compelled him to differ from accepted views as to the possibility of defining precise superficial areas of altered sensation. He used all the chances offered by a mixed general practice to look below accepted knowledge, which he found confessedly unable to explain many symptoms or to suggest remedies in many circumstances; and with the splendid intention of setting such a condition of things right to some extent and in some direction he embarked upon an intensive study of cardiac disease. How his recognition and analysis of cardiac irregularities led in time to fundamental changes in diagnosis, prognosis, and treatment is indicated in our obituary notice, the last phase of his labours being sympathetically delineated through his collaborators. To the vast general deductions that characterised this phase no summary would do justice at the present moment; but to the works that he accomplished the highest acclaim is due. Mackenzie was one of the small group of men whose individual labours have revolutionised fundamental medical views.

² H. G. Wells, L. De Witt, and E. R. Long: *The Chemistry of Tuberculosis*. Williams and Wilkins Company, Baltimore, U.S.A. 1923. Pp. 397.

³ *Amer. Med. Surg. Bull.*, N.Y., vii., 1894, 388.

⁴ *Deutsch. Med. Woch.*, 1913, xxxix., 1678.

⁵ *Jour. Inf. Dis.*, 1918, xxiii., 425; *Jour. Pharm. Exp. Therap.*, 1918, ii., 357.

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1924.

THE Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infantile mortality during the year 1924.

	Birth-rate.	Death-rate.	Infant mortality-rate.
England and Wales	18.8	12.2	75
105 county boroughs and great towns, including London	19.3	12.3	80
157 smaller towns	18.9	11.2	71
London	18.6	12.0	69

The smaller towns are those with an estimated population in 1921 of 20,000-50,000. The (crude) death-rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civilian population only. The birth- and infantile mortality-rates for London have been provisionally corrected for transfers.

The Registrar-General remarks that the birth-rate of England and Wales as a whole is the lowest recorded except during the war years 1917-19. The death-rates are all appreciably higher than last year. These provisional figures, which are not likely to require substantial modification, have been issued for the information of medical officers of health.

THE CLAIMS OF THE DEFECTIVE CHILD.

ARREARS in the educational provision for defectives are serious. At the present time the accommodation available in special schools is sufficient for only 41,000 out of the 150,000 blind, deaf, physically and mentally defective, and epileptic children in England and Wales. More than half the day-school places are in London, and many education authorities do next to nothing for their unfortunates. The arrears of a decade cannot, of course, be made up in a day, but the Board of Education is pressing¹ local authorities to consider carefully which class of child shall have priority. The medical branch of the board would very sensibly give precedence to the claims of the blind and deaf. It is disconcerting to learn from Sir George Newman's report for 1923 that in 208 areas alone 281 totally blind and 484 totally deaf children were either attending ordinary schools in which they could obviously derive no benefit or were getting no teaching at all. Irreparable damage to mind, character, and power of acquiring technical skill follows such neglect in childhood, and the Board's patience is at last becoming exhausted, for, runs the circular, "the Board will not be prepared much longer to regard any authority as reasonably complying with the Education Act, 1921, unless all blind and deaf children in the area are properly ascertained and provided for." Except in large towns with at least 40,000 children on the rolls, day classes are impracticable and more institutions are needed. It is important that these should be well distributed over the country, as there are valid objections to sending young children great distances from home and much of the existing accommodation is for this reason wasted.

In discussing the position of the "physically defective" child, who in practice is usually a cripple, the Board realises that the most effective measures can be taken outside the school. A good orthopaedic scheme covering town and country districts in an area will, it is pointed out, cut off the supply of cripples at the source and will largely obviate the need for the expensive special schools of the older type. Such schemes are simple and inexpensive to run and in several areas they have already revolutionised the

prospects of the child with crippling disease or deformity. It is still possible, however, to find a P.D. school complete with costly ambulance service, and hardly a cripple child on the roll under surgical treatment or in a splint. The Board does well to guard against the reproduction of such anomalies. For the "mentally defective" child, on the other hand, preventive measures are not available and their education remains a problem as "costly as it is difficult." About 28,000 are now unprovided for. The special education they need must be given in small classes by specially trained teachers or it is not worth giving. Nothing is more certain, however, that such children if neglected in early life take their revenge on society later by a social inefficiency which expresses itself in pauperism, crime, and vice. It is suggested by the Board that even where special education cannot for various reasons be provided, an education authority should at once take certain inexpensive steps which are the foundations for any efficient scheme. The number of defective children should be correctly ascertained, such as cannot be accommodated in special schools should be supervised by skilled visitors trained to advise and help parents; and at school-leaving age such children as are likely to need permanent care and control should be notified to the Mental Deficiency Committee. Like the other schemes outlined in the circular, these measures, though admittedly incomplete, should add materially to the happiness and security of these unfortunate children and of their families.

SURGICAL TREATMENT OF PARALYTIC DEFORMITIES OF THE FOOT.

WRITING on this subject in the *American Journal of Surgery* for December, 1924, Dr. Leo Mayer, of New York, sums up usefully the history of tendon-transplantation and other procedures intended to correct the deformities and disabilities of infantile paralysis. He describes with commendable fullness the details of the operations which he himself has been accustomed to perform, details which, though they may seem trivial, make all the difference between functional success and failure. For, though the operation would may have healed readily and the transplanted tendons may be firmly attached at their new insertions, the object of the operation will not be secured if the direction of action of each transferred tendon has not had due consideration, or if there are adhesions between it and adjacent structures. Dr. Mayer describes the operations upon bone, which he has found necessary in the more severe and resistant deformities, with or without concomitant tendon-transfer. He gives some good reasons for preferring the measures which he describes in cases of talipes calcaneus, to the operation devised by Royal Whitman, which has the disadvantage, in a unilateral case, of still further shortening an already short limb.

FACIAL SURGERY.

Two books¹ have recently appeared on cosmetic surgery. The one deals with surgical trivialities, little alterations in the form of lips or eyelids which might appeal to a woman of fashion or of vanity. The other plunges straight away into the most ghastly injuries that even civilised warfare has been able to achieve, and indeed it is in the late war that it found its origin. Yet it is common knowledge that the dimensions of a defect bear no relation to its effect upon the patient, and that to a woman with nothing but herself to think of a slight droop of an eyelid may seem as terrible as the loss of half his face to a healthy man. It is, indeed, in its application to the

¹ Special Schools for Defective Children. Circular 1349 to Local Education Authorities, Jan. 12th, 1925.

¹ Facial Surgery. By H. P. Pickerill, C.B.E., M.D., M.S., Lieut.-Colonel, N.Z.M.C., Surgeon-in-Charge of Facial and Jaw Department, Duncedin Hospital; Membre d'Honneur Société Belge de Stomatologie; late Surgeon-in-Charge of the New Zealand Section, Queen Mary's Hospital, Sidcup. Edinburgh: E. and S. Livingstone, 1924. Pp. 162. 21s. Cosmetic Surgery. By Charles Conrad Miller, M.D. Philadelphia: Davis Company, 1924. Pp. 263. 8s.

minor defects of civil life that the work of the plastic surgeon of the war finds its outlet at the present day, and indeed some of these defects produce really serious deformity. Mr. Pickerill was one of the group of surgeons who worked in the later years of the war at the great hospital established by Queen Mary at Sidcup for the treatment of facial injuries, and he can claim his share in the advances made by the combined efforts of that group. The first part of his book deals with the methods which were there elaborated, and by many examples he illustrates their application to facial injuries of every degree and character. Excellent photographs and neat line drawings enable the reader to follow the operative steps, often very complex, by which the injuries were repaired and to appreciate the excellence of the results. The remainder of the book demonstrates the application of the methods to the more moderate requirements of civil life, such as the filling of defects due to the removal of growths, to lupus, syphilis, and other conditions. In a chapter on deformities he deals with hare-lip and cleft palate, and describes a new and interesting method of dealing with the latter condition. Though we may not always agree entirely with the methods advocated, the book is full of interest and suggestions, and we can strongly recommend it to the notice of all surgeons who aspire to deal with facial deformities. Dr. Miller deals solely with the lighter side of plastic surgery; his book is of real value in that it calls the attention of surgeons to the possibilities of a branch they are apt to neglect. The operations described are all done under local anaesthesia and they range between the correction of a hump nose in a bruiser and the dainty formation of a dimple in a lady of fashion. It is unfortunate that no photos of actual cases are given to enable us to compare the lustre of these reconstructed gems with that of the genuine article. But the methods advocated are logical and sound in conception, and although they seem very simple anyone who is skilled in the art will appreciate the nice judgment they require. The surgery of beauty is a risky field for the amateur, but those who master its principles will find its problems not without interest.

ARSENIC IN THE URINE.

IN the current issue of the *Analyst* an important paper appears by Mr. H. E. Cox, M.Sc., Ph.D., on the determination of small quantities of arsenic, and on the occurrence of this element in normal urine and in fish. The stimulus to Dr. Cox's work was given by the work of the Commission on Arsenic Poisoning in Sweden, whose report appeared a year ago (THE LANCET, 1923, ii., 531). Much of the value of both rests on details of experimental technique; both the Swedish Commission and Dr. Cox stress the importance of the complete destruction of all the organic matter present in the substance being assayed for arsenic, as fully as is done in the Kjeldahl process of estimating total nitrogen. The subsequent complete removal of nitric acid and nitric oxides is also essential for, unlike the Kjeldahl process, the addition of nitric acid is part of the method, the excess being removed by adding a considerable quantity of ammonium oxalate. It is stated that unless the organic matter is thus destroyed the arsenic is not rendered soluble or left in a form suitable for estimation by one of the well-known methods. While, no doubt, this is true, it must be borne in mind that a far larger quantity of reagents must be employed in each such test than is required for the older process where the organic matter is only partly destroyed. Dr. Cox states in one place that he used arsenic-free reagents and in another that his blank control always showed the same minimal figure which was constant. The term "arsenic-free" as applied to reagents is relative; it is impossible to obtain reagents literally free from arsenic. Many reputable chemical manufacturers label their strong acids "arsenic less than 0.1 part per million," and many samples of reagents

contain less than this quantity. It becomes necessary, therefore, to exercise caution, especially regarding some of the smaller values before accepting the conclusions either of Dr. Cox or of the Swedish Commission, especially as according to the former the amounts taken of his reagents contained in some cases as much arsenic as the amount of urine taken for experiment contained. This was, of course, allowed for, but it cannot be regarded as satisfactory when dealing with very minute amounts. The following tables give the Swedish figures for urine and fish:—

Urine.

One hundred persons on a known hospital diet:—

As ₂ O ₃ mg. per litre.	Percentage of cases.	As ₂ O ₃ mg. per litre.	Percentage of cases.
0.00-0.01	21.1	0.10-0.20	21.1
0.01-0.03	18.4	0.20-0.30	2.6
0.04-0.06	23.7	0.30-0.70	5.2
0.06-0.09	7.9		

Dr. Cox expresses the opinion that the arsenic figures given are rather too high.

Fish.

British—	Mg. of As ₂ O ₃ per 100 g. of fish.	British—	Mg. of As ₂ O ₃ per 100 g. of fish.
Whiting	0.04	Haddock	0.06
Plaice	0.14-0.30	Brill	0.03
Sole	0.03	Mackerel	0.05
Hake	0.03	Halibut	0.03
Herring	0.03	Turbot	0.05
Cod	0.05		
Swedish—		Swedish—	
Mackerel	0.01	Plaice	0.05-0.09
Herring	0.03	Sole	0.01
Haddock	0.02	Cod	0.04

Dr. Cox's figures for urine (hospital patients):—

16 cases	Mg. of As ₂ O ₃ per litre.	Mg. of As ₂ O ₃ per day.
	0.00-0.09	0.00-0.09
Four cases on fish diet—		
1.	0.10	0.18
2.	0.25	0.19
3.	0.58	0.61
4.	0.33	—

It will be seen that in the main the figures are in agreement, and the interesting point emerges that some of Dr. Cox's higher values for urine were in patients partaking of a fish diet. This fact may be of importance in regard to patients recovering from a possible sublethal dose of arsenic, as, of course, fish is a common diet of convalescence. It must also be remembered that the B.P., 1914, arsenic limit of various drugs varies from 0.2 to 10 parts of arsenic per million, with certain exceptions. Although high-grade chemicals rarely, if ever, reach these limits, many hospitals for reasons of economy use less pure chemicals, adopting the B.P. as their standard. Certain observers in the past have found traces of arsenic frequently in the urine of healthy persons, but others have often examined urines taking for estimation far larger quantities of urine than Dr. Cox took, and have obtained negative results. No doubt this failure might be attributed to the want of employment of Dr. Cox's technique. The present position is one of difficulty. It may be fairly accepted that arsenic is present in the urine far more frequently than was previously suspected, but not, we venture to think, quite as frequently as Dr. Cox maintains. From the medico-legal standpoint his work will require some consideration, but where a possible fatal dose of arsenic has been administered the amount found in the urine and faeces within a reasonable time of the dose would be far greater than the amount found in the fish diet cases, and would be associated with clinical symptoms. It is, therefore, not very likely that Dr. Cox's discoveries will seriously complicate the medico-legal issue. As an example of the rate of excretion of arsenic we understand that, by the old method, arsenic has been found in the urine and faeces of a patient for 14 days after the administration of liq. arsenicalis Miii. t.d.s. for one day (9 minims in all). By the fifteenth day it had disappeared and none was detected during the next two days.

SOUTH AFRICAN MINE DUST.

It is some years since the pioneer methods of dust-sampling as practised in the South African gold mines first attracted and held the attention of those interested in the study of silicosis. There are two methods concerned—namely, the gravimetric (or sugar-tube) method in which dust is weighed, and the so-called konimetric (Gr. *kónis*, dust) method in which the particles are counted with the aid of a microscope. General confidence in these methods has apparently diminished because the gravimetric returns, though reliable within their limitations, did not afford the necessary information; while lack of correlation between the konimetric returns of different observers or groups of observers, and their not infrequent lack of correlation with simultaneous gravimetric returns, has shaken confidence in this the alternative method. In a well-illustrated monograph,¹ which has recently come into our hands, a group of workers at the South African Institute for Medical Research review the position as it appears to them on the Witwatersrand, and present their most recent technique for standard routine sampling in the mines whilst actually at work.

Dr. Mavrogordato states that, in 1911, 25 per cent. of employees contracted silicosis, developing the symptoms within a couple of years; in 1917 only about 6 per cent. of workers were affected by the disease, and they were now taking from nine to ten years to develop the symptoms; and in 1922 less than 3.5 per cent. of the men employed were contracting silicosis, and they required from nine to ten years to develop symptoms. He also points out that the results of "dust surveys" in 1915 registered by the gravimetric method an average of 4.9 mg. of dust per cubic metre of air, whereas in 1919 the average had fallen to 2.9 and in 1923 it was only 1.3. It is obvious, therefore, that the diminution in the amount of silicosis has gone hand in hand with the diminution in the dust content of the air, as measured by their methods, and this fact should give confidence in the value and reliability of these methods. He is very careful to make clear that the routine methods at present in practice, although the best available under actual working conditions in the mines, are by no means perfect, and there are still difficulties to be surmounted. Dr. Mavrogordato prefers the konimetric method for routine sampling to the gravimetric method because the former is less trouble, demands less skill and less equipment, while at the same time it gives more prompt returns. In taking the sample of dust the konimeter (Kotzé or circular pattern) causes a small volume (5-10 c.cm.) of air to pass at a high and definite velocity, through a standard narrow jet, and to impinge upon a glass slide covered with adhesive material (glycerine jelly). The dust particles are counted with a microscope giving a magnification of $\times 120$, using a fixed and standard illumination, and also a special arrangement of stop and condenser to obtain a definite dark-ground illumination so as to evade the ultra-microscopic effect as far as possible, since ultra-microscopic particles of silica are either innocuous or non-existent; large particles of silica are also comparatively unimportant, the particles producing silicosis measuring from 5μ - 0.25μ . When it is the latter alone that would have to be counted by a perfect method, the difficulties in the way of introducing such a method are obvious. Nevertheless the standard routine described is considered to yield sufficiently approximate returns with a minimum demand on the operator. The drawback of the method is that it measures the total air-borne particles but not necessarily silica; the complications introduced by carbon, by fog, and by water-soluble

particles have also to be considered, and some measures to overcome these troubles are described. Dr. Mavrogordato and his colleagues do not rest satisfied with the present routine methods, and they hope to obtain the help of the dust-sampling committee of the Chamber of Mines, of the Mines Department, and of the Mine Officials to enable them to test more recently introduced technique, not only in a laboratory, but, what is of more importance to them, also under actual working conditions of the mines; these recent methods include Palmer's method, Read's method, Greenburg and Smith's method, Owen's method, and the electrical precipitation method. Dust, of course, collects in the air of mines, owing to absence of efficient through ventilation; local ventilation is of no value. Dr. Mavrogordato suggests that Dr. Leonard Hill's kata-thermometer, because it is able to detect ventilation currents and estimate velocity of air movement, may give more information as to underground health conditions than any other single procedure; but we will require to know the minimum linear velocity which will keep dust diluted and which will dissipate any dust produced owing to some failure in the usual precautions.

It may surely be regarded as very creditable to have reduced the number of cases of silicosis from 25 per cent. in 1911 to less than 3.5 in 1923, an improvement which is attributed to the use of water to prevent dust production and also to some attempt to remove dust by mechanical ventilation. To reduce the case-incidence further, some fresh factor or factors must be introduced. Dr. Mavrogordato suggests (1) systematic through ventilation to the working places; (2) a preliminary treatment of the water used for spraying and washing down; and (3) perhaps the use of exhaust-hoods (Sheffield hood principle) in certain circumstances. There is evidence that "tube-trouble"—the machine water-tubes—may be responsible for intermittent exposure to relatively dense clouds of dust; it is considered that such intermittent exposure is the deciding factor in producing the disease in susceptible human subjects. The returns show that about 70 per cent. of the silicotic cases occur in men who have used machine drills at some time or other, although such men only amount to about 30 per cent. of the men employed underground at any one time. It seems reasonable then to suspect the machine-drills, and further research is planned to elucidate such problems.

THE INFLUENCE OF THE OVARY ON PITUITARY SECRETION.

RECENT researches on the condition known as pseudo-pregnancy have a direct bearing on the problem as to the cause of parturition. In the dog, rabbit, and some other animals the corpus luteum persists during pseudo-pregnancy in the same kind of way as it does during true pregnancy, and the uterus and mammary glands undergo growth in correlation with the growth of the corpus luteum. In the rabbit, which normally only ovulates after coition, the condition of pseudo-pregnancy can be induced by permitting the doe to have a sterile coition (as with a vasectomised buck). The corpus luteum after being apparently functionally active eventually undergoes involution, and in association with this process the uterus also regresses and the mammary glands begin to secrete milk. There is no clear evidence that the ovary has any direct influence in bringing about parturition.

In the current number of the *Journal of Physiology* W. E. Dixon and F. H. A. Marshall describe four experiments in which extracts of whole ovaries of rabbit and sow were employed, and the precise stage of pregnancy or of the oestrous cycle noted at which the animals were killed. Boiled Ringer extract of ovaries—rabbit and sow—was injected into the vein in dogs, the cerebro-spinal fluid collected at suitable intervals, and its effect on the uterus of a virgin guinea-pig tested in the usual way. Dixon

¹ Publications of the South African Institute for Medical Research, edited by W. Watkins-Pitchford, M.D. No. XVII., The Value of the Konimeter—being an Investigation into the Methods and Results of Dust Sampling as at Present Practised in the Mines of the Witwatersrand. By A. Mavrogordato, M.A., M.R.C.S., L.R.C.P., with the collaboration of J. Boyd, J. Innes, E. MacEwen, A. Pulford, L. G. Ray, G. D. Maynard, J. Moir, E. Cluver. Johannesburg. 5s.

had found that certain ovarian commercial extracts had an exciting effect on the pituitary gland when injected into a vein. If the cerebro-spinal fluid collected from this animal caused contraction of the virgin uterus suspended in Ringer's fluid, this showed that pituitrin had been secreted into the C.S.F. Normal ovarian secretion does not act directly in promoting uterine contraction, but does so indirectly through its action on the pituitary body. Moreover, this action is inhibited during pregnancy by the corpus luteum. The injection experiments show that in the presence of the fully formed and presumably functional corpora lutea, the normal ovarian secretion is largely in abeyance, and this is the condition for a short part of the time between the heat periods, but more particularly during pregnancy. The corpus luteum would seem so to dominate the ovarian metabolism at these periods that the ovarian secretion, which at other times activates the pituitary, is inhibited or else is neutralised by the secretion coming from the corpus luteum. At the close of pregnancy, when the corpora lutea are in an advanced state of involution, the normal ovarian secretory activity is once more produced, and the pituitary is excited to secrete in greater quantity. When the threshold stimulus of the pituitary secretion upon the uterus is reached and passed, the pains of labour set in and parturition results. The growing irritability of the uterus in the later stages of pregnancy is explained as being functionally correlated with the involution of the corpus luteum. The authors do not suggest that the ovario-pituitary endocrine mechanism is the sole factor in producing the labour-pains, as no doubt the foetus itself acts as a direct stimulus. The onset of labour cannot easily be accounted for without postulating some further exciting cause apart from the foetus and uterus. The authors agree that the phenomena attending the termination of pseudo-pregnancy point to the conclusion that the occurrence of a certain stage in the cyclic activity of the ovary is a factor in parturition.

Ovarian secretion accordingly does not bring about parturition by acting directly on the muscles of the uterus, although the secretion of the pituitary has a definite specific action on the muscles of the uterus; and the secretion of the ovary in the absence of fully formed (and therefore presumably functional) corpora lutea has a definite specific stimulating effect in promoting pituitary secretion. The secretion of the ovary in the presence of such corpora lutea, on the other hand, has no such effect, its action on the pituitary gland being completely negative. The corpus luteum so dominates the ovarian metabolism during pregnancy as to inhibit the normal ovarian secretion; but with the involution of the corpus luteum at the close of pregnancy the uterus shows an increased irritability, and eventually, when the ovarian endocrine mechanism is sufficiently re-established, the secretion, working through the intermediation of the pituitary, becomes an important factor in bringing about labour. The action of the ovary upon the pituitary undergoes a similar variation in the absence of pregnancy and during the oestrous cycle, the determining factor being whether corpora lutea are present or absent.

GERMAN LEARNING.

GERMAN medical science has sustained a heavy loss by the recent death of three eminent medical men, Prof. Strümpell, of Leipzig, Prof. Bumm and Prof. Morgenroth, of Berlin. Prof. Strümpell was born in 1852 in Dorpat in the Baltic Provinces of the Russian Empire, where his father held the chair of philosophy at the former German university. Strümpell began his career at the University of Leipzig, where he became assistant to Wunderlich, the physiologist, and to Wagner, the pathologist. He was later appointed ordinary professor of medicine at the universities of Erlangen, Breslau, and finally at Leipzig, where

he remained until his death. Strümpell's work is well known; his great handbook of special pathology and therapy has been published in 25 editions, apart from many translations. His first work was on the study of renal diseases, but afterwards he devoted himself nearly exclusively to the diseases of the nerves. His researches on tabes dorsalis, muscular atrophy, infantile paralysis, neuritis, and traumatic neurosis were published in *Deutsche Zeitschrift für Nervenheilkunde*, of which he was the editor. Strümpell was a man of great culture; his style, both in speaking and writing, was clear and precise, and he was an accomplished musician. A few months before his death he finished his memoirs which have recently been published. Prof. Bumm was born in 1857 in Würzburg, Bavaria. He became assistant to Scanzoni at the university of his native town, the greatest German gynaecologist and obstetrician of the time. Having occupied the chair of gynaecology successively at the Universities of Bâle and Halle, Bumm was called to Berlin in 1904. His chief study was gonorrhoea in women, puerperal fever, and the treatment of cancer by radium. Apart from the pathological and technical side of women's diseases, he was much interested in the problems of population. His renown as a gynaecologist and obstetrician was very great, and he had, perhaps, the largest consultant practice in Germany. Latterly he suffered from gall-stones which, whilst he was on a holiday in Munich, produced a perforation of the gall-bladder, necessitating an immediate operation which unfortunately proved fatal. Prof. Morgenroth was less known to the general public than Bumm, as he was not engaged in private practice. He was born in Bamberg, Bavaria, and after his university training became an assistant to Ehrlich at Frankfurt, where he published his first researches concerning immunisation and hæmolysins. Having worked for some time at the German zoological station at Naples, he was appointed, after his return home, as assistant to the pathological institute of Berlin and afterwards became head of the chemotherapeutic department of the Robert Koch Institute. In this capacity he made his most important researches; he discovered optochin, a specific agent against infection by pneumococci, eucupin and vuzin, agents against the infection of wounds, which were successfully used during the war, and lately rivanol, a valuable agent against infection by staphylococci. He died at the age of 53 years from leukæmia.

THE INFLUENCE OF THE DRAMA.

PROPENSITIES which are labelled virtues or vices often are not so per se, and in a similar way it is easy to name a thing as a luxury and treat it as such when, if it were properly accepted in the scheme of life, it would be revealed as a necessity. This truism was neatly put by Sir StClair Thomson, the President at the social evening at the Royal Society of Medicine on Jan. 19th, in introducing Miss Lena Ashwell (Lady Simson) to the Fellows and their guests. He showed that it was possible to regard the arts as holding the same position towards the mental well-being of society as vitamins were considered to hold in relation to bodily health. Upon this introduction Miss Ashwell gave a witty and suggestive address on the Drama as a Necessity of Civilised Life. She described the organising of entertainment parties to operate in France, Egypt, Palestine, and other areas during the war, and proved, to an audience that wanted no convincing, the value of these parties to the morale of the forces. In this way and in many others the genuine interest which the mass of the population of this country take in the drama was, said Miss Ashwell, abundantly displayed, but, unfortunately, this old and necessary art was now giving place to an unworthy competitor, the cinema. This country, she continued, possessed the richest dramatic literature of any nation since the time of

the ancient Greeks, but it was only rarely that good plays, old-time or modern, could be seen even in the large provincial centres. The reason was partly that the taxation of the theatre as a luxury caused the production of good plays to be generally attended by a financial loss to those producing them, but this was only part of the story, the apathy of the populace being another contributing factor. It would be a national calamity if the drama were allowed to die out and the presentation of films, mainly preposterous and of transatlantic origin, should take its place, for the cinema influence was often deplorable, the aspects of life portrayed being unreal and vicious. Miss Ashwell's address was a vigorous plea for the recognition of the drama as a necessity in social life, alike as an educational medium and a source of refreshment.

DR. LOMAX AND HIS CRITICS.

IN November last we reviewed a pamphlet having this heading, which was written by Dr. Montagu Lomax as a reply to the personal references to himself contained in the report of the Committee on the Administration of Mental Hospitals, 1922. Dr. Lomax calls our attention to the fact that certain of his words—namely, "Governments do not go to the trouble and expense of appointing Departmental Committees to inquire into vague and unsubstantial charges"—were meant to imply that his charges were not of this nature, whereas in our article it is suggested that his charges were by his own confession vague and unsubstantial. This has caused him annoyance, but, while regretting that fact, we feel that Dr. Lomax, considering the charges which he has brought against others, should be slow to resent a small joke at his unlucky phraseology, and one which was so obvious that it cannot possibly have affected his position as a would-be reformer.

AN announcement has appeared in the daily press to the effect that Sir Harold Stiles is resigning the Chair of Regius Professor of Clinical Surgery in the University of Edinburgh, and a little explanation is required. Prof. Stiles's term of office does not expire until March 21st, his successor being appointed at the opening of the summer session, one month later. Prof. Stiles gave notice of his intention to vacate his chair to the authorities in order to give them ample time in which to appoint a successor, but the significance of Sir Harold Stiles's action lies in his resolve to withdraw from private practice simultaneously with his resignation of his University and hospital appointments. His professional colleagues will recognise that this is the action of a single-minded man, who has resolved that he will not create leisure in which to discharge private work by the easy process of giving up honorary or official duties.

THE LATE DR. J. D. WILLIAMS.—John David Williams, M.B., C.M. Edin., died on Jan. 23rd at Plasgwyn, Pentrefelin, Portmadoc, in his sixty-ninth year. He was the son of a farmer, and was born at Thewydd, Llanfrothen, Merionethshire. He started life as a quarryman, but when 18 years of age he determined to become a schoolmaster, and having gained a scholarship qualified as a certificated teacher at Bangor Normal College. He subsequently became headmaster of schools at Llanidloes, Llfrothen, and Tanygrisiau. Then he resolved to become a medical practitioner, and proceeded to the University of Edinburgh, where after four years' study he graduated M.B., C.M. in 1891, and in 1892 obtained the degree of Bachelor of Science in Public Health. He was for a time assistant physician to the Chester and District Skin Dispensary; he then took up general practice in Shrewsbury, retiring two years ago to Pentrefelin. In Shrewsbury he held several public appointments, being medical referee for some important local institutions, and honorary surgeon and lecturer to the St. John Ambulance Brigade. He was a Fellow of the Royal Institute of Public Health and a president of the Shropshire and Mid-Wales Branch of the British Medical Association.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CVII.—THE TREATMENT OF GINGIVITIS.

THE word gingivitis implies inflammation of the gingivæ or soft tissues in the immediate vicinity of the teeth, and should not in any way be confused with chronic general periodontitis, more colloquially known as pyorrhœa alveolaris, the latter being a disease of the periodontal membrane, the delicate structure which closely surrounds the tooth root, and is therefore a deeper seated disease. Cases of chronic general periodontitis may be met with where there is no inflammation of the gingivæ; this may be explained by the fact that the inflammation of the periodontal membrane is situated at the apex of the root. More often, however, it is the gingivitis which draws attention to the other condition. Gingivitis may be divided up into (1) marginal, (2) general, (3) chronic, and (4) ulcerative.

Marginal Gingivitis.

Marginal gingivitis is usually catarrhal in character and may be found both in children and adults. The free margins of the gums appear red, congested, and swollen. The patient may or may not complain of soreness, the gums tend to bleed when touched, and if squeezed a thick muco-purulent discharge often exudes from around the necks of the teeth.

The normal gingival trough is accentuated forming a pocket; this pocket is caused by the swelling of mucous membrane and not through loss of tissue as in the case of periodontal disease. This may be demonstrated by gently investigating the pocket with a probe, when the pocket will be found to end at the neck of the tooth. A careful examination will show that the free margin of the gums have advanced towards the biting edge of the tooth covering part of the crown. The condition may become purulent, and not infrequently the interdental papillæ become hypertrophied and the whole gum swollen, the chronic hypertrophic gingivitis more often found in children.

One of the chief causes of gingivitis is mouth-breathing. Constant friction of the cheeks against the teeth, efficient mastication of food, and above all a constant flow of saliva washing away debris are necessary to bring about the physiological conditions. Mastication will aid in inducing a normal blood-supply to the teeth, but the presence of functionless or tender teeth in the mouth not only provides infected foci, but impedes normal functions. Mouth-breathing allows any particles of food remaining around the front teeth to dry and putrefy, and there is no cleansing action by saliva. Apart from the need to wash away bacteria the gingival organ secretes actually substances which, if allowed to dry, form calcareous rough deposits injurious to soft tissues. In a mouth-breather the gingivitis is generally limited to the anterior teeth.

Other mechanical causes may be traced to overhanging edges of fillings, but these tend to cause a chronic hypertrophic condition locally. Continued and indiscriminate use of floss silk may cause damage to mucous membrane if forced between the teeth in such a way as to cut the gums, but perhaps the most dangerous is the tooth-pick. This is seldom kept even socially clean, and is often stabbed into the gum in a vain endeavour to remove food lodged between two teeth, and then replaced in the waistcoat pocket.

General Gingivitis.

General gingivitis is commonly found as a sequela of fevers, also in wasting diseases. This may be largely attributed to loss of tone of muscles of mastication following on a liquid diet. The sticky, starchy, and sugary foods, popular in convalescence, unless thoroughly acted upon by ptyaline, form somewhat insoluble substances which stick to the teeth and

putrefy. The ætiology of the gingivitis of pregnancy appears to be somewhat obscure.

Metallic poisons, particularly lead and mercury, lead to general gingivitis which, if not treated, may become serious. Care must be taken to differentiate between a true lead poisoning and other conditions such as tartar or black pigmentation seen in dark-skinned races. A true lead poisoning will usually be characterised by general conditions such as colic or wrist-drop, and the blue line situated on the gum around the lower incisors. Patients undergoing a course of mercury treatment frequently develop a severe gingivitis, and the teeth should be put into a healthy condition before such a course is begun, since in an unhealthy mouth mercury is deposited in minute globules at the gingivæ where they become turned into the sulphide, which acts as a powerful cell poison.

Chronic Gingivitis.

Chronic gingivitis is nearly always due to some mechanical irritation, such as the wearing of a denture at night, and lack of hygiene. In some cases diet may be a factor, such as hot sauces; one case that came under observation appeared to be caused by a sour-milk diet.

The Routine to be Followed by Patients.

In all cases of marginal, general, or chronic gingivitis the cause should be looked for and removed. Where there is mouth-breathing, then any post-nasal growth should receive attention, but in order to break the habit of mouth-breathing, which may persist although there is no nasal obstruction, the patient should wear an oral screen at night. This screen consists of a piece of vulcanite or metal made to fit against the labial aspect of the gums as far back on either side as possible. Thus the screen will be held in position by the pressure of the lips in front, and owing to the shape of the sulci there will be little possibility of much movement or any tendency to swallow it, apart from the fact that the screen is of some size. After a week the patient becomes used to the appliance and will sleep comfortably. In all cases the gums will require an astringent mouth-wash, and the following will be found useful:—

R	Zinci chloridi	aa gr. ii.
	Zinci sulphatis	aa gr. ii.
	Spiritus chloroformi	℥v.
	Aqua menth. pip.	ad 3ss.

Misce.

Ten drops in half a tumbler of water as a mouth-wash. All tartar should be removed before using such a mouth-wash.

Where there are tags of gum between the teeth an application of pure trichloro-acetic acid may be found useful, administered for not longer than 30 seconds, to be repeated if necessary in a week's time. It is best applied to the tag of gum on a small pledget of wool. An excellent routine for the patient to carry out daily would be somewhat as follows. In the morning two or three drops of some cleansing preparation, as milton, should be placed on the tooth-brush and all the teeth should be carefully cleaned and the mouth then rinsed with the zinc astringent mouth-wash. Next, the gums should be massaged by pinching the gums with the finger and thumb towards the crowns of the teeth, and finally rubbing laterally with the index-finger. During the day the mouth should be rinsed out with the zinc mouth-wash two or three times. At bed-time some non-gritty tooth-paste may be used in preference to the milton, and this should be followed by careful massage with the fingers, using glycerine and tannic acid B.P. preparation. Some people, however, do not tolerate tannic acid for more than a week, in which case some bland preparation as myrrh and borax is substituted, followed by a rinse of water as cold as the patient can stand. It is of importance for the patient to have a small tooth-brush and one which is fairly stiff; if the bristles show a tendency to come out it should be discarded. After use the brush should be rinsed and placed in a suitable

position to dry. In the case of hypertrophic gingivitis the application of ferro-pyrin on wool to the pockets once a day will be helpful, this drug being a powerful astringent and anodyne. The treatment of gingivitis by electrical means is a specialised subject and should be carried out only by experts. Gingivitis caused by wearing a denture at night will clear up when the habit is discontinued and with constant mouth-wash. Poisoning from mercury and lead is not difficult to deal with once the poison is discontinued. Hydrogen peroxide may be used with great success in the case of mercury, but if the gums have started to ulcerate then the condition may be dealt with as though it was ulcerative gingivitis.

Ulcerative Gingivitis.

A condition prevalent during the late war was known as "trench-mouth." Of this condition two varieties are described: a diphtheroid type, which is superficial and somewhat less severe than the second type, which is ulcero-membranous and may involve the whole of the buccal mucous membrane and penetrate to the bone. In both types the *Bacillus fusiformis* of Vincent's angina is found besides the pyogenic bacteria always associated with such ulcerative conditions. The appearance of both forms is typical. Ulceration usually commences around a septic tooth or badly fitting crown. Within 48 hours the infection spreads to both jaws and the gums become swollen with grey slough around the teeth. If the infection is of great virulence the teeth become loose. The breath is very foul and the temperature may rise to 102° F. The infection may spread to the tonsils and pharynx. Unless dealt with, the teeth may be lost, and serious scarring take place from the cheeks becoming attached to the gums.

In treating such a condition it is most unwise to extract teeth; this procedure will only allow the condition to penetrate deeper. No great harm will be done by leaving in infected teeth until the condition is improved, unless, of course, an abscess is present. The patient should have a purge followed by saline each morning for four days, and his general health maintained by tonics containing iron and arsenic. Locally, the mouth should be cleaned up by constant rinsing with a chlorine preparation such as eusol, milton, or fecto, about a teaspoonful to a glassful of water. The ulcerated part should be swabbed over with the following preparation:—

R	Liq. arsenicalis	aa 3iii.
	Vin. ipecacuanhæ	aa 3iii.
	Glycerine	3ii.

Misce.

The patient may suck not more than six 5-gr. tablets of potassium chlorate a day. In a week the patient should be nearly recovered, and the treatment for simple gingivitis may be carried out, but the gums should not be massaged until the mucous membrane has fully recovered. All vessels, especially drinking glasses, should be carefully boiled as the disease is easily communicable.

The best method of applying drugs to the buccal mucous membrane is by the use of wooden applicators bound with cotton-wool such as are employed in aural surgery; these should be burnt after use.

J. L. DUDLEY BUXTON, L.M.S.S.A., L.D.S.,
Dental Surgeon to University College Hospital
Dental Dept.; Assistant Dental Surgeon,
West London Hospital.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—A post-graduate course will be held at the hospital, Queen-square, Bloomsbury, W.C., from Feb. 2nd to March 27th. The course will consist of the following subjects: Out-patient Clinics, Clinical Lectures and Demonstrations, Lectures on the Anatomy and Physiology of the Nervous System (if sufficient applicants), Lectures on the Pathology of the Nervous System, Clinical Demonstrations on Methods of Examination (if sufficient applicants), and Lectures and Demonstrations on the Neurology of the Eye. Copies of the syllabus may be obtained on application to the Dean of the Medical School.

Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.

INTRODUCTORY NOTE.

THE Royal Commission on National Health Insurance, under the chairmanship of Lord Lawrence of Kingsgate, has held 14 sittings and is now sitting weekly. The evidence given at the first six meetings by the official witnesses of the Ministry of Health and the Scottish Board of Health supplements and elaborates the printed volume of statements put in by the Government departments in question. This official evidence, taken in conjunction with the statements referred to, embraces a review of the whole of the working of the National Health Insurance system.

We propose to give a résumé of those parts of the official evidence which we consider to be of interest to our readers. Taken as a whole, this evidence gives in a concise and comprehensive form an account of the scheme in which medical men play so important a part, and of which—especially in its more general, as distinct from its medical features—they are, we believe, not too well informed.

This summary of the earlier evidence, followed by a short account of the evidence at more recent meetings given by approved societies, will prepare our readers' minds for the evidence to be given in April on behalf of the insurance practitioners (on the lines of the statement given in our issue of Jan. 10th, p. 95) which we hope to summarise from week to week as the official reports are issued. It is important to note the scope of the official evidence given at this stage. At the outset the Chairman indicated that it was not proposed to invite, for the time being, from the Ministry's representatives, any criticisms of the scheme or proposals for its amendment. It was desired to get a clear view of the system as it is and later to hear the officers of the department on points of criticism and suggestions for amendment.

References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

THE SCOPE OF THE INSURANCE SCHEME.

Who are Insurable?

(App. A. 22-3.) The great majority of employed persons between the ages of 16 and 70 are compulsorily insured, the usual test being whether there is a contract of service. Seamen are included under a special provision, and certain classes of persons are also specially included, who may not be technically under a contract of service, but who are, broadly speaking, in the position of employees working for a master.

Exempted Employments.

(App. A. 4 and 5.) Clerical and other non-manual workers employed at a rate of remuneration exceeding £250 a year are excluded and also many specified employments which are either not the worker's principal means of livelihood, or are employments in which the worker is protected by the terms of his engagement against risks which the insurance scheme is intended to meet. As regards the latter class, no provision need be made by the employer corresponding to medical benefit or any other benefits except sickness and disablement benefit, but the scales of sick pay and pension are frequently so far in excess of the statutory sickness and disablement benefits that the employees are probably not at any serious disadvantage in this respect. Broadly speaking the effect of this provision is to exclude

from the insurance scheme all established civil servants and certain analogous grades of Crown employees, the police throughout the country, the majority of Poor-law and asylum officers, the permanent clerical staffs (and in some cases workmen) of many local authorities, and clerks and permanent officials of railway companies.

The Wages Limit.

(App. A. 12.) The wages or salary limit which, it will be noted, is not a limit of total income and does not apply at all to manual workers—was raised from £160 to £250 in 1919. This amendment was merely designed to adjust the remuneration limit to changed economic conditions, and although no precise statistics are available it is probable that the number of insurable persons was not greatly enlarged thereby. The following questions to Sir Walter Kinnear, the Controller of Insurance, as affecting this class, are of interest:—

(Q. 107.) I notice in such bodies as Stock Exchange clerks, insurance officials, warehousemen, travellers, and people of that class, there seems to be an enormous exit from insurance when people get round about 23 to 25 years of age. Do you think that is to be attributed to people going over the income limit?—I can assign no other cause, unless it may happen that their terms are so altered that they pass away from a contract of service.

And again:—

(Q. 110, 111.) Is it not rather difficult to defend an arrangement under which so large a number of young people are compulsorily brought into insurance and compulsorily ejected from it after a few years?—They have the right to remain in insurance as voluntary contributors at the same premium.—Do they ever avail themselves of that right?—Very few do.

Asked whether at the moment he knew of any convenient way of determining whether a person should be insured otherwise than by the present automatic system, the Controller said that he did not.

Doubtful Questions of Insurability.

(App. A. 16.) The Minister is charged with the judicial function of determining, subject to an appeal to the High Court on a question of law, whether a class of employment or the employment of a particular person is within the scope of compulsory insurance and, if so, who is the employer.

As to difficulties in connexion with the manual labour test, the witness said:—

(Q. 35.) We had quite considerable difficulty in the early days, but as a result of experience and legal decisions certain broad determining principles have been laid down and we find our decisions, as a rule, are accepted without question and we have very little difficulty now in this connexion.

(Q. 148, 149.) As a reason for the exclusion of the non-manual worker at £250 when the benefits of the Act are conferred on the manual worker with wages up to any figure, the witness suggested that the former was more accustomed to making provision for himself and had, on the average, greater security of tenure in his employment.

Exempt Persons.

(App. A. 21.) Exempt persons are to be distinguished from excepted persons, who are outside the Act altogether. The exempt person is one who is engaged in employment within the meaning of the Acts, but has voluntarily obtained a certificate exempting him from paying any contribution on the ground that he has a private income or is ordinarily dependent on some other person. The employer in this case remains liable to pay his own share of the contributions, since if he were free from contributing for exempt persons there might be a tendency to give employment to them in preference to other workers. The number of exempt persons is very small, amounting in England to 33,600, or about $\frac{1}{4}$ per cent. of the population. The employers' contributions are used to provide them with medical benefit, and it appears that 90 per cent. of exempt persons take the trouble to go through considerable formalities in order to get medical benefit.

(Q. 166.) The exempt person is the only person who gets something for nothing?—As far as his proportion of the contribution is concerned, that is so.

Voluntary Contributors.

(Q. 42.) It was thought at the inception of the Act of 1911 that there would be a large number of voluntary contributors, but these expectations were not realised. The scheme for the admission of such persons to insurance was considerably restricted in 1918, and there are now in England only about 30,000 voluntary contributors. They are mainly composed of persons who have been insured as employed contributors for not less than two years and have elected to remain on as voluntary contributors.

Number of Insured Persons.

(App. A. 27.) The number of insured persons in England and Wales was 11½ millions in 1912 and 13½ millions in 1922. (Including Scotland, the total is about 15 millions. Notes on the Scottish evidence will be given later.) Compared with the Census figures of 1911—the last which are available for this purpose—the following particulars are of interest:—

The number of occupied persons in England and Wales at that date between the ages of 16 and 75 (? 70) was 15,200,000. Of these 1½ million are employers or persons working on their account; 270,000 are made up of officers in the Army and Navy, ministers of religion, professional men, &c. This leaves a total of nearly 13½ millions who may be said to be employed in the broad sense of the term, of whom, as stated above, 11½ millions were insured in 1912. The balance of two millions is accounted for by persons whose work does not come within the definition of contract of service or apprenticeship and by non-manual workers over the salary limit and other persons engaged in excepted employments.

Collection of Contributions.

(App. A. 28, 29.) The Health Insurance scheme is contributory in character. The funds are contributed by insured persons, their employers, and the State; the contributions of insured persons and their employers consist in the main of weekly payments, and those of the State take the form of a grant of two-ninths of the sums expended on benefits and their administration. The weekly contribution in general in the case of employed contributors is 10d. (9d. for females), of which 5d. is normally payable by the employer and the remainder by the worker. (App. A. 31-8.) The employer is responsible for paying the joint contribution and may recover the worker's share by deducting it from his wages. During unemployment or sickness no contributions need be paid. They may be paid by the worker during unemployment to avoid a reduction in the cash benefits. No arrears accrue during notified sickness.

The Stamping of Contribution Cards.

(App. A. 38.) Contributions are usually paid by means of stamps affixed by the employer to cards which the worker gives up half-yearly to his society. It is the duty of the worker to obtain a half-yearly card from his approved society or from a post office, and to produce it to his employer on commencing employment and at other times when required by the employer. But, as the onus of paying contributions is on the employer, emergency cards providing for a single weekly stamp are available at post offices for use by employers whose employees fail to produce cards, and it is the duty of the employer to obtain and stamp these cards where the ordinary cards are not forthcoming.

Enforcement of Payment of Contributions.— Inspection and Prosecution.

(App. A. 40.) The payment of contributions is enforced by the Ministry by means of inspection, correspondence, and, where necessary, prosecution. An inspector appointed by the Minister has power

to enter at all reasonable times any place (except a private dwelling-house which is not a workshop), to require the production of cards, &c., and to satisfy himself generally that the Acts are being complied with. Routine visits are made to factories, shops, farms, &c., but private employers are in general visited only on receipt of a complaint, although the inspector has no right of entry in such a case and must withdraw if requested to do so. Proceedings generally must be brought within one year after the offence. During the year 1923 the number of prosecutions in England was 984.

(Q. 24.) Asked whether there was any evidence of hostility to the scheme on the part of employers or employees, the Controller said that there was a good deal of hostility in the early days, partly owing, he thought, to political considerations, but that it had died down. Of course, he said, we get complaints from time to time from individuals. That is inseparable from the working of a scheme which affects 15,000,000 bread-winners and practically every employer throughout the country. But, he said, there is no evidence of general hostility to the Act now. As to evasion of the payment of contributions, Sir Walter Kinnear said:—

(Q. 213.) Our calculations lead us to think that on the whole we collect about 99 per cent. of the contributions which are due. We recognise that there is a certain degree of non-compliance amongst casually employed persons, and to a more limited extent amongst domestic servants.

Special Classes of Workers.

Interesting provisions will be found in the evidence as to problems affecting special classes of workers, of which one or two short notes here will give a sufficient indication. (App. A. 55.) In the case of out-workers, for instance, who work at home for several employers, a special system of "units" of earnings (equivalent to a full week's earnings if working for one employer) has had to be devised, under which each employer stamps a card for each unit instead of for each week without regard to the question whether another contribution has already been paid in the same week by another employer.

(App. A. 48-54.) Again, special provisions for the contributions and benefits of seamen in the mercantile marine are necessary. There is a reduced contribution in the case of foreign-going ships, in view of the fact that the employers are liable under the Merchant Shipping Acts to provide the seaman with medical treatment and maintenance during sickness until they return him to a home port. As regards foreign domiciled seamen, employers' contributions are paid quarterly to the Ministry, and the amount collected, which is approximately £23,000 a year, at the present time, is credited to a special fund, commonly known as the Lascar Fund, and is used for the provision of pensions for insured seamen under a scheme administered by a governing body comprising representatives of shipowners and insured persons.

The Controller's evidence on the subject of cash benefits and medical certification will be summarised later, after some of the main official evidence with regard to medical benefit has been given.

THE fourteenth meeting of the Commission was held at the Home Office, Whitehall, on Jan. 22nd, Lord Lawrence of Kingsgate in the chair. Evidence was received from three miners' societies—viz., the Scottish Miners' Federation Approved Society (Mr. James Gold), the Lancashire and Cheshire Miners' Permanent Approved Society (Mr. D. Shaw), and the Lancashire and Cheshire Miners' Federation Approved Society (Mr. Lee Shaw). The special difficulties arising in societies composed wholly or largely of miners were represented by these witnesses—in particular the inability to give additional benefits owing to the unavoidable heavy expenditure on normal benefits for those engaged in the mining industry. Proof copies of oral evidence given at the meeting, Jan. 8th, are now on sale at H.M. Stationery Office (1s. 6d.).

SOME REFLECTIONS ON SECOND-HAND CARS: WITH HINTS ON THEIR PURCHASE.

BY J. MARSHALL, M.I.A.E.,

LONDON MANAGER OF MESSRS. MANN, EGERTON AND CO., LTD.;
OFFICIAL CONSULTING ENGINEERS, MEDICAL INSURANCE
AGENCY.

THE second-hand car problem, both from the owner's and the motor-car dealer's point of view, is too often a source of tribulation and of hard thoughts. The owner naturally seeks to obtain the fullest market value he can for his property and the dealer to ascertain the lowest price at which he can get the car. This question is probably one of the most difficult the dealer has to face. The average owner is disposed to consider the value of his used car at far in excess of its actual worth on the market, and where the medical man appears especially inclined to go wrong is in respect to purchases made in the two years following the war period. During this time enormous prices, and in many cases large premiums, were obtained, with the result that values became quite fictitious. When the unfortunate owner of a car bought during 1919 and 1920 proposes to sell it he is horrified at being offered a mere fraction of the purchase money, forgetting to what extent values have decreased during the intervening years.

The particular value of each second-hand car is, apart from its condition, based on the present-day prices of a new car of similar make. The owner when considering the exchange of his used car for a new one is often inclined, without much consideration, to accept the highest offer made for the used car. This is not necessarily a wise decision. The owner should ask himself the following questions: (1) Am I getting good value in the price being paid for the new car? (2) Am I buying a car which is not a good seller? (3) Has the car being offered to me a good second-hand value?

If the car is not good value for the money asked, it can be assumed that the owner will be offered a high price for his used car. If it is not a good seller, any small increase in the value allowed for the second-hand car will not anything like cover the heavy depreciation which will occur immediately the car is put on the road. It may be that a car sells freely but has a low second-hand value. Thus it happens that many fairly high-priced cars will be found to be cheapest in the long run, largely owing to their low depreciation—i.e., high second-hand value. My experience is that too little attention is paid to these points by would-be purchasers, many being inclined to consider only the low initial cost.

The Purchase of a Used Car.

The purchase of a used car bristles with difficulties. Here especially does it pay a purchaser to deal with a firm which is careful of its reputation in the sale of used vehicles. Such a firm gives no guarantee with a used car, but studies the interests of clients by careful examinations and submits a candid opinion as to the car's mechanical condition and worth. From a reliable firm a first-rate used car should be obtainable if the owner is prepared to pay a fairly good price. It is rarely possible, although it does happen, at long intervals, that a first-class car can be bought at a "give away" figure.

The "Points" of a Used Car.

The Trial Run.—When the purchaser has clearly in his mind the type of body required, and has decided that the h.p., age, and finally the price, which is practically governed by the last two points, are, broadly speaking, satisfactory, a run on the road should be taken. The trial should, if possible, include a steep and a long hill so that some idea as to the power, road performance, and general silence of the car may be obtained. These being satisfactory, the following vital points should be carefully examined.

(a) *Engine.*—Without going into technical details, some idea of the condition of the engine can be arrived at by listening when it is running idle, and also under load. If any knocking is heard the opinion of an expert should be obtained, for it may prove vastly expensive to get rid of knocking. It may, and often does, involve the renewal or extensive repair of loose gudgeon-pins, slack pistons, broken rings, broken big-end connecting-rod bushes, and sloppy main bearings. Knocks are very elusive and difficult to locate definitely, although, broadly speaking, where there is a distinct thump it may be taken that the bearings on either end of the connecting rod are badly worn. Where this occurs the engine has to be taken out and this procedure may cost, over and above the cost of any broken parts replaced, anything up to £15.

(b) *Steering Connexions.*—Front wheels should be examined for play in bearings and swivel-pins. The amount of play can be decided by jacking up the wheel and jerking the wheel itself sharply in and out and sideways. There should be practically no movement either way.

(c) *The Gear-box* should be examined for worn bearings and worn teeth on gear wheels. This is quite simply done, as the ordinary gear-box cover is removable with the undoing of two or three wing nuts. To test for wear in the bushes, jerk the shafts sharply up and down, when there should be no movement. Excessive wear of the gear-wheel teeth is shown by a flat on the teeth about one-third of the way down. When this is found it does not follow that the gears are not sound; generally the effect of worn teeth is a noisy gear-box, especially in the lower gears.

(d) *Universal Joints.*—Usually these are made of fabric and the holes in the joints may be found to have practically worn through or the material itself to be badly twisted, causing the propeller shaft to run out of truth, with consequent noisy transmission. The effect of a propeller running out of truth is to upset the balance of the whole car, causing the gear-box and back axle to be noisy, in addition to which there is intense vibration throughout. The cost of replacement of the worn fabric joints would be roughly 30s. each or, if of the metal type, approximately £6. The metal type is not often found on up-to-date cars, since the fabric type is much easier to replace and requires no attention under running conditions.

(e) *Back Axle.*—If both wheels are jacked off the ground the end-play of the differential can be tested by pressing each wheel in turn in and out and noting the movement; end-play should be slight. If, when the car was tried on the road, the back axle was found to be noisy it would require careful examination, particularly as to end-play in the bevel pinion.

The Lighting and Starting System is a vital part of the car and is probably the most expensive part. Great care and attention should be given to the inspection of the various units. The battery should not be forgotten; its condition can easily be determined even by a superficial glance at the plates and terminals. A glance at the plates will show whether they are sulphated or not, that is, whether covered with a grey-green deposit. When the plates are in this condition, which is obvious even to the tyro, it is a sign either that the battery is worn out or that it requires new plates, an expensive process which would probably cost about £4-£5. Whilst on a trial run, the opportunity should be taken to see whether the dynamo is charging at slow engine speeds, such as 15 miles an hour on top gear, since the doctor's rounds often involve a good deal of low-speed driving. When the engine is speeded up to a road speed of 25 miles per hour on top gear with all lights on, the current taken out should be only slightly more than that going in, this consumption being shown on the meter on the dashboard. In view of the fact that the lighting and starting system

of a doctor's car is used extensively it is essential that the battery be of large capacity. Much depends on the size of the engine, but for an ordinary car of, say, 12 h.p., the battery should be of a capacity of about 80 ampère hours; otherwise it will constantly be found necessary to have it charged on the board.

Body Work.—It is not difficult to estimate the condition of the body as to paint-work and upholstery, but not so easy for the average purchaser to say whether it is a good, bad, or indifferent one. New bodies vary in price as much as 100 per cent., type for type—that is to say, some first-class coach-builders can obtain double the price for their products that a second-class firm could safely demand. A good body will always have its value. It looks well, paint-work is good, and rattles and squeaks are absent. These factors have a great influence on the worth of a second-hand vehicle, particularly where closed bodies are involved.

Conclusion.

For no apparent reason certain makes of cars have in certain years not proved very satisfactory in the hands of the public, even as certain vintages find no favour. Caution should be exercised in the purchase of vehicles which may have been used during the war period. There was nothing inherently wrong with those made at that time, but many of them were subjected to the roughest possible usage by bad drivers and under appalling conditions, and unless they had had a considerable sum of money spent on them they would be practically worn out in spite of being painted up nicely and looking smart.

It is difficult to give a general idea of the amount of wear that should be disregarded in testing second-hand cars for faults, nor is it easy to give the cost of repairs to make good defective or worn parts. The cost of a particular part might be 6d., but labour charges for fitting same might quite easily mount up to £10 according to the make of the car. The works of some cars, especially certain continental makes, are notoriously difficult to get at, and very often involves the taking down of an engine, gear-box, and clutch to replace a small part, in, for example, the clutch itself.

In conclusion, I can only emphasise again the fact that the prospective owner would be well advised to obtain the services of an expert before finally completing a deal. The small sum involved in an inspection fee may save him a very large sum in the long run.

INFECTIOUS DISEASES ABROAD.

THE following general summary is compiled from the monthly epidemiological reports published by the Health Section of the League of Nations, supplemented, when possible, by more recent information from other sources.

Plague.—A new outbreak of plague is reported from the Canary Islands, the affected localities being Santa Cruz and Realego Alto, both in the island of Teneriffe. These localities, as well as Las Palmas, Puerto Luz, and Orotava in the island of Gran Canaria, were also affected last year and in 1923, but little or no clinical or epidemiological information about the cases is available. In the Azores, cases continue to occur in the neighbourhood of Ponta Delgada in the island of St. Michael; of 20 cases reported up to Dec. 26th, nine were fatal. The apparent cessation of the epidemic at Lagos (Nigeria), reported in a previous summary,¹ lasted until the end of 1924, but six fresh cases occurred during the first 12 days of the present year, and the official declaration of freedom from the disease has been withdrawn. The outbreak at Los Angeles (California) is definitely at an end, but during the extensive search for infected rodents, which is being carried on

continuously there and elsewhere in California, as well as in other suspected areas in the United States, 63 infected rats were found at Los Angeles up to Jan. 3rd of this year, eight at Oakland between Dec. 13th and Jan. 3rd, and five at New Orleans up to Jan. 3rd. In South Africa cases of bubonic plague occurring singly or in twos and threes continue to be reported from rural districts of the Transvaal, the Cape Province, and the Orange Free State.

Cholera.—Excepting India, where, at present, cholera is somewhat more prevalent than during the same period of last year, very few cases of this disease have recently been reported from any part of the world.

Typhus.—No definite increase in the incidence of typhus is shown in the statistics recently received from countries of Eastern Europe. The latest information from Poland indicates that the prevalence of the disease in that country is steadily decreasing; the incidence at present in Latvia and Lithuania is also low in comparison with the incidence during the same period last year.

Small-pox.—The outbreak which occurred in Bosnia-Herzegovina in November, 1924, lasted only two weeks, during which 66 cases were reported. Most countries of Europe are at present unusually free from the disease. In Switzerland only two cases were notified during the first week of the present year.

Enteric Fever.—In nearly every country in the Continent of Europe, as well as in England and Wales,² a considerable increase in the recorded incidence of enteric fever was a notable feature of the statistics of disease during 1924 as compared with those of 1923. It may be that the increase can be partially explained by improved notification, but in general it was so considerable and widespread that a true increase of prevalence must be presumed. The increase was most marked in the Baltic region, particularly in Sweden, Finland, Esthonia, Latvia, and Lithuania, in each of which the number of cases recorded during 1924 was much higher than in either of the two preceding years. In Finland 499 cases were notified during October as compared with 280 in the same month of 1923, and 157 in the same month of 1922. From Russia recent statistics are not available except for the city of Leningrad, where 175 cases with 16 deaths were notified during the fortnight ended Nov. 1st, as against 98 cases with 12 deaths during the preceding fortnight. Germany, Poland, Bulgaria, and the Kingdom of the Serbs, Croats, and Slovenes are other European countries with an unusually high incidence of enteric fever during 1924. In Germany the weekly notifications began to decline after the middle of September, but in Poland the maximum had not been reached at the end of October.

Scarlet Fever and Diphtheria.—During the second half of 1924 there was a serious increase of scarlet fever in many areas of Russia, particularly in the chief cities. In Leningrad between the middle of July and Nov. 1st there were 1677 cases, of which 628 occurred during the last four weeks of the period. In Moscow, Kiev, and Odessa the incidence in September was twice as high as in August. Regions as widely separated as Gomel in White Russia, Velikij Usting in the north, Rostov on the Don, and Petrozavodsk near the Baikal Sea were affected, and it is said that the fatality-rate was high, and that severe cases amongst adults were frequent. In Scandinavia, Poland, the Netherlands and Germany scarlet fever was more prevalent during the last quarter of 1924 than during the same period of 1923, but in Jugo-Slavia and Bulgaria the incidence of the disease was relatively low. In most European countries the incidence of diphtheria at present is not higher than is usual at this season of the year.

¹ THE LANCET, Jan. 3rd, 1925, p. 43.

² In England and Wales approximately 4072 cases were notified during 1924 as compared with 3211 during 1923.

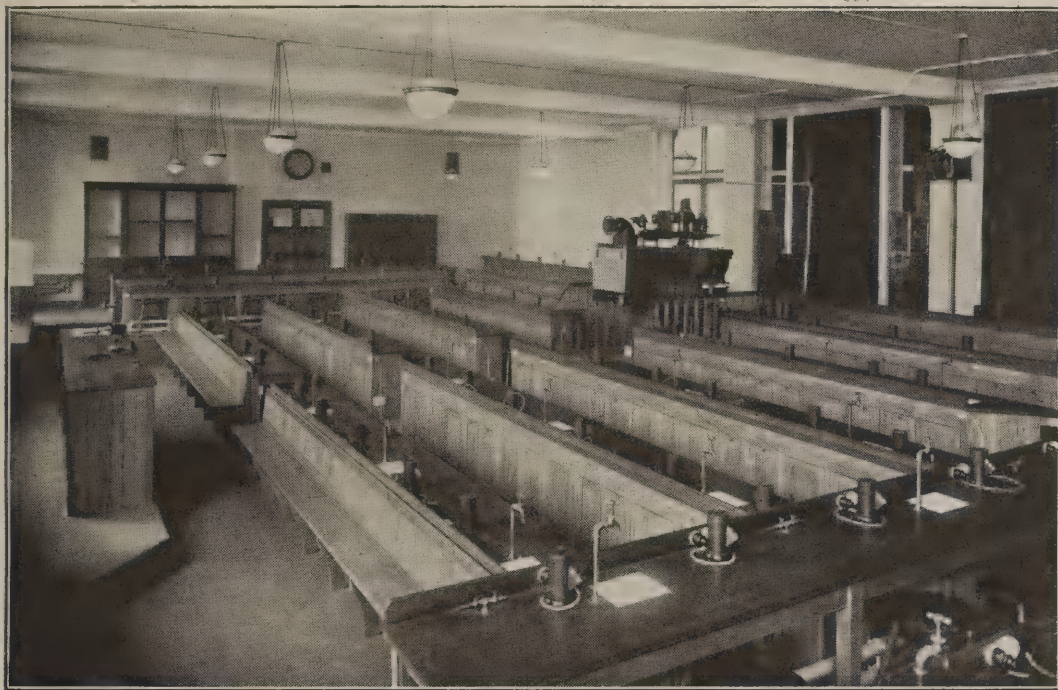
PATHOLOGY AND BACTERIOLOGY AT ST. BARTHOLOMEW'S MEDICAL COLLEGE.

NEW LABORATORY ACCOMMODATION.

THE teaching of pathology and bacteriology at St. Bartholomew's Medical College has recently been reorganised under the direction of Sir Frederick Andrewes. It now extends over two and a half years of the clinical curriculum, in order that the student may correlate his study of the science of disease processes with his practical observations in the wards. The transference last year of the department of physiology of the Medical College to its new building in Giltspur-street was timely, for it left vacant a

each 15 feet long, are placed one on each side of the lecturer's bench. An epidiascope stands opposite the lecturer's bench on a platform level with the back benches. Made by Zeiss, it is a combination of two of the latest models. It has a 30 ampère arc for episcopic projection, and by means of a revolving front will also show museum bottles on the screen, which is on the wall behind the lecturer's bench. Above the episcopic projecting apparatus is an optical bench on which a 5 ampère arc projects a direct beam either through a microscope or lantern slide. The lower power of this lamp makes it possible to leave slides on the screen for any length of time undamaged by heat. Sections or films can be successfully shown even under a 1/12 lens at a distance of 22 feet from microscope to screen.

Both in general plan and in detailed equipment this laboratory gives evidence of the most careful study of the needs of the student. While no expense has been



THE RECONSTRUCTED PATHOLOGICAL LABORATORY AT ST. BART'S.

laboratory adjoining the pathological block which has been recently adapted for the teaching of morbid anatomy and histology to large numbers of students. The enlargement was effected by the removal of the partitions which separated the private room of the professor of physiology from the main laboratory. The new room measures 63½ ft. by 36 ft., giving accommodation for 98 students doing practical work, allowing 3 feet for each, whereas for lectures, owing to the addition of seats in front of the first rows of benches, 200 men can be seated. A microscope lamp and a gas point are provided for each student, and one sink for every two students. The microscope lamps are made cheaply from inverted treacle-tins painted black outside and aluminium inside. The lids are screwed to wooden bases, and a hooded opening is made at one side of the tin. Each student has a locker under the bench behind him, so that he merely has to turn round to get at it. Lockers for men in the back rows are placed in nests on the walls. The benches are raised in tiers, each 5 inches above the one in front; the side benches are also raised. All the bench tops are teak, the rest of the wood being pine. Two demonstration benches,

spared in such structural alterations as the raising of the benches in tiers so that every student can see the lecturer, economy has been considered in so far that wherever possible the fittings and bench tops of the old laboratory have been adapted and fitted in the new one. The result is a very fine laboratory, light and spacious.

PRESENTATION TO PROF. MATTHEW HAY.—The town and University of Aberdeen recently combined to honour one who has rendered signal service to both. On Jan. 14th Prof. Matthew Hay was presented with his portrait in oils by Mr. Charles Sims, R.A., Keeper of the Royal Academy. Principal Sir George Adam Smith on behalf of the University, and Lord Provost Meff on behalf of the town paid warm tribute to the work of Prof. Hay, who occupied the chair of forensic medicine in the University since 1883, and who was medical officer of health for the city from 1888 to 1923. Some indication of Prof. Hay's untiring industry may be gained by recalling that, apart from these offices, he was an original member of the Medical Research Council, and represented the University on the General Medical Council, the Carnegie Trust, and the Federated Superannuation Fund. For 25 years he was chairman of the University's finance committee.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Quality of the Vienna Milk-supply.

At a recent extraordinary meeting of the Vienna Paediatric Society the problem of the supply of children's milk for the Vienna population was discussed by medical men and agriculturists. Prof. Pirquet opened the meeting with a report on the relative value of milk as food, showing that it is the cheapest source of animal albumin. The rearing of milch-cows must be regarded as more economical than the rearing of pigs). One unit of feeding material is turned into two-thirds of a unit of milk, whilst the latter-named animals give only a return of one-third of human food unit. Dr. Reichel showed the present condition of the Vienna milk-supply as regards quality. The data given by him were collected last year by private enterprise to obtain an exact picture of the actual conditions with a view to legislative measures. The following points were those chiefly investigated: Adulteration, decomposition, denaturalisation of milk, and the health of the animals. The result was disappointing. The milk supplied to Vienna children was manifestly poor in fat and with a high bacterial content. The production and manipulation of milk was conducted on a very low standard of cleanliness. Since 1909 private enterprise had endeavoured to secure first-class children's milk, but the public authorities had not done anything in this respect. Mr. Winkler explained that if milk was to have a low bacterial content (not more than 80,000 in a cubic centimetre) and to be free from all pathogenic material, it must be obtained from healthy cows and handled only by healthy and cleanly persons. Dr. Schlossmann emphasised the necessity of sending all milk required for infant consumption through a central control station in the cities, where it can be stored (cold storage) and treated in any way necessary. The price of milk must be in proportion to the costs of production and transport, otherwise the supply drops short of demand. This was demonstrated by Mr. Hainish, the President of the Austrian Republic, one of our largest agriculturists, who also took part in the discussion. He said that before the war 850,000 litres of milk were brought daily to Vienna. When the price was fixed at a low sum by the magistrates the supply fell to 60,000 litres. Our republic has sufficient facilities to enable every inhabitant to get at least one litre of milk per day out of the production of the country without relying on imports.

A Hygiene Exhibition in Vienna.

In early summer an exhibition devoted to hygiene will be held in Vienna. The well-known museum of hygiene in Dresden will coöperate and a most comprehensive exhibition may be expected. A series of dry and wet specimens, objects, models, tables, and statistic and graphic demonstrations will be on view. A special department will deal with modern individual hygiene, the supply of sound and economic food, including various diet formulæ for the normal and diseased body, and vegetarianism; healthy housing, clothing, and physical culture (and scientifically conducted cosmetic culture) will also be demonstrated. Another department will be devoted to the vast subject of social hygiene; antenatal and infant welfare, the care of the chronically diseased tuberculous subjects and cripples, as well as of juveniles and of the senile will receive attention. Sections will be devoted to: modern sport and gymnastics; the prevention of infectious diseases, including venereal diseases; the problems of city buildings, drainage, police, water-supply; control of food; the protection of the manual and brain worker against the dangers involved by their occupation; the training of nursing personnel; the organisation of spas and sanatoriums, of public and private hospitals, to which the State corporations and private institutions will be able to contribute. The intoxicating liquors and habit-forming poisons (alcohol,

morphine, cocaine, arsenic) form another section. The problem of recreation—chiefly from the viewpoint of the poorer classes, who cannot afford a regular week-end or a few weeks stay in the country—will receive attention. The Municipality of Vienna deserves credit for providing huge sun-baths, playgrounds, and forest or open-air schools for debilitated children. A series of lectures by eminent physicians will aid the public in obtaining an insight into the modern views of hygiene. In connexion with this exhibition the united organisations of Austrian women will conduct an exhibit, "the new household," devoted to the reorganisation of the antiquated methods of housekeeping and cooking. This will be the first of its kind in Europe. Its aim is to open up the problem as to how all requirements of the family can be satisfied at a minimum expenditure of money, mental and manual exertion and time. The reduction of household work by time- and labour-saving devices and machines will give the housewife much greater opportunities of rest and spells better health.

Austrian Red Cross Society.

At a recent meeting of the Austrian Red Cross Society Mr. Beck, the President, pointed out that now the chief line of work was directed towards the propagation of peace-time enterprise. The problem of sanatoriums for consumptives, of training of qualified nurses, as well as the aid of public and private charitable institutions was now receiving special attention. Without the financial and moral help by the Red Cross many of these institutes would have been completely ruined during the last few years. The large stores of provisions, sanitary appliances, and outfit at the disposal of the Society were used to keep these institutes running. The large tuberculosis hospital in Grimmerstein is conducted solely by the Society, and here hundreds of diseased women and children are restored to health. In the last months of the year 1924 attention has been centred chiefly in the work of social care of young people, and the efforts made to interest the younger classes of the population in this work have met with very satisfactory results.

Jan. 14th.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Outbreaks of Typhoid Fever.

It is more than ten years since New York City was visited with an explosive outbreak of typhoid fever, such as began in the third week of November last. In the week ending Dec. 13th, 1924, 116 new cases were reported to the health department, and since then a score or so of new cases have appeared daily. Over 400 cases have occurred during the outbreak. Typhoid fever has also been prevalent in the adjoining counties of New York State and in the city of Chicago, where there have been 99 cases with 11 deaths. The source of contamination remains more or less of a mystery. The cases are scattered widely over the area of the city, and yet careful investigation of the water- and milk-supply have failed to discover any loophole for infection. Suspicion has fallen upon some of the oyster beds, since a large proportion of the cases admit having consumed oysters. Although no *B. typhosus* has been found amongst the oysters, and the case against them is at least unproven, the Health Commissioner, Dr. Frank J. Monaghan, has put a ban on the sale and distribution of shell-fish from beds in Hempstead Bay. The special appropriation of \$50,000 which the city has made for combating the outbreak represents a mere fraction of what the oyster industry must be losing. An appeal for help has been addressed to the Federal Health Service, which responded promptly. The investigation has been assigned to Dr. L. L. Lumsden, who has already been successful in finding the origin of several typhoid epidemics in different parts of the country. He will be

assisted by several junior officers of the Service, and there is reason to believe that the investigation will prove of first-class importance to the science of epidemiology.

Social Values of Disease.

In a De Lamar lecture at the School of Hygiene, Johns Hopkins University, on Jan. 12th, Dr. Homer Folkes discussed public health in relation to social welfare. He stressed a point of difference between the medical practitioner and the health officer in that the former responds equally to all calls for help, whereas the latter is compelled by circumstance to select a few diseases upon which to concentrate his effort and financial resources. A disease which carries off babies in the first year of life is obviously of less social significance than a disease which slays the young parent of either sex leaving children uncared for or unprovided for according to whether the mother or the father is carried off. From this point of view the age-group 25-35 is, perhaps, the group most to be protected from mortality. From a more strictly economic point of view the group 20-30 is of first importance. The requirements of the American social ideal involve an increasing investment in the citizen during the first 20 years of life, and it is only in the third decade that the returns begin to come in. Besides, the consideration of mortality is that of the degree of recovery in cases which do not terminate in death. Although four diseases—heart disease, cancer, Bright's disease, and pneumonia—have now passed tuberculosis as causes of death at all ages, only pneumonia can compare at all with tuberculosis as a cause of mortality in the third to fourth decades of life. Moreover, we have no means as yet of controlling the mortality from pneumonia. There are two other diseases in still more humble positions in the tables of mortality which are of great social significance. These are mortality in childbirth and syphilis. The first is really a notable cause of death when the deaths are measured against the total population exposed to risk, while the second parades under many disguises, and if all these were collected under a single caption there is no doubt that an important cause of death would be revealed. Besides the social significance of a disease, the practical administrator must also take into account the scientific knowledge at our disposal for combating it, the practicability of applying that knowledge, and the significance of the disease, not only to the present generation but also to posterity.

The Journal of Scientific Instruments, a monthly publication dealing with the principles, construction, and use of their apparatus, is produced by the Institute of Physics with the co-operation of the National Physical Laboratory; the journal has been published hitherto by the Institute, but in future will be issued from the Cambridge University Press on behalf of the Institute.

THE NEW MEAT REGULATIONS.—The Minister of Health has addressed a letter to Lord Banbury and Sir Henry Cautley, who consulted him as to certain prevalent misunderstandings of the Public Health (Meat) Regulations, 1924, and the Rural District Councils (Slaughter-houses) Order, 1924. (See *THE LANCET*, Jan. 10th, p. 90.) These Regulations, the Minister writes, are designed to give effect to certain of the recommendations of the Departmental Committee on Meat Inspection, and do not impose any limitation as to the persons who may slaughter animals or as to the places at which animals may be slaughtered. What they do require is that where an animal is slaughtered for sale for human consumption notice must be given to the local authority, and the carcass must be retained for a few hours to give the inspector an opportunity of inspecting it if the local authority desire that this should be done. This is a very important provision for preventing traffic in diseased meat, inasmuch as inspection can only be satisfactorily carried out at the time of slaughter when all the organs are available for examination. This provision only applies where the meat is intended for sale, and the requirement as to the retention of a carcass does not apply in the case of a sheep, the danger of disease in sheep being relatively small.

Correspondence.

"Audi alteram partem."

THE SALE OF PATENT MEDICINES.

To the Editor of THE LANCET.

SIR,—The publication of a Special Supplement on the Sale of Patent Medicines by *THE LANCET* of Jan. 10th has again brought an important subject to the notice of the medical profession. This Supplement, which contains the report of the Select Committee of the House of Commons on Patent Medicines, 1914, and the text of the Proprietary Medicines Bill, 1920, deserves careful perusal by every medical man. While all are aware of the harm which is caused by the indiscriminate sale of patent medicines many are still unaware of the extent of the evil and of the powerlessness of the law to deal effectively with it. Ample information on both of these subjects is supplied by the report. It must be more generally recognised that the present uncontrolled sale of remedies and appliances, which are vaunted for powers they do not possess, leads many unfortunate sufferers to lose valuable time at the onset of serious illness before they seek medical advice and treatment. The analysis of many of these secret remedies has shown that they are useless and cruel frauds sold at an exorbitant price. There is urgent necessity for amendment of the present law. If the Proprietary Medicines Bill, 1920, became law it would go far to remedy the present deplorable state of affairs. It is greatly to be hoped that the present Government may be induced to bring about this very necessary reform so that we may at any rate no longer lag behind our colonies and other countries in a matter so vital to the health of the nation.

I am, Sir, yours faithfully,

Manchester, Jan. 26th, 1925. GEORGE R. MURRAY.

To the Editor of THE LANCET.

SIR,—If the public is concerned about its own interests, it should be deeply grateful to *THE LANCET* for bringing back to life the report of the Select Committee of the House of Commons on Patent Medicines. I trust that as a result of *THE LANCET*'s public-spirited action the present representatives of the public at Westminster will be moved to give their earnest attention to the striking statements of this plain-spoken document, and see that legislation upon the urgent questions it raises is not further delayed. That it was shelved during the Great War was perhaps inevitable; that a measure founded on the report got no further than the Upper House during the political turmoil of the last few years was not surprising; but now that we have entered on quieter times and there is no general election in immediate prospect, the House of Commons, one may hope, will have more ample opportunity for undertaking legislation of the kind that is useful rather than showy.

Of the urgent need of legislation on the subject in question I think no one who studies your re-issue of the report can doubt. We find the Committee roundly asserting, in sum, that under cover of a legitimate trade in medicinal preparations the varied resources of advertising were being employed in the promotion of a number of impudent and heartless frauds, involving danger to life and health as well as to purse; that these frauds were being prosecuted by the help of mendacious assertions, bogus testimonials, and fictitious signatures; that highly intoxicating beverages were being puffed and sold as medicines without any indication of their alcoholic contents; that advertisements were issued which were thinly veiled incitements to criminal acts; and that the large sums spent in advertising were sufficient to keep a large section of the press muzzled on the whole subject. Add to this that ours seemed to be about the only civilised country that had made no

serious attempt to check such abuses, and that even the few enactments bearing on this traffic were rendered abortive by the failure of the legislature to provide for carrying them into effect, and the case for the prompt re-introduction of the interrupted Bill of 1920 seems unassailable.

At the present day, fortunately, medicine is not unrepresented in the legislature; and it is to the medical Members of the House of Commons, and to the representatives of the more modern universities, who number so many medical men among their constituents, that appeal may in the first instance be justifiably made.

I am, Sir, yours faithfully,

The Athenæum, Jan. 24th, 1925. ISAMBARD OWEN.

To the Editor of THE LANCET.

SIR,—Your supplement of Jan. 10th will, I am sure, be of more than passing interest to the profession and the public by exposing the menace to the health of the community by the use of proprietary medicines and the fortunes made by the sale of them to an over-credulous public.

The object of this letter is to illustrate the way in which some at least of the pretensions of those who batten on human suffering may be checked by individual effort. About ten years ago there appeared at the end of a number of a well-known monthly magazine of high repute a concealed advertisement having the likeness of an editorial article, occupying two pages—a plausible reference to a cure for consumption, concluding with an address in Australia to which £5 was to be sent for particulars of the remedy. I at once wrote to the editor, calling his attention to the article, urging him to see that this masked advertisement did not appear in future numbers, at the same time pointing out how derogatory it was for a journal of such standing to become party to a fraud. To secure the success of my protest I promised, in the event of the "article" being repeated, to ask my colleagues to remove his magazine from their waiting-room tables. I received a "high and haughty" reply, together with an invitation to wait upon the editor. I then wrote suggesting an interview at my house. This concluded the correspondence, but its object was achieved in that no further veiled advertisements appeared.

I am, Sir, yours faithfully,

CHARLES W. CHAPMAN.

Wimpole-street, W., Jan. 13th, 1925.

DRUNK OR SOBER?

To the Editor of THE LANCET.

SIR,—We have read with interest and amusement the address of Sir James Purves-Stewart delivered on Jan. 13th before the Society for the Study of Inebriety. At the same time we must confess to a certain feeling of disappointment; for we had hoped that the harassed divisional surgeon might, perhaps, derive from this lecture valuable assistance in the most thankless and difficult of all his tasks—something a little more helpful, for instance, than a half-hearted instigation to the performance of lumbar or cistern puncture! And there is one point on which we must at once join issue with Sir James Purves-Stewart—namely, his suggestion that "the police surgeon may be too open to suggestion." We venture to submit that the police surgeon is very much less open to the charge of bias than is the medical man called in by the suspect for the express purpose of proving the latter's sobriety. With a long experience of many police divisional surgeons, we have no hesitation in saying that we have implicit confidence in their absolute impartiality. The divisional surgeon has nothing to gain by supporting the provisional diagnosis of the arresting police officer; in point of fact he very frequently reports on his man as being sober, and we are satisfied that when the divisional surgeon has any doubt as to the prisoner's sobriety, the prisoner gets the benefit of the doubt.

We also contend that a police surgeon attached to any of the big stations in central London has an unrivalled experience in the recognition of inebriety in all its stages, and, for ourselves, we would prefer to rely on the opinion of such an experienced and impartial observer rather than on that of any other medical man, however eminent in his own particular line. Again, we do not feel that Sir James Purves-Stewart has sufficiently emphasised the notorious fact that drunkenness may be a very transient phenomenon. We can most of us recall incidents in the course of bump-suppers, or similar festivities, illustrative of this point—e.g., the incoördination and dysarthria of the undergraduate at 10.30 P.M., who has pulled himself together and is conversing amicably, though possibly with a slightly overdone solemnity, with the dean at 11.15 P.M. The same sort of thing occurs not infrequently at the police-station, if we substitute a distinguished consultant for the dean of the bump-supper days.

We are, Sir, yours faithfully,

CHARLES A. BALLANCE.

London, Jan. 26th, 1925. MAURICE CASSIDY.

ETHYLENE GAS.

To the Editor of THE LANCET.

SIR,—Dr. Langton Hewer's article in your issue of Jan. 24th on his investigations as to the value of this anæsthetic are of interest, and all anæsthetists will, I am sure, be grateful to him for publishing them. Undoubtedly with oxygen it is most valuable. Unfortunately there is a fly in the ointment; I exclude the difficulty in compressing the gas, as seemingly Messrs. Coxeter have overcome that; personally the chemist who most kindly attempted to do so for me some 20 months ago was not as successful. The one point which does, however, interfere with the value of this anæsthetic is its explosive nature. Now that electric sterilisers are more popular, this contra-indication to its general employment may not be as powerful. Still, I would emphasise the fact that its use in the neighbourhood of a naked light is fraught with danger.

I am, Sir, yours faithfully,

CHARLES T. W. HIRSCH.

Hyde Park Gate, S.W., Jan. 25th, 1925.

ALASTRIM, PARA-SMALLPOX, AND VARIOLA.

To the Editor of THE LANCET.

SIR,—Prof. Jorge appears to deal with his subject very fully, but I do not think the Gloucester cases of last year fitted altogether with his description. (1) *Age-distribution*. The majority of the cases occurred in children, the greatest incidence being between the ages of 5–15. (2) *Onset*. In every case I have seen there has been a definite prodromal illness of three to four days, frequently severe. (3) *Rash*. Distribution was similar to severe small-pox, and in marked cases there were lesions with umbilication and scarring. In my experience there was, contrary to Prof. Jorge's findings, a definite relationship between local and general conditions. A severe rash was always accompanied by a certain amount of prostration and frequently by secondary fever. I fail to see how it would be possible to differentiate between a well-marked case of so-called alastrim and a mild case of true small-pox.

Material from some of our cases at Brockworth was sent to Dr. M. R. Gordon at the Pathological Department, St. Bartholomew's Hospital. He reported (1) the serological reaction obtained from the material was similar to that from vaccine lymph, and (2) the material he received from a very virulent case in the Surrey area in the autumn of 1923 reacted serologically in the same manner as the Gloucester strain.—I am, Sir, yours faithfully,

RONALD B. BERRY,

Jan. 24th, 1925. Medical Officer of Health, Gloucester.

"ELECTRONIC REACTIONS."

To the Editor of THE LANCET.

SIR,—One sentence of a certain report quoted in the last issue of THE LANCET (p. 180) is very illuminating. The signatories to the report presented to the joint Sections of Medicine and Electro-Therapeutics of the Royal Society of Medicine declare that "the fundamental proposition underlying the original and other forms of apparatus devised for the purpose of eliciting the so-called electronic reactions of Abrams is established to a very high degree of probability." (It should, perhaps, be noted that in the *British Medical Journal*, the word "designed" appears in place of "devised.") But how was this fundamental proposition first arrived at? Surely, nothing could have been known about the electronic reactions prior to the construction of the apparatus designed or devised to elicit them? We must therefore conclude that the electronic reactions were first conceived in Abrams' bosom, then demonstrated or elicited by an ad hoc apparatus, designed or devised to elicit them, but which (we are now assured) had no business to elicit them, and, finally, have been elicited by an ad hoc contrivance devised or designed by Dr. Boyd to elicit them.

In other words, the apparatus of Abrams and of Boyd are not scientific arrangements designed or devised to amplify or utilise experience, but are contrivances designed or devised to satisfy a wish present to the mind of the inventors—namely, the wish to elicit the "reactions of Abrams."

Nothing is more certain than that any contrivance designed or devised to elicit physical phenomena, of a kind never experienced but simply imagined, will either (1) fail to satisfy the wish of the inventor, or (2) if it does apparently satisfy his wish will owe its seeming success to the operation of some factor which, consciously or unconsciously present to the mind of the inventor, escapes detection by trustful "investigators." This is axiomatic, and of immense importance in these affairs. In the case of an investigation, conducted in France during the war, by a small committee, of which I was a member, it became very clear that the inventor (who claimed to have worked under Abrams) had, at an early stage, and prior to all experience, become possessed by the wish to invent a wonder-working machine that would do certain things, the like of which had not until then been done. And the precocious obsession by such a wish can always be detected, whether we have to do with getting gold from the sea, petrol from tap-water, cucumbers from moonshine, or ectoplasmic limbs from a medium.

But there is another axiom. In all such cases a stage is reached at which investigators are asked (and sometimes join in asking) that personal assurances of good faith should be allowed to take the place of the production of such evidence as is needed to substantiate the claims made, and as could be furnished, were the claims substantial. When this demand is made the province of science has been left behind, and we enter a domain in which demonstrations of confidence are confused with proof of integrity.

In the case of Dr. Boyd's contrivances, we are asked, by the signatories to the report, to accept assurance as to the critical judgment of the research officer to the Society of Psychical Research in place of the *experimentum crucis*! Mr. Dingwall, I know, will not be surprised if I say, frankly, that I like not the security. And I am sure that Mr. Dingwall himself will not accept the proposition that faith in his negative findings should exempt men of science from the performance of a scientific duty. I am reminded of some delightful passages in the late Dr. Geley's last work. After assuring his readers of the perfect control always instituted during certain spiritualistic performances, he declares that, on one occasion, when some very beautiful manifestations were obtained, the controls were omitted, owing to the lively emotions sustained by the investigators. But this, says Dr.

Geley, was of no importance. The beauty of the results firmly sustained the belief of the investigators in the good faith of the medium, a belief otherwise warranted by the institution of most rigorous controls on occasions when the results were negative!

Indeed, in all these situations the same *lacunæ*, the same excuses, and the same assurances return with almost calculated regularity. These recurrences, these *lacunæ*, do not authorise us to suggest fraud. But they do compel us to declare that, when they are present, the methods of scientific inquiry have not been followed.

Abrams began his career by performing a real service when, many years ago, he demonstrated his "lung reflexes." The sad comedy developed afterwards. That certain changes in percussion notes do occur in response to certain variations in muscular and visceral tone is now generally accepted. But, of any connexion between unseen bottles in hatches and changes in the percussion notes obtained over a little boy's belly, one can only say: *De non apparentibus et de non existentibus eadem est ratio*.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., Jan. 23rd, 1925.

BLOOD CHANGES IN SPRUE AND PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—In his interesting paper which appeared in your columns on Jan. 16th (p. 75), Dr. C. Elders concludes that the blood picture of sprue cannot well be distinguished from that of pernicious anæmia, in respect particularly to its high colour-index so characteristic of that disease. The 12 blood counts in two cases of sprue which he records gave a colour-index above the normal—1.0—in no fewer than ten counts, was normal in one, and below normal in one, the average index being 1.2. The six counts in a case of pernicious anæmia gave an index above normal in all counts, the average being the unusually high one of 1.57, and the first count giving the extraordinary index of 2.4.

In view of other features of similarity presented in the two diseases these high figures of colour-index, if correct, are striking; and I therefore ask permission to say that they appear to me to require some further consideration and elucidation before any final judgment is based upon them. I desire to point out, that in all the 18 counts recorded the figures of colour-index given are as much as one-fifth to one-third higher than the actual colour-index yielded in the usual way by the percentages of hæmoglobin and of red cells given or obtainable from the data in the reports.

Thus, in the first count recorded, the figure of hæmoglobin—20 per cent.—divided by the percentage of red cells—viz., 980,000, or 19 per cent. of the normal 5,000,000—yields a colour-index practically normal, viz., 1.05; whereas in the report the colour-index for this count is given as 1.3. And similarly in all the other counts. When these are corrected the results as regards colour-index are very different from those stated in the reports. It then appears that in the two cases of sprue, instead of a colour-index above normal in ten out of 12 counts, it was above normal in only three counts, normal in one count, and below normal in no fewer than eight counts, the average being 0.97 instead of 1.2. On the other hand, in the case of pernicious anæmia the colour-index was above normal in four out of the six counts, and below normal in the other two; but the average was 1.28 instead of the unusually high one of 1.57.

Of all the blood changes in the disease pernicious anæmia, the most constant at all stages of the disease, in my experience of about 1000 counts in 200 cases, is a colour-index above normal, found in my cases in 83 per cent. of all blood counts, normal in 7 per cent. of counts, and below normal in only 10 per cent. of counts; average, 1.16. On the other hand, in all the

other cases of severe anæmia presenting degrees of blood change sometimes as low as 14 per cent. of red cells, comparable in degree or character with those of pernicious anæmia, the colour-index is found above normal in only 12 per cent. of counts, normal in 28 per cent., and below normal in no fewer than 60 per cent. of counts; average, 0·8.

This is the class of case which I have differentiated and term septic anæmia. Judged by these data, the anæmia of cases of sprue of the kind now recorded belongs to the class of anæmia of septic type, rather than to the class constituted by the great hæmolytic disease known by the name of pernicious anæmia.

I am, Sir, yours faithfully,

WILLIAM HUNTER.

Harley-street, W., Jan. 20th, 1925.

AIR-EMBOLISM FOLLOWING URETHROSCOPY.

To the Editor of THE LANCET.

SIR,—By a curious coincidence there appear in both *The Lancet* and *British Medical Journal* of this week (Jan. 17th, 1925) notes of cases of air-embolism following urethroscopy; the one by Mr. R. S. Roper, the other by Mr. K. V. Trubshaw. Attention is very properly drawn by both these surgeons to the dangers of aero-urethroscopy. I have myself had three cases of what I believe to have been air-embolism following urethroscopy, one of which, unfortunately, proved fatal.

(1) About 20 years ago, shortly after I was appointed assistant surgeon to the Royal Victoria Hospital, Belfast, I was examining in the out-patient department the urethra of a young adult male with Fenwick's aero-urethroscope, when the patient suddenly became rigid and appeared to be about to have an epileptic fit. The urethroscope was immediately removed and the symptoms passed off in a few minutes, leaving no after-effects.

(2) On June 1st, 1923, I was examining a man, aged 45 years, in my consulting-room. The patient had a stricture in the bulbous portion of the urethra, through which I could only just thread a filiform bougie. After removing this bougie I passed the tube of a Wyndham Powell's urethroscope, and proceeded to distend with air. While I was inspecting the urethra the patient took an attack of dyspnoea and complained of pain in the left mammary region. He became faint, with a slow and feeble pulse. The tube was immediately removed and the symptoms passed off in a few minutes. Previous to this examination the patient had had filiform bougies passed, and since then has had an internal urethrotomy performed, and large metal dilators passed at regular intervals without any symptoms whatever.

(3) The third case was that of a stout, florid man, aged 67, with an impassable stricture. On Feb. 5th, 1922, I went some miles into the country to operate on him in the local hospital. Before the anæsthetic was administered I tried to pass a fine filiform bougie without success. This was followed by slight hæmorrhage. I now introduced the tube of a urethroscope which fitted rather tightly into the urethra. Air was being pumped in when we noticed that the patient was breathing stertorously, and had become cyanotic and unconscious, with dilated pupils and loss of corneal reflex. Notwithstanding all efforts to restore him death took place in a few minutes. A post-mortem examination was not allowed. If the anæsthetic had been given the death would have been wrongly attributed to it.

Now that attention has been drawn to this matter surgeons will be on the look-out for the first signs of distress in a patient undergoing an examination with the urethroscope, and may, perhaps, be warned in time to withdraw the instrument before serious symptoms have developed. Mr. Roper discusses the question of urethral shock and refers to cases occurring in St. Peter's Hospital. Thomson-Walker¹ faithfully records three cases which were under his care, two of which proved fatal. In all, a stricture was present, and in all the urethra had been examined under air-distension. The post-mortem examination of the fatal cases does not seem to have raised the question of air-embolism. It would be interesting to

¹ Genito-Urinary Surgery, Cassell and Co., 1914.

know if the brain was examined, as some of the symptoms in the recorded cases would seem to point to cerebral involvement.

We have now had sufficient experience of this accident to emphasise the importance of not using air-distension if any bleeding is present. It is also well to keep a close watch on the patient's condition, and instruct him to call out at once if he feels the slightest distress apart from the local discomfort of instrumentation. I wonder if urethral shock really occurs, and, if so, is it ever fatal. During many years of practice I have never seen anything beyond the faintness which any manipulation may produce in a patient who is frightened or nervous, except the alarming symptoms occasionally produced by the introduction of cocaine into the urethra, and directly attributable to the drug. The advantages of aero-urethroscopy are so obvious that there can be no question of abandoning it, but the risk of air-embolism must now be borne in mind.

I am, Sir, yours faithfully,

ANDREW FULLERTON,
Professor of Surgery, Queen's
University of Belfast.

Jan. 19th, 1925.

PICRIC ACID FOR BURNS.

To the Editor of THE LANCET.

SIR,—I am glad to see that Mr. H. S. Souttar, in his article on Burns and Scalds (*THE LANCET*, Jan. 17th), calls attention to the dangers of picric acid applications and has given up its use. I have never employed picric acid for burns and scalds, as I have found other methods more satisfactory. On several occasions I have seen very unpleasant complications result from picric acid; judging from my own observation, I do not think that medical men always realise that picric acid is tri-nitro-phenol. It is the phenol element that is poisonous, especially in little children.

I am, Sir, yours faithfully,

GEORGE PERNET, M.D.
London, W., Jan. 26th, 1925.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. Martin is placed on the Ret. List, with the rank of Surg. Capt.
H. A. M. Whitby to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. W. Malcolm is granted the local rank of Maj., for serv. with the Iraq Levies.

TERRITORIAL ARMY.

Lt.-Col. H. G. G. Mackenzie, having attained the age limit for retention, relinquishes his commn. and retains the rank of Lt.-Col.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. C. A. Lees, having attained the age limit, is retired, and retains his rank with permission to wear the prescribed uniform.

ROYAL AIR FORCE.

J. MacC. Kilpatrick is granted a short service commission as a Flying Officer.

Lt. V. P. Ellis, Dental Surgeon, General List, Army, is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

INDIAN MEDICAL SERVICE.

Major Kunwar Shamsher Singh has handed over the duties of Superintendent of the District Jail at Rawalpindi to Lt.-Col. M. Corry and Lt.-Col. N. M. Wilson, the District Jail at Ambala to Major B. Gale and Lt.-Col. H. C. Keates, and the District Jail at Lyallpur to Lt.-Col. R. T. Wells. The Governor of Bihar and Orissa has nominated Col. H. Ainsworth to be a member of his Legislative Council.

The King has approved the relinquishment of his temp. commission by Lt. Shanker Lal Gupta.

Obituary.

SIR JAMES MACKENZIE, M.D. EDIN.,
F.R.C.P. LOND., F.R.S., LL.D. ABERD.,

CONSULTING PHYSICIAN TO THE LONDON HOSPITAL; DIRECTOR,
INSTITUTE OF CLINICAL RESEARCH, ST. ANDREWS.

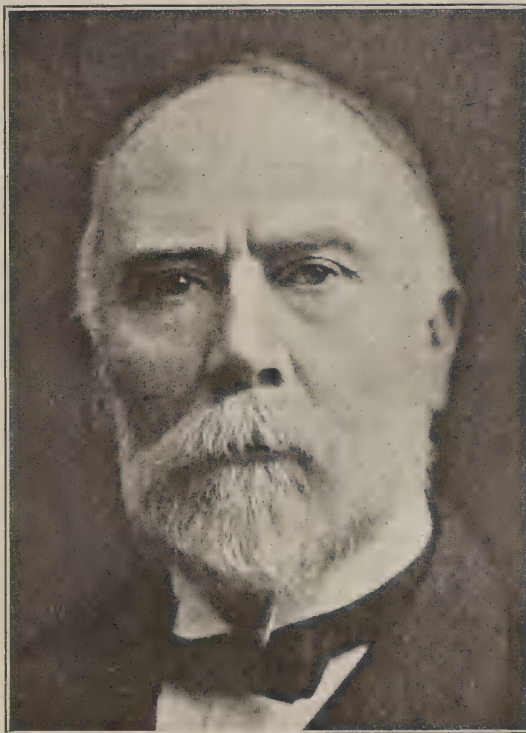
WE regret to announce the death of Sir James Mackenzie which occurred at his London residence on Monday last.

Sir James Mackenzie was born in 1853 at Scone, where his father, Robert Mackenzie, resided. He received his early education at the Perth Academy, whence he proceeded to the University of Edinburgh as a medical student. After graduation in 1878 he held the house appointments at the Royal Infirmary of Edinburgh, immediately after which he studied for a short period in Vienna, and then migrated to Burnley, where he went into general practice and where he remained for nearly 28 years. He was a highly equipped man with a scientific outlook from the first, and it was in the conduct of his practice that he made close written observations upon signs and symptoms in his various cases which led eventually to his commanding position as a cardiologist.

But it was long before his researches yielded anything in the nature of a general message to science, and those who have followed his career know that the time which he spent in collecting and collating notes and verifying conclusions would have terrified a man less nobly absorbed by his double determination to arrive at truth and to do good. He has told us that he became in an early stage of his career as a doctor specially interested in the nature of heart affections because the symptoms from which the conditions had to be inferred were few in number, enabling investigations to be limited and comparisons to be instituted along definite lines. Gradually there unfolded before him the great design to clear up some of the obscurities darkening our knowledge of cardiac mechanism and our interpretation of cardiac symptoms, and, where possible, to bring organic changes in the heart into relation with the symptoms, ascertaining their significance in respect both of prognosis and treatment. Steadily, and undeterred by the exhausting routine of general practice, he pursued his observations of cardiac mechanism along original lines and by original methods whose efficacy was due greatly to the intensive watching of individual cases over long periods, for from the beginning Mackenzie felt that if the generally accepted foundations of cardiac therapeutics were to be labelled as insufficient or unsound, unimpeachable evidence must support the challenge. He recognised, of course, as everyone must, that much of the orthodox treatment of heart disease which held the field till 20 years ago was correct, but he saw also that routine was often employed which would only be useful in certain cases, and that the vital importance of many trivial signs indicating cardiac irregularity had passed unnoticed. His close study of these irregularities soon threw light upon functional derangements of the heart in an amazing manner, and further gave indications both for logical diagnosis, prognosis, and treatment. The arrhythmias and the manner in which the heart responds to the varied conditions that may be brought about by infectious diseases or by the exhibition of drugs were made the subjects of special research, and at length the minute and assiduous investigations carried on for many years began to obtain recognition, and as each contribution to our learning was published new adherents were gained.

While still at Burnley he published a notable work, "The Study of the Pulse," and made good some of his conclusions which had been considered speculative when first promulgated; but probably his labours were first made clear to anything like a large audience at a meeting of the British Medical Association at

Toronto in 1906. On the voyage to this gathering our representative noticed how in a circle, which included also Henry Ashby, Clifford Allbutt, and Sims Woodhead in particular, Mackenzie's colloquial demonstrations of the bundle of His and reflections on similar sides of his deeply thought-out views, would cut right across text-book instruction, and yet appear convincing in their logicity; and when he read his contribution those who had heard his preliminary and informal disquisitions were not surprised at its effect. Prof. Aschoff opened the discussion, which centred around heart-block, with a description of the anatomical-pathological basis of irregularities and failure of heart muscle, the result of investigations



SIR JAMES MACKENZIE.

made by himself and Dr. Tawara upon the intracardiac muscles. This formed an excellent prelude to Mackenzie's paper, which described with full illustrations the phenomena of heart-block. He showed how his conclusions had been arrived at by the personal following-up, over 20 years or more, of groups of cases, tracing the association of the signs and symptoms—especially pain—with the passage of time, with the general conditions of the patient, and with accidental circumstances, and indicating his method employed for detecting and standardising intracardial lesions. He pointed out that the stimulus for contraction from auricle to ventricle through the bundle of His, if depressed, will result in a prolongation of the interval between auricular and ventricular contractions, until the ventricular systole may drop out or respond irregularly to auricular beats. He then explained the methods which he had devised for appreciating affections of the bundle.

Recognising that in cardiac disorder it is necessary to obtain information in regard to the movements of the different chambers of the heart, he devised instruments convenient for the purpose by modifying the sphygmograph so that simultaneously with a radial tracing the record of other movements connected with the circulation or respiration could be noted. He laid down that the essential requisite for

the interpretation of the tracings of any movements of the circulation is a standard by which different phases of cardiac revolution can be recognised, and, taking the radial pulse as that standard, its cause being known and its position in the cardiac cycle being fixed, he was able to record any movements occurring before, with, or after the radial pulse, and refer them to forces having a definite period in the cardiac cycle. He produced graphic illustrations of simultaneous tracings of the carotid and radial pulses, showing the duration of the interval between them; and also simultaneous tracings of the apex beat and the radial pulse, and of the apex beat and the jugular vessels and the radial pulse, while by other tracings he illustrated graphically the influence of rest and of depressing disease, as well as of vagus stimulation and of the various phenomena of heart-block.

In 1907 he came to London and took up consultative practice. He was immediately appointed lecturer in cardiac research at the London Hospital and elected physician to the institution, and in the following year brought out a large and carefully illustrated volume entitled "Diseases of the Heart," which had a great reception and went through several editions in a comparatively short space of time, being also translated into German, French, and Italian. The long years of waiting were triumphantly rewarded by private practice in overwhelming quantity and unstinted official recognition. In 1911 he delivered the Oliver-Sharpey Lectures before the Royal College of Physicians of London, in which he reviewed the whole subject of heart failure, forming a penetrating comparison between the old and the modern conceptions. The lectures were published in full in THE LANCET, and did not escape criticism in detail, for researches had been made since his earlier work, with which all are now familiar, and which necessitated, perhaps, more variations in his views than he was prepared to allow; but the enormous value of the researches that he had pursued steadily for a working generation was acclaimed on all hands.

During the war Mackenzie played a prominent part in assisting the authorities to evaluate heart disease as structural or functional, and as temporary or permanently incapacitating its victims. He was appointed physician to the King in Scotland, in 1915 he was knighted, and in 1916 was elected F.R.S. But at the cessation of hostilities, and when at the zenith of his fame, he closed down all his metropolitan work and went to St. Andrews, where he founded the Clinical Institute, with the broad intent to bring the methods of general practice into touch with the methods of research. There he worked steadily for four years in close touch with his collaborators, and the outcome of some of their labours has already been published widely. The tribute from his St. Andrews colleagues, which Dr. David Waterston sends, explains what it must have meant to Mackenzie to leave London, and suggests the wide scope of his final interests.

About a year ago he became by a tragic coincidence the victim of the cardiac affection which was the subject of his last written work, for he died of angina pectoris.

His literary work includes besides his famous treatise "Diseases of the Heart," of which a fourth edition is shortly to be issued, with the author's revision, by the Oxford University Press; "Symptoms and their Interpretation," and "The Principles of Diagnosis and Treatment in Heart Disease," both of which have been the subject of wide translation and re-issue; a treatise on "Heart Disease in Pregnancy" and one on "Angina Pectoris," which was published last year. He was also the author of contributions to two volumes of "Reports of the St. Andrews Institute," the second of which is reviewed this week in our columns; he delivered the Gibson Memorial Lecture before the University of Edinburgh and the Schorstein Lecture at the London Hospital.

He married in 1887 Frances, daughter of Mr. George Jackson, who survives him.

A TRIBUTE TO SIR JAMES MACKENZIE FROM HIS ST. ANDREWS COLLEAGUES.

Dr. DAVID WATERSTON writes:

"In the deep sense of recent personal loss, it is not easy for his St. Andrews colleagues to pay an adequate tribute to the memory of Sir James Mackenzie, and it is possible only briefly to mention some aspects of his work and his influence there.

"Sir James Mackenzie's work culminated in his foundation of the Institute for Clinical Research at St. Andrews. The reasons which induced him to found the Institute there and the special line of research which he desired the Institute to represent have been fully expounded by himself in various papers and in the reports of the Institute. As a clinical investigator his work began with the observations which he made while in practice in Burnley. His busy consulting and hospital practice in London added to the wealth of his experience, but it was in his work at the Clinical Institute that he summed up and put forth the considered conclusions drawn from the clinical observations made during the course of his life's work.

"The conception of an Institute devoted to clinical investigation was the outcome of his pioneer work as an investigator while a general practitioner. He formulated the fundamental truth that medicine is a special branch of science dealing with a special group of phenomena to which the clinical investigator must apply the methods which are specially suitable for his purpose. Other sciences have their contribution to make to medicine, but they are to be regarded as only ancillary and not replacing the proper methods of clinical investigation into the phenomena of ill-health and disease which afford the material for study. Among other things, it was essential, in his view, to employ the opportunities the general practitioner alone possesses of watching the 'life-history' of ill-health in patients over a long course of years.

"St. Andrews was known to him, was a place of convenient size, and seemed in other respects suitable for launching his great enterprise. After paying some visits to it he decided to give up his appointments and his work in London and to devote his energy and ability to this new field. What it meant to leave London and his work there is not easily estimated. The London Hospital authorities had given him every facility for special hospital work. His position had been recognised as a great consultant, clinician, and teacher. He deeply appreciated the facilities which had been afforded him both at the London Hospital and at the Hampstead Hospital (Mount Vernon). But he realised that he could not in London carry on the work which he felt was fundamentally necessary for the advance of medicine, and after full consideration he decided to abandon this work and to devote himself to founding a Research Institute.

"He came to St. Andrews unknown by name to all but a few of his medical colleagues and began at the cottage hospital a series of clinics in the out-patient department, to which he soon attracted all the practitioners. These clinics rapidly produced the desired effect and aroused in his audience the desire to coöperate in the work which he showed was waiting to be done. With the assistance of generous friends who were deeply interested in his ideas, and with his own financial help, a suitable building was secured and fitted up, and the definite work of the Institute was begun. At a later stage, as the usefulness and value of the work became realised, additional help was given by the Carnegie Trust and by the Medical Research Council.

"Of the work which has been accomplished at the Institute this is not the occasion to write at length, nor is it possible as yet fully to estimate the significance and the far-reaching results of this pioneer movement in medicine. It has already had an influence far wider than a merely local one, and medical thought and medical practice in many countries of the world have received from it direction and guidance. The recent award of the Mickle Fellowship of the University

of Toronto is an illustration of the wide recognition given to his work in St. Andrews. For three years he devoted his whole time and thought to the work of the Institute and to the training of those who worked with him there, and then, satisfied that he had laid down the lines for their work, he gradually withdrew himself from active direction, and gave to the members of the Institute the opportunity of carrying on the work by themselves. At a still later stage his health began to fail, and he decided to winter in a milder climate, but to the very last the welfare of the Institute was foremost in his interests and thought.

"It is not easy for his colleagues to realise fully the extent of the loss they have sustained by his sudden death. His vivid personality and the vigour of his mind had made a deep impression upon them, and the stimulus of coming into contact with him in discussion and debate was of incalculable benefit to them all. They realised the greatness of his genius and his extraordinary insight into medicine, and they had come to look upon him not only with respect and admiration, but with the most sincere affection.

"Great as was the influence of his personality his colleagues feel that the value of his work did not depend upon that element, and will not end with his death. Not only in his work upon the heart, but in the wider field of general medicine, his observations and the principles which he has deduced from them are of permanent and abiding value."

SIDNEY BARWISE, B.Sc. BIRM., M.D. LOND.,
D.P.H. CAMB.

THE sudden death on Jan. 24th of the medical officer of health for Derbyshire came as a shock to his many friends in the public health service. Dr. Barwise was in his sixty-third year, but he had retained the keenness and energy of youth and up to the last gave the impression of having many more years of active life in front of him. His student days were spent in Birmingham where, as a pupil of Dr. Alfred Hill, then medical officer of that city, he acquired a keen interest in chemistry. After holding residential appointments at the Queen's Hospital in Birmingham, Barwise took the D.P.H. at Cambridge in 1889 and became medical officer of health of Blackburn. While there he made a useful report on the smoke nuisance. In 1891 he was appointed, from among 56 applicants, medical officer of health for Derbyshire, a position which he held for nearly 35 years. His intimate knowledge of chemistry and his subsequent experience soon marked him out as an expert in the questions of sewage purification and the prevention of the pollution of rivers. During the gradual change over from the environmental to the domestic aspect of public health, Dr. Barwise's keen intellect enabled him to adapt himself to the new conditions, and through his instrumentality Derbyshire is now regarded as one of the most progressive counties in nursing, maternal care and child welfare, dental treatment, and all matters appertaining to the school medical service. Recent instances of his activities have been campaigns in favour of clean milk and of what is known as the newer knowledge of nutrition. In his last report considerable space was devoted to helio-therapy and helio-hygiene; in the Derbyshire sanatoriums all the various treatments which have been recommended for tuberculosis have been tested. This report also contained an important administrative study of goitre, which has been reprinted, and it will be for others to initiate action on the lines advocated with a view to making "Derbyshire neck" a thing of the past.

The methods which Dr. Barwise adopted in sifting new proposals were thorough, but when once he had made up his mind he took a strong line. As was natural, he occasionally aroused considerable opposition, as in the recent case of the employment of dental dressers. Those who heard Dr. Barwise explain his views on this subject felt that, in his hands at any rate, the scheme was sound and did actually give

results. His opponents in this and other matters would be the first to acknowledge that Dr. Barwise, though keen, was a courteous and fair fighter. In a period of rapid advance in the science and art of public health Dr. Barwise will be remembered as one who was never content with achievement, and was always ready to consider and adopt new measures.

CHARLES MOLESWORTH TUKE, M.R.C.S. ENG.

Dr. Charles Tuke, whose death occurred in London on Jan. 24th, bore a name associated for several generations with the enlightened care of the mentally ailing, but was not an actual descendant of William Tuke, the founder of the York Retreat. His father was Dr. T. Harrington Tuke, for many years proprietor of a private asylum at the Manor House, Chiswick, and Charles Tuke, in coöperation with his brother, the late Thomas Seymour Tuke, for many years carried on the father's work at Chiswick House, to which beautiful place the institution was removed. Charles Tuke was a student at St. George's Hospital, where he held several house appointments before becoming resident clinical assistant at Bethlem Royal Hospital, which, and his family connexions, determined his future outlook. He was an active member of the Medico-Psychological Association and became President of the West London Medico-Chirurgical Society. In his younger days he was a well-known cricketer, for several seasons being a successful bowler in the Middlesex county team.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 17TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely—small-pox, 113; scarlet fever, 1910; diphtheria, 1089; enteric fever, 27; pneumonia, 1261; puerperal fever, 47; cerebro-spinal fever, 9; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 31; continued fever, 3; dysentery, 13; ophthalmia neonatorum, 81. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases exceeded 100 for the first time for a twelvemonth.

The cases of dysentery were notified, one from the metropolitan borough of Southwark, the others from the following counties: Chester, 1 (Macclesfield); Durham, 1 (Sunderland); Gloucester, 2 (Bristol); Lancaster, 1 (Whiston R.D.); Stafford, 1 (Cheadle R.D.); Surrey, 3 (Woking); Yorks E. Riding, 1 (Kingston-upon-Hull); Yorks W. Riding, 2 (Leeds).

Deaths.—In the aggregate of great towns including London, there were 6 deaths from enteric fever, none from small-pox, 13 from scarlet fever, 49 from diphtheria, 56 from measles; 142 from influenza, as compared with 124, 100, and 83 in the three preceding weeks. In London itself the deaths from diphtheria numbered 12 and from whooping-cough 34.

THE case of *Rex v. Bateman* will be before the Court of Criminal Appeal on Monday next, Feb. 2nd.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held at 90, Buckingham Palace-road, London, S.W., on Tuesday, Feb. 10th, at 6 P.M., when a discussion will take place on Food and Health, to be opened by Major-General Sir Wilfred Beveridge, followed by Dr. W. M. Willoughby. The chair will be taken at 6 P.M. by Dr. Louis C. Parkes, deputy chairman of the Council.

MANCHESTER'S FILM CRUSADE AGAINST VENEREAL DISEASE.—A campaign to fight venereal disease was begun on Jan. 26th and will be continued until Feb. 14th. By means of a series of cinematographic films, the Manchester Public Health Department will endeavour to draw the attention of the public to the gravity of venereal diseases and the urgent need from the social and individual standpoint for immediate and continued treatment at the free clinics which are provided in the city. Men and women and girls over 15 years and boys over 17 years are invited, and the film displays will be free. Films of a biological character will be shown at meetings for women only. The films will be shown at various public halls in the city and in adjacent townships. Amongst the films which are to be shown are "The End of the Road," "Damaged Goods," "How Life Begins," "The Shadow," and "The Flaw." All the films to be shown have the approval of the Ministry of Health and the Public Health and Watch Committee of the city.

Medical News.

UNIVERSITY OF OXFORD: Scholarships in Natural Science.—Scholarships in Natural Science (for which intending students of medicine are eligible equally with others) are offered for competition as follows: Keble College, examination beginning on March 16th; Merton, Exeter, New, Brasenose, Corpus Christi, and Wadham Colleges examination beginning on March 17th.

The Romanes Lecture for 1925 will be delivered by Sir William Bragg, F.R.S., Hon. Fellow of Trinity College, Cambridge, and Fullerian Professor of Chemistry at the Royal Institution, in the Sheldonian Theatre, on May 20th, at 5.30 P.M., on the Crystallin State.

UNIVERSITY OF LONDON.—A course of eight lectures on the Chemistry of the Internal Secretions will be given by Dr. E. C. Dodds, lecturer in biochemistry and chemical pathologist to the Middlesex Hospital, at Middlesex Hospital Medical School, Cleveland-street, W., at 5 P.M., on Tuesdays and Thursdays, Feb. 3rd, 5th, 10th, 12th, 17th, 19th, 26th, and March 3rd. Attendance at this course is recognised in connexion with the B.Sc. (Honours) Degree in Physiology. A course of four lectures on the Medullary Centres will be given by Dr. J. M. Duncan Scott at St. Bartholomew's Hospital Medical School, 6, Giltspur-street, E.C., at 5 P.M., on Wednesdays, Feb. 11th, 18th, 25th, and March 4th. Admission to both courses of lectures is free.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—A. J. Dowek, Manchester; T. McD. Kellough and J. Maingard, Guy's Hosp.; E. J. P. McDowell, St. Thomas's Hosp.; A. Mishriky (Sect. II.), St. Mary's Hosp.; B. L. Steele, Univ. Coll. Hosp.; and C. C. Taffs, St. Thomas's Hosp.

Medicine.—W. Bentley, Birmingham; C. V. Brown (Sect. I.), Guy's Hosp.; N. E. Challenger, McGill; L. Freeman, St. Thomas's Hosp.; E. F. Hottinger, St. Mary's Hosp.; R. C. Pratt (Sect. I.), Birmingham; C. W. Warne, Guy's Hosp.; and D. Winstanley, Liverpool.

Forensic Medicine.—N. E. Challenger, McGill; E. F. Hottinger and W. Johnson, St. Mary's Hosp.; W. Irving Pierce, Boston, U.S.A.; R. J. Rutherford, Durham; and H. Winstanley, Liverpool.

Midwifery.—M. R. Burke, St. George's Hosp.; F. Carroll, St. Mary's Hosp.; C. E. Hagenbach, St. George's Hosp.; E. F. Hottinger, St. Mary's Hosp.; A. J. Moody, St. Bart's Hosp.; K. E. R. Robertson, St. Mary's Hosp.; and H. Winstanley, Liverpool.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: A. J. Dowek, L. Freeman, E. F. Hottinger, E. J. P. McDowell, A. J. Moody, C. C. Taffs, and C. W. Warne.

EDINBURGH UNIVERSITY ALUMNI ASSOCIATION.—A meeting of the Alumni Association of Edinburgh University was held on Jan. 23rd in the McEwan Hall, at which the Earl of Balfour, K.G., Chancellor of the University, delivered an address. Sir Harold Stiles, the founder of the movement a year ago, took the chair, and in opening the meeting stated that having seen the great benefits which accrued from similar institutions in America, he had suggested that an Alumni Association be instituted in Edinburgh University. The object was to try to produce a relation between Alumni of the University in all parts of the Empire, and to do everything to promote the interests of their Alma Mater. The movement had taken root, 842 graduates had joined, and £1075 had been subscribed. That very morning he had received from one of his old house surgeons, Dr. Charles Cooper of San Francisco, a gift of £1000 to be used in giving practical advice to young graduates in research. Lord Balfour commenced by saying that he rejoiced in having an opportunity of addressing representatives of the University with which he was so closely connected on a subject which he was convinced was going to have in this country, as it has already had in America, a great and growing success. The subject touched a side of University life too often forgotten; the individual graduate was too apt to consider a University as a mechanism for imparting a certain amount of learning. This, doubtless, he said, was its main and primary object, but a man who leaves a university having only obtained a modicum of intellectual education and a certain equipment for the struggle of life is a man greatly to be pitied; a university gave a man much more than this. Anybody who had been through a university, and who had tried to measure all he has gained from its instructions and its life would find that after all it was the human intercourse which accompanied it, patriotism and traditions, which all combined to form a bond of union. Another side of the question was that of money. For this he felt strongly, that large sums should not be asked of any member of the

Association. The sum asked was deliberately kept within the means of those whose incomes were small, but it was to be hoped that the obligatory sum would in many cases be exceeded, especially by those Alumni whose success was due to their past training. The cost of medical teaching had greatly increased, and the cost of research had been added to it in every university worth the name. Literature, mathematics, history, philosophy, and theology given a suitable building, good lecture rooms, good lecturers, and willing students might be taught at no great expense, but in the case of medicine and experimental science the cost of teaching was growing—it could not be done on the cheap. Debts of gratitude, he continued, were due to citizens of Edinburgh for the help they had afforded, also to such bodies as the Rockefeller Trust. Students' fees and endowments from Government and local authorities, however, were not sufficient; what was required was that past members of the University should subscribe according to their means, and that the money collected be turned to the best account.

HUNTERIAN SOCIETY.—The annual dinner will be held at the Hotel Victoria, Northumberland-avenue, on Feb. 12th at 7.30 P.M. Fellows are asked to notify the hon. secretaries, at 94, Harley-street, W. 1, as soon as possible the number of guests they intend to bring.

RONTGEN SOCIETY.—A meeting will be held on Feb. 3rd at 8.15 P.M. in the British Institute of Radiology, 32, Welbeck-street, London, W., when a paper on Constant Voltage High Tension Generators will be read by Major C. E. S. Phillips and one on Some Further Aspects of the Theory and Operation of Potter-Bucky Diaphragms, by Mr. C. H. Holbeach, who will also give a demonstration of the new C.D.X. dental X ray equipment.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Feb. 2nd, Mr. Arthur Giles will lecture for the Fellowship of Medicine on the Operative Treatment of Uterine Displacements. The lecture will be delivered in the West Lecture Hall of the Royal Society of Medicine at 5.30 P.M. During the month of February the following courses will be held: A three weeks' combined course in Diseases of Children, arranged by the Paddington Green Hospital, Victoria Hospital, and the Children's Clinic; a four weeks' course in Dermatology at the St. John's Hospital for Diseases of the Skin; a month's course in Venereal Diseases at the London Lock Hospital, and as this course is not held unless eight entries are received early application is desirable; and eight clinical demonstrations (twice a week) spreading over a month at the School of Tropical Medicine. For the last fortnight of February a course will be held in General Medicine and Surgery and the Special Departments, at the North-East London Post-Graduate College (Prince of Wales's Hospital, Tottenham, N.), for which early application should be made. In March there will be courses in Diseases of the Chest, Brompton Hospital; Medicine, Surgery, and Gynaecology, at the Royal Waterloo Hospital; Gynaecology, at the Chelsea Hospital for Women; Infectious Fevers, at the North-Eastern Hospital, Tottenham; and an intensive course dealing with Medicine, Surgery, and the Various Specialties, at the Royal Northern Hospital, with which will be associated the Royal Chest Hospital. Copies of the syllabus of the above-mentioned courses, together with the Fellowship Bulletin, may be had on application to the Secretary at 1, Wimpole-street, W. 1.

THE MINISTER OF HEALTH ON HIS PLANS.—Under the auspices of the People's League of Health, a deputation waited on Mr. Neville Chamberlain on Jan. 27th. The deputation was introduced by Viscount Burnham, and its object was to submit to the Minister the resolutions passed at the Conference convened by the League, held at the British Empire Exhibition, Wembley, last May. The members of the deputation included: Prof. J. G. Adami, Sir W. Arbuthnot Lane, Sir Harry Baldwin, Dr. H. Scurfield, Sir Leonard Rogers, Sir William Simpson, Dr. A. F. Tredgold, Mr. C. J. Bond, Prof. H. R. Kenwood, Colonel S. Lyle Cummins, Dr. Jane Walker, Prof. F. E. Wynne, Prof. G. M. Robertson, Prof. W. E. Dixon, Lieut.-Col. F. E. Fremantle, Mr. E. B. Turner, Mrs. Scharlieb, M.D., and Miss Olga Nethersole. The Minister of Health, replying to the deputation, said that the department had already issued a pamphlet on diet. He doubted whether a Government department could properly undertake the issue of popular leaflets which must necessarily be in a form open to criticism by specialists. But he contemplated that further pamphlets would be issued by the department which might be made a basis of popular leaflets prepared by more suitable bodies. He would give further consideration to the question. He was advised that the public were getting far more careful about the kinds of prepared foods that they gave to children; but he agreed that possibly something more needed to be done by regulation, and he was considering the framing of regulations on this subject. He proposed

to accept generally the recommendations of the Food Preservatives Committee, which would be circulated in draft so that the interests concerned could make out any case they had against them. In view of the many Government measures urgently requiring to be passed through, he doubted whether it would be politic to introduce legislation for the abatement of the smoke nuisance this session, but he hoped to secure it an early place in the Government programme next year. As to provision of facilities for the early treatment of mental cases, the fact that he had himself prepared a Bill when previously in office was an earnest of his intentions in this matter. He was informed that the Board of Education were about to make special provision for dealing with children who had suffered from encephalitis lethargica. The securing of better coördination of hospital services was an aim with which he was in entire sympathy. The reform of the Poor-law, which was essential to this object, would be dealt with by the Government as soon as possible. He quite recognised the risk of the spread of tuberculosis by adults suffering from the disease. He thought that it would be better to remove the source of infection from the children rather than the children from the source of infection, because if the source of infection was not removed though it might not affect children it would probably infect somebody else. Many local authorities had in private Bills taken power to remove tuberculous cases compulsorily, and he was prepared to give general powers to local authorities in amending the Public Health Bill which he contemplated introducing as early as possible. That Bill would be a preliminary to the consolidation of the Public Health Acts, and he hoped that it might be possible to get both these measures through in the coming session. He also hoped that if not this session, at any rate next, he would be able to get through a Bill amending the Midwives Act. The Home Office at present had a committee under the chairmanship of Mr. Justice Tomlin considering the subject of amendment to Part I. of the Children Act, 1908, and he hoped that legislation on this subject also would be possible at an early date. He associated himself with the resolution, congratulating Miss Nethersole and her helpers on the success of the Conference.

Medical Diary.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, Feb. 5th.—4.30 P.M. *Papers to be read:*
H. M. Carleton: Growth, Phagocytosis, and other Phenomena in Tissue Cultures of Foetal and Adult Lung. (Communicated by Sir Charles Sherrington, O.M., P.R.S.) F. W. Fox and J. A. Gardner: The Origin and Destiny of Cholesterol in the Animal Organism. Part XIV.—The Cholesterol Metabolism in Normal Breast-fed Infants. (Communicated by Sir Walter Fletcher.) H. H. Thomas: The Caytoniales. A New Group of Angio-sperous Plants from the Jurassic Rocks of Yorkshire. (Communicated by Prof. A. C. Seward.) Winifred Branchley and H. G. Thornton: The Relation Between the Development, Structure, and Functioning of the Nodules on *Vicia Faba* as Influenced by the Presence or Absence of Boron in the Nutrient Medium. (Communicated by Sir John Russell.)—*Papers to be read in title only:* A. S. Rau, F. W. R. Brambell, and J. B. Gatenby: Observations on the Golgi Bodies in the Living Cell. (Communicated by Prof. J. P. Hill.) V. Nath: Cell Inclusions in the Oögenesis of Scorpions. (Communicated by Prof. J. Stanley Gardiner.) L. J. Harris: The Combination of Proteins, Amino-acids, &c., with Acids and Alkalis and their Combining Weights, as Determined by Physico-chemical Measurements. (Communicated by Sir Frederick Hopkins.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. MEETINGS OF SECTIONS.

Tuesday, Feb. 3rd.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Cases:

Mr. W. H. Ogilvie: (1) Case of Paralytic Dislocation of the Hip-joint. (2) Case of Rickets with Unusual Deformities.
Mr. R. C. Elmslie: Two Cases of Scoliosis with Paraplegia.
Mr. H. A. T. Fairbank (President): (1) Case of Unilateral Imperfect Formation of Hip-joint: Subluxation with Spontaneous Recovery. (2) Specimen, &c., of Unusual Osteoma from Case of Multiple Exostoses.

Other cases will be shown.

Will members wishing to show cases please send their notes to the hon. secretary, Mr. P. Jenner Verrall, 116, Park-street, W.

PATHOLOGY: at 8.30 P.M., at the National Institute for Medical Research, Hampstead, N.W. 3.

Demonstrations:

J. Brownlee: Charts Illustrating Changes in Immunity with Age.

A. Eidinow: The Effect of Irradiated Blood on Hæmo-bactericidal Power.

H. H. Dale, F. M. Durham, and J. E. Marchal: The Effect of "Bayer 205" on Trypanosomes.

J. Smiles: The Action of Light on Bacteria.

J. E. Barnard: A Method of Demonstrating the Development of Young Colonies with High Powers.

H. W. Dudley and O. Rosenheim: Demonstration of Spermine Phosphate from Various Tissues.

W. Mair: A Peculiar Reaction to Filtrates of Pneumococcal Cultures.

S. R. Douglas: Some Remarks on Möllgaard's Chemotherapeutic Treatment of Tuberculosis.

Communications:

W. J. Purdy: The Temperature of Normal Rabbits.

P. Hartley: Further Observations on the Role of the Ether-soluble Constituents of Serum in Certain Serological Reactions.

Wednesday, Feb. 4th.

SURGERY

ANÆSTHETICS

MEDICINE

OBSTETRICS &

GYNÆCOLOGY

PATHOLOGY

Speakers:

Sir Charles Gordon-Watson and Mr. E. C. Lindsay (Surgery), Dr. F. E. Shipway (Anæsthetics), Lord Dawson of Penn (Medicine), Mr. J. Prescott Hedley (Obstetrics), and others.

N.B.—If necessary, this discussion will be adjourned to Friday, Feb. 6th, at 8.30 P.M.

Friday, Feb. 6th.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases will be shown by Mr. H. M. Wharry, Mr. Herbert Tilley, Mr. Norman Patterson, Mr. H. Bell Tawse, Dr. W. H. Kelson, Mr. F. J. Steward, Mr. T. B. Layton, Dr. T. B. Jobson.

Saturday, Feb. 7th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)

Cases will be shown.

Demonstration:

Mr. Lionel Colledge: Kinematograph Pictures of Cases of Facial Paralysis Treated by Nerve Anastomosis.

Paper:

Mr. G. J. Jenkins: Septicæmia as a Complication of Middle-ear Infection.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 2nd.—5 P.M., Prof. Zachary Cope: Extravasation of Bile.

WEDNESDAY.—5 P.M., Prof. H. P. Winsbury White: The Pathology of Hydronephrosis.

FRIDAY.—5 P.M., Prof. A. H. Todd: Syphilitic Arthritis.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

MONDAY, Feb. 2nd, to SATURDAY, FEB. 7th.—WEST

LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street. Lecture arranged by the Fellowship of Medicine and open to all members of the profession. Monday, Feb. 2nd, 5.30 P.M., Mr. Arthur Giles: The Operative Treatment of Uterine Displacements.—COMBINED COURSE IN DISEASES OF CHILDREN, Paddington Green, Victoria Hospital and Children's Clinic. Two sessions daily.—LONDON LOCK HOSPITAL. Comprehensive Course. Clinical work daily and lectures at Dean-street Monday, Tuesday, Thursday, and Friday.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN. Demonstrations daily in the various departments. Pathological demonstrations arranged for and Tuesday and Thursday special lectures. Tickets for this particular course from the Fellowship.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Tropical Section, Endsleigh Gardens). Tuesday and Thursday, 2 P.M. Clinical Demonstration by Dr. G. C. Low and Dr. P. Manson-Bahr.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Feb. 2nd.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—11 A.M., Dr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Dowling: Skin Dept. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Mr. Sinclair: Surgical Dyspepsia. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—11 A.M., Dr. McDougall: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, Feb. 3rd.—4.30 P.M., Dr. L. R. Yealland: The Differential Diagnosis of Fits.

FRIDAY.—4.30 P.M., Mr. H. W. Carson: Prognosis in Breast Cancer.

Daily, In-patient and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: FEB.—MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Feb. 2nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Epilepsy: Dr. Aldren Turner.

TUESDAY, Feb. 3rd.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Compression Paraplegia due to Tumours: Mr. Armour.

THURSDAY, Feb. 5th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., The Diagnostic Significance of Tremors: Dr. Risien Russell.

FRIDAY, Feb. 6th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Some Forms of Acute Encephalitis: Dr. James Collier.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Feb. 5th.—12 noon, The Cerebro-spinal Fluid, Physiology and Pathology: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Feb. 2nd.—12 noon, Spinal Cord and Medulla: Dr. Hinds Howell.

The Fee for this Course will be £2 2s.

Dr. H. J. MacBride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, Feb. 4th.—3.30 P.M., The Optic Nerve: Mr. Leslie Paton.

Applications for this Course should be made early. Fee, £5 5s., if taken as a separate Course, or £3 3s. if taken with the General Course.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course. J. G. GREENFIELD, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 5th.—4 P.M., Dr. Paterson: Acidosis and Vomiting in Infancy and Childhood.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.

THURSDAY, Feb. 5th.—5 P.M., Dr. C. H. Roberts: Malpresentations.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Feb. 3rd.—5 P.M., Dr. Graham Little, M.P.: Lichen Planus.

THURSDAY, Feb. 5th.—5 P.M., Dr. J. L. Bunch: Pruritus. Prurigo. Lichenification.

ANCOATS HOSPITAL, MANCHESTER.

THURSDAY, Feb. 5th.—4.30 P.M., Mr. Diggle: Diseases of the Oesophagus.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch)

FRIDAY, Feb. 6th.—4.30 P.M., Dr. J. F. Ward: Management of Premature Infants.

MANCHESTER MEDICAL SOCIETY.

WEDNESDAY, Feb. 4th.—4.30 P.M., President's Address: Twins in Health and Disease.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES.

MONDAY, Feb. 2nd.—(At the Children's Hospital.) Dr. Fordyce: Clinical.

TUESDAY.—(At the Southern Hospital.) Mr. T. R. W. Armour: Fractures in the Neighbourhood of the Ankle-joint.

WEDNESDAY.—(At the Northern Hospital.) Mr. Simpson: Surgical Cases.

THURSDAY.—(At the Stanley Hospital.) Dr. Gullan: Pernicious and Other Anæmias.

FRIDAY.—(At the Royal Infirmary.) Mr. Jeans: Urinary Cases.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Feb. 3rd.—4 P.M., Dr. J. Thomson: Albuminuria in Children and Adolescents. Discussion to be opened by Dr. Rowand and Dr. Paton.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.

WEDNESDAY, Feb. 4th.—6 P.M., Lieut.-Col. R. McCarrison, I.M.S.: Food of Mankind Treated Historically and Geographically.

Appointments.

MILLER, C. H., M.D. Camb., F.R.C.P. Lond., has been appointed Assistant Physician to the Royal Devon and Exeter Hospital.

POWELL, A. T. W., M.B., B.S. Lond., Assistant County Medical Officer of Health for the County of West Suffolk.

ROSE, W. G., F.R.C.S. Eng., M.B., B.S. Lond., Assistant Honorary Surgeon to the Derbyshire Royal Infirmary.

TODD, ALAN H., M.S., B.Sc. Lond., F.R.C.S. Eng., Honorary Orthopaedic Surgeon to Croydon General Hospital.

Certifying Surgeons under the Factory and Workshop Acts: BROOME, F. C. S., M.B., B.S. Lond. (Ryde, I.O.W.); PARKER, C. S., M.R.C.S., L.R.C.P. Lond. (Coalville, Leicester); ALLAN, G. G., M.B., Ch.B. Edin. (Ayton); McCracken, W. J., M.B., B.Ch. Belf. (Haworth).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Second Asst. in Pathology. £250.
Bath, Eastern Dispensary.—Res. M.O. £150.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. (male) £200. Also H.S. (male) at rate of £120.
Brighton, Royal Sussex County Hospital.—H.P. £150.
Bristol, Cosham Memorial Hospital, Kingswood.—Res. M.O. £150.
Cardiff City.—Asst. M.O. £600.
Devizes, Wilts County Mental Hospital.—Asst. M.O. £350.
Finchley Urban District.—M.O.H. and Sch. M.O. £900.
Hastings, Royal East Sussex Hospital.—Hon. Radiologist.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100.
Ladynell Sanatorium, Pendleton.—Asst. R.M.O. £350.
Lanark County.—M.O.H. £1300.
London Temperance Hospital, Hampstead-road, N.W.—Anaesthetist.
Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.
Manchester, Ancoats Hospital.—Two H.S.'s. First 6 months at £100. Second 6 months at £150.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—H.S.'s at rate of £200.
Ministry of Pensions, Birmingham, Highbury Hospital.—Jun. M.O. £350.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. Cas. H.S. at rate of £100.
Rochdale Infirmary.—Radiologist.
Royal Chest Hospital, City-road, E.C.—Phys. Also M.O. in charge of Tuberculosis Dispensary. £750.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £100.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. at rate of £180.
St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—H.S. £200.
St. Pancras Metropolitan Borough.—Asst. M.O. £600.
St. Paul's Hospital for Skin and Genito-Urinary Diseases, Endell-street, Holborn, W.C.—Hon. S. and Hon. Asst. S.
Salford Infectious Diseases Hospital, Ladynell Sanatorium, Pendleton.—Asst. R.M.O. £350.
Salford Royal Hospital.—Surg. Reg. £100.
Salisbury, General Infirmary.—H.S. £150.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. at rate of £100.
Seamen's Hospital Society, Dreadnought Hospital, Greenwich.—Physicians.
Seamen's Hospital Society, Hospital for Tropical Diseases Endsleigh Gardens, N.W.—Med. Supt. £250.
Stirling District Mental Hospital, Larbert.—Second Asst. M.O. £275.
Stoke-on-Trent, North Staffordshire Infirmary.—H.S. £150.
West End Hospital for Nervous Diseases.—Asst. P., P. for Skin Dept., H.P. for In-patients. £150. Also Clin. Asst. in Special Dept.
West London Hospital, Hammersmith-road, W.—Hon. Surg. Reg. £100.
Woolwich Metropolitan Borough.—Asst. M.O. £600.
The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Ossett, Yorks, West Riding; and Bruton, Somerset.

Births, Marriages, and Deaths.

BIRTHS.

ALEXANDER.—On Jan. 18th, at Woodside, Plymouth, the wife of Captain R. H. Alexander, M.C., R.A.M.C., of a son.
BLACKWELL.—On Jan. 17th, at Maison Bruges, Don-road, Jersey, the wife of Dr. A. S. Blackwell, of a son.
CROSBIE.—On Jan. 15th, at Ardcaien, Londonderry, the wife of Dr. Douglas E. Crossbie, Clarendon-terrace, Londonderry, of a daughter.
QUIRKE.—On Jan. 22nd, at York-road, Edgbaston, the wife of Major M. J. Quirke, I.M.S. (retired), of a daughter.

DEATHS.

BARWISE.—On Jan. 24th, suddenly, at Derby, Sidney Barwise, M.D., B.Sc., D.P.H., Medical Officer for the County of Derby, aged 62.
BEST.—On Jan. 23rd, at The Firs, Waltham Cross, after three weeks' illness, Frederick Henry de Graves Best, M.R.C.S., L.R.C.P., in his 56th year.
IRVINE.—On Jan. 20th, at Wellington College, Berks, from illness contracted on war service, Arthur Gerard Cheyne Irvine, M.R.C.S., L.R.C.P., Captain, R.A.M.C., late of Selly Oak, Birmingham, aged 60.
MACKENZIE.—On Jan. 26th, at Albert Hall Mansions, Kensington, London, Sir James Mackenzie, M.D., F.R.C.P., LL.D., F.R.S., honorary physician to His Majesty in Scotland, aged 71.
POLLARD.—On Jan. 20th, suddenly, George Frederick Pollard, M.D., M.R.C.S., of 24, Uxbridge-road, Hanwell, aged 70 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE TREATMENT OF FRACTURES.

*A Post-Graduate Lecture to the Fellowship of Medicine,
delivered on Jan. 20th, 1925.*

By SIR W. ARBUTHNOT LANE, BART., C.B., M.S.,
PRESIDENT OF THE POST-GRADUATE MEDICAL ASSOCIATION.

I PROPOSE to consider the changes that have taken place in the method of treatment of simple fractures since I started operating on them in 1894, a period of more than 30 years. At that time the treatment of simple fractures was a disgrace to surgery. While that statement might be somewhat modified, I believe that at the present time no branch of surgery is as unsatisfactory as this is, and that a large proportion of the bad results of treatment are due in part to ignorance and in part to a want of skill of those into whose hands they are unfortunate enough to fall.

The average student while in the wards sees only a small number of cases of fracture, and he soon discovers that the views held and the methods and the results of treatment adopted by his several surgical teachers vary within very wide limits. The excellent radiography done at the big London or other large general hospitals enables him, however, to recognise the character of the fractures, and he must form his own opinion on the relative advantages of the several methods of treatment which he sees adopted. When he goes into practice he rarely has a case of fracture under his care and he soon realises the anxiety and risk that its treatment involves him in. He may experience great trouble in the accurate diagnosis of a fracture, since it is often impossible owing to difficulties of transport to obtain a radiogram in the case of fracture of the leg, and many of the radiographers and apparatus in country districts are not infrequently unable to produce perfect radiograms. A poor radiogram is often more misleading than none at all. The bad results of treatment, both functional and aesthetic, are very obvious, and as excellent radiograms can subsequently be easily obtained by the patient they may readily bring the medical attendant into a court of law and may expose him to great financial loss and professional discredit. It is not generally recognised how many actions for damages are stopped by the tactful advice of the consultant or by a compromise of a financial nature.

The most important law I ever formulated is that "the skeleton represents the crystallisation of lines of force." It is upon the knowledge of this law that the scientific treatment of fractures depends. The same law applies with equal truth to every soft structure in the body, and perhaps more effectually and obviously to the several portions of the gastro-intestinal tract, so as to impose on the community almost all the diseases of civilisation. Few surgeons appear to have sufficient mechanical knowledge and skill to deal effectually with fractures by operative procedures. As the risk of a possible unsuccessful result is so manifest, it is very advisable that any medical man who is asked to treat a fracture should call another into consultation, and he might with advantage choose an opponent. In this way he will materially safeguard his interests. In any case he should join a medical defence society when he starts in practice.

Operative Treatment.

In operations on simple fractures the operator may experience great difficulty in bringing the fragments into accurate continuity, especially when two bones are involved, or when there is much comminution. Even when the fragments are placed in apposition too short a plate may be employed with an insufficient number of screws, or the plate may be placed in an unsuitable position, or the precautions taken may not be sufficient to ensure perfect asepsis. It is no longer necessary to urge the wisdom of operating on simple fractures when the conditions which I put forward in my paper¹ in 1894 exist, the chief of which is the necessity of restoring perfect continuity of the fragments of a broken bone or bones by operation when it is of vital importance to the individual that the normal function of the skeleton has to be restored, assuming that it is not possible to obtain this result if other means have proved ineffectual. This applies to the leg even more than it does to the other bones, since it has to transmit the weight of the rest of the body.

The somewhat abrupt change in the manner in which the operative treatment of simple fractures was regarded by the profession was due to the wise action of the British Medical

Association on the initiative of Sir Victor Horsley, the then President of the Surgical Section, in appointing and generously financing a committee to investigate the result of the various methods of treatment and in printing their full report as a separate publication. It was entitled the Report of the Committee on the Treatment of Simple Fractures. It contained a very full and accurate description of the methods and results of the treatment of fractures in the several parts of the world. The committee comprised 16 members, who took part in the investigation on which they expended much time and trouble. The conclusions which they arrived at fully bore out the accuracy of my views. The committee was appointed in February, 1911, and the report was published in November, 1912. This is, I believe, the only occasion on which the British Medical Association has taken such thorough and effectual measures to arrive at the truth and to inform the medical profession on a subject which had long been discussed with so much violence and acrimony.

The change in the attitude of surgeons to operative measures was at first followed by disastrous results, especially in America, where fractures were operated on by a large number of medical men whose experience and skill varied within wide limits. The failures that resulted from such indiscriminate operations were due to insufficient aseptic precautions as well as to lack of mechanical knowledge. This brought about a reaction against operation, the procedure being held responsible and not the want of familiarity of the operators with the details necessary to ensure success. Many surgeons, hoping to obtain better results, attempted to improve on the simple methods which I employed, and which I have used with uninterrupted success since. They made more complicated steel plates or they used plates made of bone; they devised elaborate and intricate screws and screw-drivers, drills, forceps for grasping the fragments and retaining them in apposition, and many other modifications, all of which rendered more difficult a procedure which in principle is perfectly simple, but which may be made most difficult and unnecessarily complex in its application.

Lessons of the War.

The war produced a great change in the treatment of fractures by operation. Many of those surgeons who had been most actively opposed to operations on simple fractures did not hesitate to put plates and screws into the fragments of the broken bones in compound fractures usually produced by projectiles with the most disastrous results. It took quite a long time before the folly of this procedure was realised and a stop was put to this practice. Even when the wound had healed or was apparently quiescent, the introduction of such large foreign bodies as plates and screws not infrequently resulted in the renewed activity in the growth of septic organisms which had lain dormant in the bone and in the soft parts, so that disaster followed such operative procedures only too frequently. It took a long time before this complication was recognised and dealt with, but finally the results obtained with suitable precautions were excellent.

With all this experience some surgeons still continue to secure the fragments of bone in recent compound fractures by means of plates and screws with the same most unfortunate results. Every new procedure would appear to involve necessarily much damage and loss of life to the community, till the principles of the treatment and their application have been thoroughly grasped by surgeons generally. The use of steel screws has been objected to on the ground that they produce a rarefying osteitis, and that they have to be removed in consequence. This is due to imperfect asepsis and results only when the aseptic precautions employed by surgeons are insufficient. That this does not occur if enough care is taken is demonstrated by a large number of radiograms which I will show you. It is perhaps not sufficiently recognised that the moderate degree of asepsis which is employed in operations generally throughout the body is quite inadequate for procedures involving the burying in the tissues of a quantity of metal. This only too readily affords a nidus and a medium for the growth of organisms, which do not exist in the wound in sufficient quantity to produce trouble without the presence of the foreign body.

Great advances were made during and since the war in the treatment of severe compound fractures of long bones especially, and much was done in improving methods of traction in simple fractures, by which the resistance offered to the apposition of fragments by the shortening up of the soft parts by hæmorrhage and inflammation can be gradually overcome.

Treatment by Extension.

The most effectual method of treatment of simple fractures of the shafts of the long bones of the leg in which operative interference is not called for is by forcible extension usually under an anæsthetic followed by the use of an ambulatory splint. The splint must be so constructed that while the fragments are being constantly extended the patient is able

¹ A Method of Treating Oblique Fractures of the Tibia and Fibula more Efficient than those in Common Use, Transactions of the Clinical Society, 1893-94.

to lead an active life, moving the joints of the damaged limb with perfect freedom. In this way not only does the patient avoid stiffness of the joints and muscles which accompanies the ordinary methods of treatment, but the formation of callus is hastened by the free circulation of blood through the limb. This splint can also be employed with great advantage after the fragments have been secured by means of plates and screws. In the case of fracture of the shaft of the long bones of the leg this principle is carried out in an ideal manner by the extension apparatus devised by Mr. Hoefftke with which you are all probably familiar. The principle involved of replacement of fragments by extension, the continued exercise of traction by some form of apparatus, and the free spontaneous functioning of the muscles, soft parts, and joints in the vicinity of the fracture is that which governs the treatment of all simple and compound fractures. How often does one see a patient incapacitated for months, and sometimes permanently, by the limited range of movement of the joints in the vicinity of a fracture due to their having been left in one position for a long period. This complication is perhaps most serious in the case of a knee which has been allowed to become fixed in a flexed position.

In such cases of simple fracture in which the necessity for perfect function is not met by accurate apposition of fragments operation is called for. In the case of malunion following compound fractures only when the operator has every reason to suppose that the tissues have become freed from the presence of any organisms which existed in the original wound should surgical measures be undertaken with the object of restoring axial continuity of fragments. Such operations are often most difficult and may make a great demand on the knowledge, judgment, and skill of the operator. This is particularly the case when both bones of the forearm or leg are involved. Grafts of bones should be used freely to fill up any gaps that may remain between the fragments, though it should be borne in mind that quite a considerable interval can be readily filled in by the crystallisation of bone along the line of force. Great pains should be taken to secure them in position and immobilise them. The great advantage gained by the skilful employment of bone-grafts is illustrated by the remarkable work which was done by Mr. Gillies and the other surgeons and dentists at the Queen's Hospital, Sidcup. The methods devised and adopted by those men form a new era in the treatment not only of the damage produced by projectiles, but also of the various deformities and fractures of the bones of the face in civil life. The published works of Gillies and Pickerill contain full descriptions and illustrations of the various operative procedures requisite for these conditions.

CHARGES OF ADULTERATING MILK.

A CASE is to be stated by a bench of county justices in which a summons for selling milk deficient in cream was brought against a farmer and dismissed. A deficiency of milk-fat was apparently admitted, and also that there had been no deliberate abstraction of cream, the deficiency arising through the sample of milk upon which the proceedings were based having been drawn from the bottom of a vessel containing the milk, which had stood for a long enough time for the cream, or much of it, to have risen to the top. It was contended for the prosecution that this was tantamount to an abstraction of the cream and was to the prejudice of the customer. Whatever may be the decision of the divisional court upon this subject, it will tend to show whether legislation is necessary to safeguard the quality of milk supplied by dealers to the public or by farmers to dealers. It certainly is desirable in the interest of the public that no absolute defence should be possible when milk not up to a fixed standard is sold for food. Defences now raised, such as that the milk was as it came from the cow, neither skimmed nor adulterated, or was supplied under a warranty of quality would be better accepted in mitigation of a penalty than as a means of escaping all responsibility on the part of the person who sells to the consumer.

GEOGRAPHY AND CIVILISATION.

In a little book first published in 1915, revised and enlarged recently, Mr. James Fairgrieve¹ has endeavoured to trace the influence of geographical factors on the course of history—on the one hand by stimulating action, on the other by showing how and where the most effective action shall take place. The book deals with the material side of history, and frankly ignores "those spiritual aspects of the drama which do not exhibit the geographical control." Civilisation first dawned on the flood-plains of Egypt and Mesopotamia

¹ Geography and World Power. Fifth Impression. By James Fairgrieve, M.A., F.R.G.S. University of London Press. 1924. Pp. 373. 5s.

because here were protected lands, having abundance of water and warmth. Mr. Fairgrieve passes on to discuss the rise of civilisation in the Eastern Mediterranean, and the redistribution of world power after the break-up of the Roman Empire. The ocean and the forest are shown to be the factors which have shaped the development of Western and Eastern Europe. Other great physical features are discussed in dealing with the rest of the world, the central theme of the book—man's increasing ability to control energy—being maintained throughout. The last chapter is a fascinating study of probable lines of advance in the light of man's accumulated knowledge and experience. No sphere shows greater triumphs than that of medicine. The construction of the Panama Canal was rendered possible by the investigation of tropical diseases. Malaria cost the Suez Canal 38,200 francs in 1903, while in 1908 the cost was less than half that amount. Additional supplies of energy thus liberated must inevitably bring about changes in the distribution of mankind and in habits of life which will profoundly influence the course of history.

The book displays a fine sense of proportion in dealing with so vast a topic.

INTOLERANCE TO A DENTURE.

To the Editor of THE LANCET.

SIR,—In reply to the letter from "Medico" in your issue of Jan. 10th, I should advise him to regard his inability to wear a denture as due to psychological causes. I am taking for granted that the denture itself is all that it should be. Various gargles may be tried, but in a bad case success will only be achieved by practice and the will to overcome the difficulty.

I am, Sir, yours faithfully,

L. ERIC CHAS. PECKOVER,
L.D.S., R.C.S. Eng.

Worthing, Jan. 21st, 1925.

RED-HAIRED ALBINOS.

To the Editor of THE LANCET.

SIR,—The presence of red hair in persons with albinotic characters is an association which has been noted in a relatively small number of cases. Two children were recently shown at the Royal Society of Medicine with these features, and there are a few other references in the literature on the subject.

It will be of interest, therefore, to record the following observation made by the late Mr. Joseph Conrad, the famous novelist, which occurs in his unpublished diary under date July 4th, 1890, while camped about a week up country from Matadi on his way to the Congo—a journey which produced his celebrated story "Heart of Darkness." I am indebted to Mr. Richard Curle, Conrad's friend and executor, for this observation and for permission to publish the extract from the diary, which runs as follows:—

"In the evening, three women, of whom one albino, passed our camp; horrid chalky white with pink blotches, red eyes, red hair, features very negroid and ugly."

Here we have in a few words from the pen of a keen observer and a master of descriptive writing, a woman with complete albinism of skin and eye since she was chalky white with the erythematous blotches produced by sun-burn, and had a red reflex from the eye, but with red hair. Conrad notices the repulsive appearance which all albino negroes present to us, and the fact that negroid facial characters appear more marked in a white-skinned native.

I am, Sir, yours faithfully,

London, Jan. 21st, 1925.

HUGH S. STANNUS.

ON Jan. 21st the death took place at Hatch End of Mr. E. J. Sowerby, chairman of Messrs. H. K. Lewis and Co., Ltd. Owing to failing health he retired from active work in April last. He came to Gower-street in 1872, when Mr. H. K. Lewis was still at the head of the business. From 1880 he was manager under Mr. Morris Lewis. In 1905 a partnership was formed, of which he was the senior member. In 1915 the present company was created, Mr. Sowerby being chairman, with the other partners as directors.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	..	..	£2	2	0
	Six Months	..	..	1	1	0
	Three Months	..	..	0	10	6
ABROAD	One Year	..	..	2	10	0
	Six Months	..	..	1	5	0
	Three Months	..	..	0	12	6

A Plea

FOR

ACCURACY IN THERAPEUTIC DEDUCTION.

Being an Address delivered before the Medico-Chirurgical Society of Nottingham on Jan. 7th, 1925,

By EDWIN BRAMWELL, M.D. EDIN.,
F.R.C.P. LOND. & EDIN.,

MONCRIEFF-ARNOTT PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY, AND PHYSICIAN TO THE ROYAL INFIRMARY, EDINBURGH.

THE science of medicine has admittedly made great strides of recent years. Information as to the processes and causation of disease is steadily accumulating, the art of diagnosis is being constantly facilitated by the introduction of scientific methods of precision, brilliant results are being achieved in the field of preventive medicine, and the pharmacologist is ever adding to our store of knowledge as to the mode of action of the remedies we employ. While this is so it will be generally admitted that the progress of practical therapeutics has been in no way commensurate with the advance in our knowledge of the aetiology, pathology, and diagnosis of disease. I propose to discuss the reasons responsible for this state of affairs and the possibilities of their correction.

THE CLINICIAN RESPONSIBLE FOR THE EVALUATION OF TREATMENT.

The ultimate proof of the value of any remedy can only be established at the bedside. This is a fact which we are too apt to forget. Hypothetical considerations and the results obtained by the laboratory worker are invaluable because of the possibilities and indications they suggest, but the clinician is responsible for the final evidence. We clinicians are, however, in relation to questions of treatment, too often influenced by impressions or by expressions of opinion without analysing the reasons upon which our conclusions are based. Sir James Mackenzie, writing of medical progress, says with truth:—

"If the most enlightened members of our profession were to inquire into the grounds of their beliefs, even those most dearly cherished, how often would they be surprised to find on what fallacies their beliefs are based . . . the tendency to believe without reason is ever recurring, while the reverence for authority makes us accept statements without proof."

Those of you who have read Sir William Osler's delightful essay on Harvey will recall the lines he quotes which occurred to Henry Sidgwick in his sleep:—

"We think so because all other people think so;
Or because—or because—after all we do think so;
Or because we were told so and think we must think so;
Or because we once thought so, and think we still think so;
Or because having thought so we think we will think so."

Elsewhere Sir William Osler wrote:—

"It is so much easier to believe than to doubt, for doubt connotes thinking and the expenditure of energy, and often the disruption of the *status quo*. And then we doctors have always been a simple trusting folk! Did we not believe Galen implicitly for 1500 years and Hippocrates for more than 2000? In the matter of treatment the placid faith of the believer, not the fighting faith of the aggressive doubter, has ever been our besetting sin."

Although the methods of medicine have become so much more scientific there is still much loose thinking and loose talking about treatment. In the interests of progress it is essential that we cultivate the habit of refraining from making assertions which have no true foundation and which may give rise to or perpetuate erroneous and consequently misleading impressions admittedly so difficult to eradicate.

5293

PSEUDO-SCIENTIFIC MEDICINE.

Pseudo-scientific medicine is, indeed, one of the curses of the present day, more especially since it appeals to and misleads the educated layman, for, as Oliver Wendell Holmes points out:—

"Exalted wisdom, immaculate honesty, and vast general acquirements are insufficient to prevent an individual from having the most primitive ideas upon subjects out of his line of thought."

We are too apt to forget that although there is reason for believing that a remedy may do good, we are not justified consequently in assuming that the remedy in question does good until actual proofs are forthcoming. There can be no doubt that the elegant brochures which we are constantly receiving do much to maintain this state of affairs. Here we find extracts from the writings, it may be of eminent scientists, utilised for the purpose of emphasising the indications for treatment which the advertised preparations have been especially designed to meet; yet when we come to look for the results effected by the preparations in question we seldom discover any reference to facts supporting the vendor's claims, unless perhaps unconvincing and misleading statements by anonymous doctors of medicine who have, no doubt, been well remunerated for their services. To quote, from one of the last articles written by Sir William Osler:—

"We owe a debt to the modern manufacturing pharmacist, who has given us pleasant and potent medicine in the place of nauseous and weak mixtures, . . . but even the best are not guiltless of exploiting on the profession the products of a pseudo-science. . . . The length to which organotherapy has extended beyond the legitimate use of certain preparations is a notorious illustration of the ease with which theoretical views place us in a false position. Because thyroid extract cures myxœdema and adrenalin has a powerful action, it has been taken almost for granted that the extract of every organ is a specific against the diseases that affect it. This forcing of a scientific position is most harmful, and I have known an investigator hesitate to publish results lest they should be misapplied in practice. The literature on the subject issued by reputable houses indicates, on the one hand, the pseudo-science upon which a business may be built up, and, on the other, the weak-minded state of the profession on whose credulity these firms trade. . . . For years the profession has been exploited in this way until the evil has become unbearable, and we need as active a crusade against pseudo-science in the profession as has been waged of late (in America?) against the use of quack medicine by the public."

The medical man who is in the habit of "trying" the latest preparation on the market is to be regarded with suspicion, for he does so too often, not with the purpose of attempting to prove the efficacy of the remedy in question, but either because he is unduly credulous or in order to impress his patients and create the belief that he is *au fait* with medical progress.

THE FALLACIES OF EXPERIENCE.

Perhaps some of you may repudiate my imputations and tell me that we know from our experience that the remedies, or many of the remedies, we are in the habit of using, are effective. Doubtless we are often right, but in these days such an answer is insufficient. An assertion unsupported by facts is in itself of uncertain value, since its worth is dependent upon the reliability and judgment of the individual who makes it. It is necessary that we analyse our reasons, for is it not the case that when we form an opinion from experience there must be facts or impressions which have determined our conclusions?

Let me give you an illustration of an every-day habit of thought which demonstrates the possibilities of what I may term an erroneous experience. I treat a patient, let us say, with a certain drug. The patient improves and it may be recovers from his illness. I make most careful observations at the time, and after critically considering the evidence come to the conclusion that, although the facts do not justify a dogmatic statement, there is good reason for believing that the remedy in question has probably—note the

F

word probably—been responsible for the betterment. Later I meet with other cases of a similar nature. I employ the same remedy, and although I have not considered the facts with the same precision that I did in the first case, I receive the impression and perhaps express the opinion, although, mark you, I have really no additional data which justify me in modifying my original conclusion, that the remedy is useful in cases of the kind. As years go by and my precise observations become hazy and tend to fade from memory I may go so far as to say that this is the drug to use in the treatment of the disease in question. Yet you will observe that my experience does not justify any such assertion. There is, indeed, a natural tendency in the human mind for the wish to be father of the thought. As that wise old physician John Gregory, at one time professor of medicine in Edinburgh, remarked 150 years ago in his "Lectures on the Duties and Qualifications of a Physician," "There is an experience which, however extensive, does not render a physician more sagacious because it is not attended with the necessary observation." In the interests of therapeutic advance it is indeed essential that we cultivate the habit of analysing our reasons and reviewing our experience.

CRITICISM NOT SYNONYMOUS WITH SCEPTICISM.— THE METHOD OF SYDENHAM.

But some of you may say, "If I develop such a critical attitude of mind my pharmacopœia will be so limited." Do not misunderstand me. Criticism and scepticism are not synonymous terms, and must not be confused. I do not for one moment intend to imply, far from it, that we should refrain from employing reputed remedies which there is reason to believe may meet what we believe to be necessary requirements and may do good although their efficacy is as yet unproven. All I ask is, that in the interests of progress we refrain from loose statements and develop our critical faculties in order that we may be in a position to realise and utilise our opportunities should they arise, and thereby perhaps contribute something to the advance of knowledge. The adoption of this attitude will, I venture to say, in no way impair our therapeutic results. Facts are required, and the question is how are these to be obtained.

We have just commemorated the tercentenary of Thomas Sydenham. As Sir Humphry Rolleston says:—

"Sydenham not only revived but put into practice the dictum that medicine depends on the observation of, not on hypotheses about, disease."

Dr. Arnold Chaplin writes of Sydenham:—

"He drove home the great truth that the solution of the problem of disease, its manifestations, and its cure must be sought at the bedside by means of observation and inquiry, and not by an appeal to theory and authority sanctified by time."

It is the method of Sydenham applied to treatment which is called for at the present day to advance our knowledge of practical therapeutics. A crusade on these lines would be a fitting tribute to the great master of clinical medicine and help to remove a slur which undoubtedly reflects upon the good name of medicine as a scientific profession.

DIFFICULTIES OF THERAPEUTIC DEDUCTION.

Does a reputed therapeutic agent actually do good? This is the point of essential importance to the clinician. I would class all reputed remedies in two groups: First, those which have been definitely proved by the clinician to be of value in the treatment of disease, and, secondly, those which we believe ought to do good and which may do good although we have no actual proof of their efficacy. Our aim as clinicians must be to attempt to prove the value of the remedies we employ—i.e., to adduce evidence which will enable us to transfer affirmed therapeutic agents from the second group to the first. Facts, I repeat, are what we require.

The difficulties of therapeutic deduction are great and the fallacies numerous. Bedside conclusions are, because of the question of control, much more difficult than are the problems which confront the laboratory worker, although Sir Berkeley Moynihan perhaps exaggerates the position, no doubt wittingly, when he asserts that the difficulties of laboratory research are mere "bumble puppy" as compared with those of clinical deduction. But if we admit that bedside observations are essential to the progress of practical therapeutics, is it not our duty to recognise our responsibilities and face them? If we cannot be certain, let us at least, in the interests of progress, be as certain as we can. Why not look at a question of treatment just as we are accustomed to regard a problem of diagnosis, and if dogmatism is unwarranted consider the data and express our conclusions in terms of probability and possibility?

It is often difficult or impossible to determine whether our remedies have actually done good and whether they are to be credited with any improvement which has occurred in the course of their administration. Our logical faculty is here afforded full scope, and, as an old friend recently said to me, it is perhaps unfortunate that the subject of logic is no longer insisted upon as a necessary preliminary to the study of medicine. I would in this connexion commend to your notice a little book, published in 1864, by Dr. A. W. Barclay, physician to St. George's Hospital, being an expansion of his Lumleian lectures, entitled "Medical Errors or Fallacies connected with the Application of the Inductive Method of Reasoning to the Science of Medicine." The author writes of treatment:—

"The great difficulty in tracing out the relation of cause and effect consists in the presence of an immense number of circumstances, many of which it is impossible to exclude, while all may contribute more or less to the production or at least the modification of the result."

Speaking of *induction* in relation to the effect of remedies upon the course of diseases, Dr. Barclay says:—

"Legitimate induction does not demand any lengthy series to prove its truthfulness; but while it assumes a certain familiarity on the part of the observer with the facts bearing on the subject, its distinctive character consists in the discovery of some law which will stand the test of experimental inquiry, and is found true for every case which comes under its operation. If the law fail in any case where the special circumstances to which it relates are present, we ought to be able to show that some higher law interfered with its operation, or else we must abandon the law, or at least hold it in suspense."

Again he remarks:—

"The number of instances required to frame an induction is, of course, different, just in proportion to the certainty of the progress of the disease without the administration of the special remedy, and the possibility of other causes exerting any influence over it; and also in proportion to the clearness of the evidence by which the causation is established, the quickness or the invariableness with which the effect follows. If, on the other hand, in a few well-marked examples free from complication, the remedy is administered to the full extent of producing its constitutional effects, without arresting the progress of the disease, we may be certain that the supposed law is a false assumption."

We are constantly confronted with what I may term the *post hoc* and *propter hoc* consideration. Some of you may have heard of a method of treatment which I understand was regarded until quite recently, if not at the present day, as an infallible cure for shingles by the Chinese physicians. The medical man likens the patches of vesicles to berries; he paints a representation of a plate upon the surrounding skin and the head of a bird with open beak beside the plate. The vesicles disappear; the berries, he says, have been eaten by the bird. While this is an extreme instance of the *propter hoc*, it serves to illustrate the natural tendency of the human mind to attribute improvement to the measures employed in the treatment of disease when it is often the *vis medicatrix nature* which deserves the credit.

Many diseases run an acute course which we know from experience terminates either in death or complete recovery. When the patient survives it is often impossible to decide whether or to what extent the remedial measures employed have assisted the *vis medicatrix naturæ* in determining the result.

There are some acute diseases in which the damage attributable to the pathological process is done within the first few hours or days or weeks of the illness, although after-effects, paralysis for instance, result. While in some of these cases there is a varying degree of gradual improvement and it may be complete recovery, in others there is no tendency to betterment. Under such circumstances it is very often impossible if there is improvement to express an opinion as to what extent, if any, our remedies have assisted the reparatory processes of Nature in effecting the result. Were I to question your reasons for believing, even those of you who have had a considerable experience of organic nervous diseases, that muscular relaxation, massage, and electrical stimulation are of value in the treatment of the flaccid palsies, I venture to think that there are few of you who would be able to give me an answer based upon personal observations which would convince an unbiased mind. Yet you have probably all met with cases of symmetrical paralysis due to a polyneuritis in which control observations are possible. Again, there are certain maladies which are characterised by a chronic progressive course, interrupted it may be by remissions or temporary betterments, dependent upon the nature of the pathological process. Here the clinician must analyse his data with the greatest care before he ventures to assert that the treatment he has employed has been responsible for any improvement which may have occurred.

In times of epidemic, therapeutic conclusions may be vitiated by a change in the type of the disease. Some years ago a discussion upon the treatment of influenza took place before a medical society soon after a serious outbreak of this affection, when the value of several separate remedies was affirmed by individual speakers. The probable explanation was instructive. In the earlier days of the epidemic the mortality, notably from pneumonia, had been high, but later the disease took on a milder form which laboratory observations indicated was probably to be explained by the disappearance of the streptococcus. The diminished mortality, which was attributed by the speakers to the remedies they happened to be using at the moment, was evidently to be accounted for by a change in the type of the disease. Statistics may indeed be quite misleading. Because a series of patients suffering from the same condition recover when treated with a certain remedy this is in itself no proof of the efficacy of the treatment.

THE MENTAL FACTOR.

The mental factor is a common source of fallacy which is difficult to eliminate in estimating the effect of the remedies we use. The potency of suggestion in influencing the patient's mental outlook and his subjective symptoms is indeed generally admitted. We are apt to forget that our every word and action may make an impression upon the patient; it is also to be remembered that individuals vary greatly in their degree of suggestibility. Hence, it is of essential importance that, in attempting to arrive at conclusions as to the effect of remedies, we remember the possibilities of suggestion and that we avoid making suggestions which may vitiate our conclusions. Needless to say, no reference should be made as to the manner in which a remedy is supposed to act. Vaccine and, I think I may also say, endocrine therapy are two of the most abused methods of treatment at the present day, since a pseudo-scientific explanation often advanced to explain the anticipated effect of the remedy appeals with especial force to the mind of the uninitiated. Do not misunderstand me. Vaccines and glandular products are, we know, sometimes invaluable, and in the future will no doubt

with increasing knowledge come to occupy a more and more prominent place in treatment. But the indiscriminate way in which these measures are sometimes used is no better than pure quackery unless it be excused on the plea of gross ignorance.

I have referred to what I think may be regarded as the two chief difficulties in arriving at therapeutic conclusions—those dependent upon the nature of the disease and upon the mental state respectively, but there are others of lesser importance. Needless to say, change in environment, rest, diet, and freedom from worry are all factors which may favour improvement. Then I may remind you that differences may be observed according to the mode and time of administration and quality of the remedy. Thus we know that certain remedies are more effective when given in solution than in tablet form, while it sometimes happens, although the standardisation of remedies has done much to exclude this fallacy, that the preparation we are employing is comparatively inert as compared with the same preparation obtained from another firm. The remarkable fact that a remedy when first introduced often proves more effective than it does in the hands of subsequent observers is no doubt in some instances, though not always, to be accounted for by the influence of suggestion.

RESPONSIBILITY OF THE CLINICAL TEACHER.

Those of us who are teachers of clinical medicine bear a great responsibility, for we have a dual aim in view. Our purpose should be not only to produce the capable practitioner but at the same time to encourage the spirit of progress in the future generation. We are indeed responsible for creating the critical attitude of mind which is necessary for the advance of practical therapeutics. To quote Sir William Broadbent:—

"The basis of all clinical facility is observation, that is to say, the intelligent and instructed employment of the senses to obtain the facts, and in close relation with observation is inference, the right interpretation of the facts of observation . . . a third faculty which is called into existence is discrimination, an analysis and classification of the facts and inferences with due recognition of their significance and relative importance."

The clinical teacher cannot attempt in the time at his disposal, even admitting that he has the knowledge and ability to do so, to give the undergraduate an exhaustive knowledge of the very varied features of disease. Our aim should be to educate his powers of accurate observation and judgment rather than to fill his mind with facts, to see to it that he acquires a knowledge of the methods we employ, to train him to think in terms of disease as met with in the living patient, to instil in him general principles, to show him how to deal with patients, to teach him accuracy of thought and expression, and last, but by no means least, to kindle his enthusiasm. Even at the present day we may recall with advantage the words of John Gregory:—

"Among the infinite variety of facts and theories with which the physician's mind has been filled in the course of a liberal education it is his business to make a judicious separation between those founded on Nature and experience and those which owe their birth to ignorance, fraud, or the capricious system of a heated and deluded imagination."

But I am speaking especially of treatment. We have here to remember that evidence to the effect that a therapeutic agent has been proved in the laboratory to have a certain action is apt to appeal much more forcibly to the mind of the tyro, who comes to the clinical teacher fresh from his physiological studies, than a statement to the effect that a remedy does good although we know not why. This is an attitude of mind which we are constantly called upon to combat. Sooner or later, however, the student comes to realise that "nothing shows more ignorance of Nature or more self-sufficiency than to reject facts because we cannot account for them" (John Gregory). In the interests of progress it is

incumbent on us to train our students to bring to bear the same faculties of exact observation and inference, the same critical attitude and the same accuracy of expression in relation to treatment that we insist upon in the discussion of a problem of diagnosis. The student must not only be asked his reasons for believing that a remedy is of value in the treatment of a given condition, but he must be constantly called upon for evidence which he himself may have met with in his limited experience; further, he must be asked to discuss the facts in the actual case under consideration and express in as exact terms as possible any justifiable conclusions which can be drawn as to the effects of the treatment which has been employed.

THE GENERAL PRACTITIONER AND THERAPEUTIC ADVANCE.

The very prevalent and unfortunate use of the word research as the equivalent of laboratory methods and laboratory results tends to belittle the importance of clinical observation and is undoubtedly responsible for the general impression that when the young graduate commences general practice he relinquishes for good all opportunity of furthering the advance of medicine. This misconception calls for correction. There are indeed possibilities for furthering advance which are open to the general practitioner, especially perhaps in relation to practical therapeutics, and it is the duty of the clinical teacher to indicate these possibilities to the student and arouse his interest in the field which lies before him. Sanderson, the great headmaster of Oundle, whose views upon the public school system of education have aroused such widespread interest, laid it down as one of his axioms that when a boy leaves school he should do so full of confidence in the realisation of his potential powers. This is an ideal which I think we clinicians should aim at and encourage in our teaching. The undergraduate must be given to understand that, as regards treatment, we require facts and that he has it in his power if he makes use of his opportunities to add something to the store of knowledge. Sir James Mackenzie has, perhaps, done more by his demonstrations of what may be accomplished by a general practitioner than by the most valued contributions with which he has enriched the literature of medicine. An isolated observation, if correctly observed, controlled, and recorded, may indeed be of real worth. I may here remind you of Sir Lauder Brunton's discovery, when still a house physician in the Edinburgh Royal Infirmary, of the value of nitrites in the treatment of angina pectoris. While examining a patient who was suffering from an attack of cardiac pain, Lauder Brunton noted that the blood pressure was unduly high; knowing that nitrites produce relaxation of the non-striated muscle, he gave the patient some nitrite of amyl during a subsequent attack, with the result that the pain was almost immediately relieved. All of us, no doubt, have occasional opportunities of arriving at important therapeutic conclusions, but too often we fail through want of knowledge or want of training to appreciate the significance of our observations. Some weeks ago I met a practitioner of wide knowledge and sound judgment. I asked him as to his personal experience of the value of a certain remedy. He told me that he had definitely made up his mind as to its value and that he had observed so many cases in which he was satisfied that a cure had thereby been effected. His statements were sufficient to convince me that his conclusions were almost certainly justified. I said to him, "If you were to report these cases with the evidence as you have narrated it to me you would, I believe, be making a valuable contribution to medical literature." His answer was, "Unfortunately, I have not kept a written record of the details, and, besides, my experience is no doubt a matter of common knowledge." This reply emphasises both the difficulty the busy practitioner has in taking records of his cases and our lack of knowledge of established facts. It is, no doubt, impossible and

unnecessary for the practitioner to take notes of all cases; but if he realises the value of therapeutic conclusions and has been trained to recognise the possible fallacies the hope that he may thereby be enabled to contribute something to the advancement of knowledge will give him an added interest in his work.

AN "ILLUSTRATED" CLINICAL PHARMACOPŒIA.

What clinical proof exists, if any, as to the effect of this or that remedy? What are the proved facts? This is a question which we must of necessity repeatedly ask ourselves. A reputed remedy, as is well known, may be widely employed at one time and sooner or later fall into disuse to be replaced by another which in turn shares the same fate. Yet when we come to ask ourselves for an explanation we must admit that the answer to the question is generally to be found in the fashion of the moment. The opportunity of proving beyond doubt the value of a remedy occurs but seldom and the experience of each one of us is necessarily limited. Consequently, I feel that an "illustrated" clinical pharmacopœia, by which I mean a catalogued collection of remedies of proved value accompanied by clinical observations illustrating the existing evidence as to the efficacy of the remedies in question, would be of great value. A publication of this kind, which would no doubt require to be based on *de novo* observations and edited and compiled by competent authorities, would, it seems to me, be most helpful in presenting the existing state of knowledge. Again, it would serve to stimulate our interest and enthusiasm and encourage us by indicating what has been done and the fallacies which require to be met, to utilise our critical faculties. In addition, it would, I think, prove the best corrective of those two extremes, credulity and therapeutic nihilism, which prepare the ground for the pseudo-science and the "cure-all" propaganda of the present day.

CONCLUSIONS.

I have entitled this address a Plea for Accuracy in Therapeutic Deduction, and I hope that I have made my position clear, for to quote a recent writer, "Language is in truth the devil. It is always in danger of expressing too much or too little or something different from what you mean." The purpose of my thesis has been to emphasise "the fundamental difference between belief and knowledge, conjecture and certainty." I have reminded you that we clinicians constitute the tribunal, so to speak, which adjudicates the value of remedies, and that great though the difficulties often are this does not excuse us from shirking our responsibilities and doing all we can to add to the store of established facts. I have further indicated that there is here, I believe, a field open to the general practitioner who has been taught to realise the possibilities and at the same time trained to appreciate the fallacies with which he is confronted.

So far as I can see, it is only by a much more general recognition of the necessity for correct thought and precise statement than at present exists that pseudo-science and quackery can be successfully combated, a matter so essential in the public interests.

THE LATE DR. AUBURN WILKINSON.—Auburn Wilkinson, M.D. Durh., of Tynemouth, died on Jan. 25th in his seventy-eighth year. A native of Wark, North Tyne, he qualified as M.R.C.S. in 1873, and as L.S.A. in 1874, later graduating as M.B. in the University of Durham in 1885, he proceeded to M.D. in 1888. He was in practice in Tynemouth for 55 years, and only relinquished active duty at the onset of his last illness about two months ago. Amongst public appointments which he held were those of surgeon to the police and honorary surgeon of the Tynemouth Infirmary. He was an honorary associate of the Order of St. John of Jerusalem and an honorary life member of the St. John Ambulance Association. He was one of the founders of the Tynemouth Volunteer Life Brigade, of which he was the honorary surgeon at the time of his death. His wife predeceased him, and he is survived by a son and a daughter, a second son having been killed in the war.

Clinical Lectures

ON

APPENDICITIS: ITS CAUSATION, DIAGNOSIS, AND TREATMENT.

Delivered at the Bristol Royal Infirmary

BY A. RENDLE SHORT, M.D., B.S., B.Sc. LOND.,
F.R.C.S. ENG.,

SURGEON TO THE BRISTOL ROYAL INFIRMARY; LECTURER ON
PHYSIOLOGY IN THE UNIVERSITY OF BRISTOL.

PART II.*

THE TREATMENT OF APPENDICITIS.

It might be imagined that appendicitis and operation follow one another as daylight follows dawn, and there is no more to be said. Nevertheless, the subject has points of interest which we shall select for discussion. The following questions come up for consideration:—

(i.) What arguments may we fairly lay before an intelligent patient or relative to induce him to consent to operation?

(ii.) Is it ever wise to postpone operation in acute appendicitis?

(iii.) Why do certain cases die, and how may this be avoided?

(iv.) How is the case to be handled which does not make good progress after operation?

(v.) Operative technique.

Arguments for Operation.

What arguments may we fairly lay before the patient or relatives to induce him to consent to operation? There are two circumstances under which it may be difficult to obtain consent; when the patient is already very ill, or when many days have passed without improvement the difficulty usually passes. But during the first 24 hours of the illness, or in what Edmund Owen used to call the "fool's paradise" stage, all our arguments may be needed.

Taking the first of these contingencies and trying to look at it from the patient's point of view (and some few older doctors will still side with him), we must admit that the symptoms do not look very alarming as yet, and a majority of cases of acute appendicitis, left to themselves, will get well. What the percentage will be is difficult to say; perhaps about 80 per cent. will recover. Then why not wait a few days and find out which way this particular case is going, and if necessary operate to-morrow or the day after? Now, every up-to-date member of the profession knows that in the early case, seen on the first or second day, this course is liable to be disastrous, but all do not know just how to argue the point.

Let us start by pointing out that about 2500 persons die every year in England and Wales of appendicitis. If these had all been operated on on the first day the number would have been far less. The general mortality of acute appendicitis in all classes of practice is, according to my records, about 6 per cent.; none of my patients operated on within 24 hours died, and it is safe to say that the general mortality under those circumstances would be well below 0.5 per cent. That is to say, by waiting beyond 24 hours, 2000 lives are annually thrown away. In 1905, when the policy of waiting till the patient was really ill before operating was in force, the death-rate in 1000 cases collected by Lett at the London Hospital was 17 per cent.

Second, let us point out that waiting during the first 72 hours of the disease allows the risks to mount up alarmingly. In my series the death-rate following operation on various days works out as shown in the table (only cases with a rise of temperature are included). For the sake of confirmation a table given

by Lett¹ from the figures of the London Hospital is also quoted. (Table VII.)

TABLE VII.—*Mortality after Operation on Different Days of the Attack.*

Day of attack.	Present series.			Lett's series.		
	Cases.	Died.	Mortality per cent.	Cases.	Died.	Mortality per cent.
First ..	39	0	0	162	2	1.2
Second ..	85	4	4.7	152	6	3.9
Third ..	95	8	8.4	115	10	8.7
Fourth ..	51	5	9.8	50	2	4.0
Fifth or later.	77	5	6.5	183	10	5.4

Table VII. shows that, striking an average and speaking in round figures, of every hundred cases seen, to wait from the first day to the second will throw away three or four lives, and waiting from the first to the third will sacrifice eight lives per 100 cases seen. The third and fourth are the dangerous days.

The third argument concerns the length of convalescence. Operation before perforation avoids nearly all the complications of appendicitis, and obviates the need for drainage. The wound will be healed and the patient able to get up in 12 to 14 days. If removal of the appendix is delayed till suppuration has occurred, various complications may arise, and the wound is quite likely to discharge for many weeks.

The fourth argument, and one which seldom fails to clinch the matter, relates to the possibility of recurrence. It may be taken as roughly correct to say that if a person has one attack of appendicitis, there is a 50 per cent. probability of a further attack, the date and severity of which are totally unforeseeable. After two attacks the probability of a third attack is about 80 per cent. Evidently, therefore, the probabilities are very great that there will have to be an operation one day; if so, why not obtain the present benefit of it? It should always be borne in mind that a child with appendicitis is generally worse than the symptoms would indicate, relatively to an adult.

The second class of cases in which it may be difficult to obtain consent to remove the appendix is in the so-called "fool's paradise" stage. There may be an unaccountable and purely temporary drop in the temperature, or, more deceptive still, the pain may suddenly cease for a while and the tenderness lessen on account of the bursting of the tensely distended appendix. How often we are told by a triumphant mother: "The little boy's temperature was 101° when you took it this morning, doctor, and now it is only 100°, so he must be better, mustn't he?" For instance, I well remember driving 25 miles to see a farmer in a very lonely part of Somerset; on arrival, there was temporary relief from perforation of the appendix, and in spite of all persuasion the old man refused to have anything done. When the car was just disappearing from sight he relented and sent after us, but we were gone beyond reach. Next day, by this time thoroughly ill, he had us fetched down again and the appendix was removed and the widespread peritonitis drained. He put up a good fight, but succumbed after ten days. It was a life thrown away.

A genuine improvement, justifying delay, may be distinguished from the "fool's paradise" stage, in that there is *improvement in all respects*. The pain, and the tenderness, and the pulse-rate, and the temperature, and the vomiting, are each and all definitely better. To trust to one or two of these signs by themselves is to court disaster.

When is it Wise to Wait?

Is it ever wise to postpone operation in acute appendicitis? The majority of surgeons in this country would probably answer in the negative, but we shall allow certain classes of cases. For this purpose some classification is necessary. We shall employ the classification given in Table VIII., which is in general use.

* Part I. appeared in THE LANCET last week.

TABLE VIII.—*Classification of Cases, with Mortality.*

Group.	No. of cases.
A. Non-perforated cases, with rise of temperature. Usually operated on on the first or second day	132 (2 died = 1.4 %).
B. Non-perforated afebrile cases (appendicular colic)	40 (0 died).
C. Perforated cases, local peritonitis, not walled off	129 (8 died = 6.5 %).
D. Walled-off abscess, usually after fifth day	52 (2 died = 4 %).
E. Widespread (so-called "general") peritonitis	38 (13 died = 33 %).

Now, for the reasons already given, there is, in ordinary, no doubt at all that cases in group A should have the appendix removed as quickly as possible, because only in this way can we be sure of averting the perils of perforation. And perforation may occur very early. There is at present under my care a young man whose appendix perforated within three hours of the first rise of temperature. Given intervention before perforation occurs, very few patients will die. In the above series one of the two deaths in this group was from subdiaphragmatic abscess, and the appendix had probably leaked although this was not recognised at operation; the other died from pneumonia seven weeks after recovery from the operation, and it is only to avoid the charge of "cooking" statistics that it is included. The rule may be laid down then that symptoms of appendicitis with a rise of temperature above 99° and of pulse above 90 demand immediate operation.

In the second group, labelled B, there is pain, perhaps some vomiting, tenderness, and a little guarding over the right iliac fossa, but no rise of pulse or temperature. The diagnosis may not be altogether certain. Here, whilst it is no doubt quite justifiable to operate, it is our practice to wait. It is exceedingly improbable that the patient will come to any harm so long as a careful watch is kept on the pulse and temperature, and the appendix removed if they show a rise. If, however, the pain and tenderness have not completely disappeared after a week, or if there is a second attack, we advise operation.

In group C the appendix has already perforated and the general rule has been that it ought to be removed at once. But here some questions arise for discussion. It may be very difficult to decide if the appendix has perforated. Of course, if there is a palpable lump, or if the widespread tenderness and rigidity indicate peritonitis, the conclusion is readily reached. The time factor helps; if the symptoms are well marked after the lapse of 48 hours, perforation has probably occurred. On the other hand, it is uncommon for matters to have progressed so far under 24 hours, though exceptions to this generalisation are often seen. So long as skin tenderness above Poupart's ligament can be elicited, the probabilities are that perforation has not yet taken place. In cases of doubt, immediate operation is the wise treatment.

When it is fairly clear that local peritonitis is already present, and the patient is in a toxic condition, there is room for difference of opinion as to the best course to follow. In the present series the procedure has been to open the abdomen and remove the appendix at once, and this is the advice that would be given by the great majority of British surgeons. But there is a good deal to be said for the line of treatment, common in America and generally followed of late years at the London Hospital, of seeking to postpone appendicectomy from the third and fourth days to a later stage. The patient is put in the Fowler position, given morphia and fomentations for pain, and nothing by mouth except water, so as to inhibit peristalsis as far as possible. The argument is that the death-rate is high when the operation is performed on the third or fourth day, but falls afterwards; by the end of ten days it is very low. If time can be afforded for the purpose, antibodies accumulate in the blood, the pus becomes shut off by adhesions, and the acute toxæmia passes off to some extent. On the other hand, we have argued that the cases in which this happy course is followed would have been the ones which

would have done well after a third or fourth day appendicectomy, and that the patients who are in real danger of a fatal issue will not settle down if the surgeon holds his hand at that period but go from bad to worse, and that a few of them may be saved by third or fourth day operating who would be lost by further postponement. The good figures obtained when the appendix is removed, or an abscess drained after a week, are due mainly to the inclusion of a common type of case in which the symptoms are mild from the first, and no doctor is sent for until there is an obvious abscess; these all do well.

However, the very recent statistics from the London Hospital are so favourable that we must be prepared to allow the possibility of the wisdom of delay in toxic cases. It is not easy to compare figures from two widely separated districts, as the death-rate from appendicitis depends much more on the readiness with which patients seek medical advice, and on the prompt action of the general practitioner, than on the skill of the surgeon.

When the attack is manifestly subsiding, everyone will agree that it is better to wait. We ought not, however, to use to ourselves the phrase "manifestly subsiding," unless there is a definite improvement in *all the signs*—pain, tenderness, temperature, pulse-rate, vomiting, &c. Otherwise we may be deceived by a "fool's paradise" stage. After the attack is over, by all means remove the appendix, but the interval makes the operation safer and freer from delays in healing. It takes about a fortnight for the peritoneum to regain sterility, and we should wait at least a week, and preferably a fortnight, but patients are apt to get impatient.

Group D may be quickly dismissed. Here, as in the classical case of King Edward VII., operation has been delayed for five days or longer, and there is a well-walled-off abscess, which can be felt and often seen as a definite rounded lump. The happy course taken by the disease may be due to a mild infection, or to a retrocaecal position of the appendix, or to the fortunate accident that it had omentum wrapped around it. Operation is necessary, or the abscess will spread, and may rupture into the bladder or in some other disastrous direction, but there is no absolute urgency to an hour or two. Question may arise as to whether it is wise in these cases to remove the appendix or merely to drain. The former operation may be very difficult. An experienced surgeon will very, very seldom leave the appendix; the occasional operator, if he is wise, will do so frequently. If the appendix is left, about 17 per cent. of the patients will have further trouble (Lett's 1905 statistics). This figure does not seem high enough to make a second operation necessary in ordinary circumstances until there is a further attack.

In group E, with evidence of widespread, so-called "general" peritonitis, we have thought that operation is urgently indicated, though there is bound to be a heavy mortality. Probably we have often tried to do too much. Even if the patient is desperately ill, it is worth while to drain the pelvis under a local anæsthetic, and I have saved cases by this, the only possible procedure. Possibly the new operation of draining the thoracic duct may help to reduce the risks in these very grave cases. At the London Hospital they advise waiting a few days in hopes of localisation in the pelvis.

Why do Certain Cases Die, and How May this be Prevented?

In the series here presented as the basis for our study there were five deaths in private practice and 20 in hospital practice. Of the five in private practice, four were operated on far away in the country at small hospitals or at a country house, and only one at a Bristol nursing-home, yet, of course, the great bulk of private operating is done at a nursing-home. Better ambulance transport to remove country cases before they get very ill is urgently needed. The four who died were all very ill. One developed measles

a day or two after the appendicectomy, a second refused operation at my first visit and sent again next day. Another collapsed unexpectedly during a spell of torrid heat in July. The one nursing-home case who died was a man of 74 who travelled for many hours by train after he had perforated. Of the hospital cases, four died within 48 hours of admission. In another case only a suprapubic drain under gas was possible. Three died of pneumonia, one, three, and seven weeks after operation. Subphrenic abscess accounted for another, and multiple residual pelvic abscess for two more. There was one death from a very unusual cause—secondary hæmorrhage from the deep epigastric artery a month after operation. All the rest were carried off by peritonitis or ileus.

TABLE IX.—*Causes of Death after Operation for Appendicitis.*

	Cases.
Died under 24 hours	3
Measles and peritonitis	1
Pneumonia	3
Heat collapse	1
Secondary hæmorrhage	1
Subphrenic abscess	1
Multiple residual abscesses	2
Peritonitis or ileus	13

Now, of the causes of death shown in Table IX., some are preventable and some cannot be controlled. Early operation before the appendix perforates eliminates nearly all. The practice of giving an aperient to a patient who may possibly have appendicitis loses many lives. The more carefully the operator swabs out the pelvis and the soiled areas the fewer cases of residual or subdiaphragmatic abscesses and of ileus will he have to lament. The technique of drainage will be referred to later. It may be that in the future we may be able to save more lives in neglected cases by opening the jejunum under novocaine in cases of ileus, and by lymphaticostomy for peritonitis.

Management of the Case which does not make Good Progress after Operation.

I shall not say more about the treatment of peritonitis or of ileus which follows well-known lines, except to mention the fact that physostigmine salicylate and pituitary given coincidentally are much more effectual than either given alone in the treatment of ileus. In really grave cases several days after operation, when all other measures have failed to get the bowels to act and the prospects look gloomy, I have had great success on many occasions with a rather drastic "triple attack." The method is to give two drops of croton oil, then four hours later a turpentine or alum enema, and whilst it is still in the bowel, an injection of pituitary. It very seldom fails, and is, I believe, life-saving.

When the temperature remains persistently high after removal of the appendix we may allow a week, unless, of course, there are signs of serious trouble, before becoming alarmed about it. At the end of a week, a routine search must be made for the cause. It will nearly always be one of the following:—

1. *Suppuration of the Abdominal Wall.*—The diagnosis and treatment are obvious.

2. *Pericæcal Abscess.*—This is due to inadequate drainage at the operation or premature removal of a drain, and ought not to occur. Diagnosis and treatment are obvious.

3. *Pelvic Abscess.*—Due to inadequate cleansing or lack of drainage. The abdomen will present no signs except some distension, but there may be a mucous discharge from the rectum. The condition is recognised by a rectal or vaginal examination. As soon as it is large enough to be fairly easy to find, open it.

4. *Subphrenic Abscess.*—Generally in these cases nothing is to be felt in the abdomen, but the liver dullness is raised two intercostal spaces at the base of the right lung, with absent breath-sounds. Confirm by a skiagram, which shows doming up of the diaphragm on that side. I prefer to open these abscesses by an incision in the mid-axillary line,

resecting an inch or two of the two lowest ribs met with, and entering the abdomen below the pleural reflection, between the liver and the diaphragm. This gives beautiful access, avoids all trouble with the pleural cavity, and allows dependent drainage.

5. *Other Residual Intra-abdominal Abscesses.*—These may occur anywhere, but except in the situations just mentioned are easily felt as tumid swellings; just above the pubes is a common place.

6. *Pneumonia, Empyema, Bronchitis.*—These need no discussion. If confusion arises between subphrenic abscess and empyema, the skiagram will decide; in the former case the upper level of shadow is domed upwards, in the latter case it is horizontal.

7. *Suppurative Pylephlebitis (Portal Pyæmia).*—In this very grave condition there will usually be rigors, and perhaps a little jaundice. The liver may be tender and swollen. Most of these patients die, but I saved one by opening and draining the abscess, which was fortunately solitary and superficial on the upper surface of the liver.

8. *B. coli Pyelitis.*—Once or twice I have seen a persistent temperature after appendicectomy due to this cause. The diagnosis is given by the exclusion of other causes, the presence of *B. coli* in the urine, and the rapid recovery after the administration of hexamine.

Operative Technique.

I shall deal with this very briefly.

(1) Use the Battle incision, not the McBurney. The idea that there are more incisional hernias after the former than when the muscle-splitting operation is performed is incorrect. If a drainage-tube is used through the incision any operation may be followed by a hernia; if the drainage is kept separate, I have only once seen an incisional hernia after the Battle operation. Its great advantage is the much better access without cutting across the oblique muscles. It is difficult to deal adequately with an infected pelvis through the McBurney incision unless its alleged advantage is sacrificed by cutting across muscle fibres. If there is a palpable swelling, make the incision partly off the swelling and partly over it. Try not to divide more than one intercostal nerve, or there will be some weakness of the rectus. Do not allow a nerve to be caught in a ligature. Even motor nerves contain sensory fibres.

(2) However difficult it may be to do so, the stump of the appendix must be securely buried or otherwise shut off from the peritoneal cavity. It is useless to trust to drainage to make good any deficiencies in this direction. The removal and secure closure of the appendix may be a very easy operation or it may be of exceeding difficulty.

(3) Thoroughly cleanse the pelvis and the perirenal pouch also if they are soiled.

(4) *Drainage.* If it is decided to drain (and if the appendix has perforated, in spite of the modern tendency to the contrary, it is probably safer to do so), close the incision and use stab-drains. Of late years I have given up drainage-tubes to a considerable extent in favour of corrugated rubber dam, which does not cause tissue-necrosis or exert any pressure. In a case with local and pelvic peritonitis the drainage-scheme is: (a) A long narrow strip of rubber dam, through a median stab just above the pubes, down to the bottom of the recto-vesical pouch; (b) a rubber tube, through a stab in the loin, just entering the peritoneal cavity close to the site of the appendicectomy; (c) a narrow strip of rubber dam at the lower end of the operation wound, entering the rectus sheath but not entering the peritoneal cavity, to control suppuration of the abdominal wall.

I have never known an incisional hernia follow this method of drainage. If it had been followed at that time, I do not think the death from secondary hæmorrhage from the deep epigastric artery would have occurred.

References.—Lett: Rendle Short's "Index of Prognosis," third edition, article "Appendicitis"; McNeill Love: Brit. Jour. Surgery, April, 1923, October, 1924.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

A STUDY OF ABNORMAL HYDROGEN-ION CONCENTRATION AS AN INDICATION OF DISEASE.

By F. CARMINOW DOBLE, M.R.C.S. ENG.,

TEMPORARY CAPTAIN, R.A.M.C.; SPECIALIST IN DERMATOLOGY FOR THE LONDON DISTRICT; HONORARY CASUALTY OUT-PATIENT SURGEON, ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, LONDON.

URINE with a high acidic value is a very much commoner condition than is generally supposed. Many people have it in a definitely pathological degree who are apparently in perfectly good health. It would appear that this state is an indication of some underlying disease, the nature of which we know nothing. This obscure condition is a grave menace to our well-being, and sooner or later, on the advent of some additional or superimposed strain, some organ or tissue of the body will refuse to function properly. It prevents or hinders the clearing up and healing of lesions and there seems to be no doubt that it can, by itself, poison various tissues of the body. I make the suggestion that it is usually congenital but may be acquired. Treatment with alkalis will relieve the patient and allow the lesions to heal up, but the high concentration of the hydrogen ions in the urine will return and the patient will have a relapse when another strain is put upon the organs or tissues. Thus it would seem that this high acidic value, apart from treatment, is permanent. The only exceptions that I have found so far to this rule are in cases of gastro-intestinal toxæmia. In this type of case there is usually an erythematous or papular rash and the pH value of the urine varies from 5 to 5.6. When the rash fades away, the pH value of the urine returns to normal, even without treatment, showing that the phase is only a temporary one.

Although I have been working on this state for the last 21 months, chiefly from the dermatological point of view, I have been struck by the number of patients in the medical wards who have shown a great intensity of the acid in their urine, and by the change for the better that takes place the moment they are treated with large doses of alkalis.

The pH Value of the Urine.

The only method employed throughout my investigations was to find out the pH value of the urine, as I found there was no increase in the actual amount of acid present in the urine of the patients I was testing. In other words, there was no true acidosis. If the pH value was pathological, I endeavoured to bring it to the normal limit and keep it there. This normal limit I have found by examining very large numbers of healthy men to be from 6.4 to 6.8. I was careful to exclude all those with skin diseases, especially seborrhœics. Even then I found a small percentage with a high pH value. It is analogous to those people who without any signs or history of syphilis are found to have a strongly positive Wassermann reaction. Also, as with them, the question arises, should they be treated? Until more is known as regards the causes of the state that question cannot be answered.

The cardinal fact underlying my clinical investigations is that the mean hydrogen-ion concentration of the urine in certain skin and other diseases is of a high order, but that no abnormal increase in titratable acids can be found associated therewith.

The possible causes of this might be: (1) The excretion of an abnormal acid of high dissociation constant. (2) The deficient excretion of one or more of the normal urinary buffers so that the normal urinary acids cause a marked increase in the hydrogen-ion concentration. (3) The abnormal excretion of

some element which causes increased dissociation or hydrolysis of one or other of the urinary constituents which are combinations of a weak base and strong acid and vice versa, or to some other cause.

The fact that quite moderate doses of alkalis are sufficient to change the pH value to normal limits instead of the massive doses required in true acidosis cases to cause the same pH change seems to indicate that there is no real acidosis underlying the condition, but that some equilibrium change or changes cause the normal urinary acids to give a high intensity value.

The pH value of the blood is of no help, but the clue to the urinary changes may possibly be found in the blood chemistry of these cases. In the quantitative blood examinations of the acid and alkali buffers, the alkali reserve, the pH values obtained from determinations of the free and fixed CO₂ ratio, and direct electrometric measurements might be of value in determining the operative factors. The changes in the sweat and saliva promise to be of interest.

Examination of the Urine.

By taking morning and evening specimens I found that the pH value varied within certain limits according to the amount and kind of food taken, and also with the interval of time since the last meal. It is better to start with a specimen taken the first thing in morning and the last thing at night, and later to examine 12-hour samples. Occasionally I find it useful to also test a specimen taken two hours after a big meal. The urine should be examined daily until the patient is well under treatment, when once or twice a week will suffice.

The Urine in Patients with Skin Manifestations.—In some 500 cases of patients suffering from skin diseases I found that all those with seborrhœa, seborrhœic eczema, acne, and cheilopompholyx, without a single exception, had a urine with a pH value of from 4.8 to 5.8, unless alkalis had been given. Infantile eczema is not a seborrhœic condition, the urine in these cases gives a normal pH value, and the patients do not improve on alkalis.

Dr. H. W. Barber, in an article written in conjunction with Dr. H. C. Semon entitled *Some New Observations on the Ætiology and Treatment of Seborrhœic Eruptions*,¹ was the first to point out that the seborrhœic state is really a manifestation of acidosis, and that in the great majority of cases the activity of the inflammatory processes ceases as soon as the urine is rendered virtually alkaline. The article goes on to say that although the chemical examination of the urine has never revealed the presence of di-acetic or β -oxybutyric acids, nor is it suggested that the degree of acidosis present in all resembles that commonly met with in diabetes, it is not to be denied that there are certain resemblances in the clinical features of the two diseases.

In the light of my recent work I am in absolute agreement with these views except that I consider that the word acidosis is not the correct word to use for this condition, and suggest that "acidic value" is more in accordance with chemical findings.

Dr. Richard L. Sutton, in his book, "Diseases of the Skin,"² writes as follows:—

"Barber and Semon believe that all patients with status seborrhœicus suffer from relative acidosis, and recommend the adoption of appropriate treatment, but Sweitzer and Michelson,³ in an exhaustive and careful series of studies, were unable to establish any etiologic relationship between the two conditions. Inquiry among pediatricians disclosed the fact that in a large number of cases of acidosis observed, due to a variety of causes, no cases of infantile eczema or of seborrhœic dermatitis were encountered."

These investigators must have fixed their attention on the amount of titratable acids and ignored the hydrogen-ion concentration altogether, otherwise they could not have failed to have been struck with the extraordinary high acidic value of the urine of all the seborrhœics they examined.

The Action of Alkalis on Patients with Skin Manifestations.

Seborrhœic Eczema.—The action of alkalis on patients with this condition is very marked, even on those cases who have had eruptions for years. The weeping stops, the angry look dies away, the redness becomes paler and paler, the irritation ceases, a thin bluish-coloured skin covers up the lesion, and then normal skin appears and the lesion is healed. This can occur without any local treatment of any kind having been applied. The length of time taken to effect a cure depends on how long it takes to bring the urine to a normal pH value, and this naturally varies with each case. If too much alkali is given and the pH value of the urine reaches from 7.2 to 8, the lesions tend to reappear, and unless the dose is cut down or stopped the patient's condition may become worse. This rather rare result of over-treatment is well illustrated in the following case:—

CASE 1.—J. P., a man, aged 36, who had had no previous skin trouble. He was badly wounded in 1916 and was given an injection of anti-tetanic serum and sent to hospital in England. Here he was given a second injection which, he states, caused him to break out in a rash all over his body which remained long after his wound had healed; in fact, he was in hospital for 18 months. In time his skin became normal except for a weeping dermatitis covering both his hands. He had received treatment from several eminent dermatologists without the lesions clearing up. He was forced to wear gloves continually, and consequently was too shy to dine away from home. He was very anxious, on his first visit to me, to attend a big dinner in Paris 48 hours later. I gave him half a pound of bicarbonate of soda with instructions to take a teaspoonful three or four times a day. His hands were perfectly healed by the time he arrived in Paris. Against my advice he continued taking large doses of this salt and in a few days, after consuming some pounds, he developed a weeping dermatitis covering practically the whole of his body. The pH value of his urine was then 8. On stopping the medicine the rash cleared up, taking ten days to do so.

The next case shows the action of alkalis both on the skin condition and on the kidneys.

CASE 2.—J. J. R., a man, aged 49, had had seborrhœic eczema for ten years, chiefly limited to the face and neck. The skin was red, swollen, and weeping. He stated that it started as a small itching spot on his nose which he scratched. He must have infected this with his nails, for the spot rapidly spread, and in a few weeks his whole face and neck was a mass of weeping and irritating eczema. Every form of local treatment was tried for years, but with only slight relief. He spent several hours a day either bathing his face with lotion or smearing ointment on it. He was unable to go into a heated room or to drive in an open car. At times it was impossible for him to shave, and he never was able to lather or wash his face with soap.

When first seen in April, 1923, the report on his urine was as follows: Sp. gr. 1010, very acid to litmus, H-ion concentration, pH 5.8, trace of albumin present, but no nucleoprotein, acetone, aceto-acetic acid, phosphates (earthy), urates, bile salts, or sugar. Quantitative albumin (Esbach) was under 0.01 per cent. Centrifuged deposit: Microscopical examination showed a few granular casts, a few tubular renal epithelial cells, and a few leucocytes, but no red blood corpuscles or crystals, &c.

Under drachm doses of sod. bicarb. his condition rapidly improved, and I was able to reduce the amount by half in a few weeks. He carried on the same local treatment that he had done for years. Not only did the eczema clear up, but his kidney condition, as shown by the examination of his urine, became normal. I noticed that if his urine stayed between 6.4 and 6.8 his face remained in a perfectly normal condition. If it went to 5.9, his skin started to inflame, and casts, renal cells, and leucocytes reappeared in his urine. If it went to the alkaline side of 7 his face condition remained good, but the casts, &c., reappeared. Thus the pathological report on his urine on Nov. 8th was as follows: Sp. gr. 1014, very alkaline to litmus, H-ion concentration, pH 7.6, albumin present and a trace of nucleoprotein.

The amount of albumin present was more than that found in all recent specimens, but was too small in amount for quantitative estimation. There was a trace of indican, but chemical tests showed the absence of blood and pus. There was no acetone, aceto-acetic acid, bile salts, or sugar, and no urates, but earthy phosphates were abundant. Centrifuged deposit: Microscopical examination showed

granular hyaline casts and a few renal cells, leucocytes, but no erythrocytes. Triple and stellar phosphates were present. The increased albumin, casts, &c., may possibly be due to the abnormally great alkalinity of the urine.

From December, 1923, to the present time he has a slight relapse of his skin condition when his urine is very acid, but his renal state remained very good, even when his urine reached 5.6 or 7.6. So it appears that the treatment has allowed his kidneys the chance of recovering. Thus on May 30th, 1924, the report on his urine was as follows: Sp. gr. 1016, alkaline to litmus, H-ion concentration, pH 7.6. There was no albumin, nucleoprotein, blood (chemical), indican, acetone, aceto-acetic acid, urates, bile salts, or sugar, but earthy phosphates were very abundant. Centrifuged deposit: Microscopical examination: No casts, renal cells, leucocytes, or other organised cells were present, but a few stellar phosphates, triple phosphate crystals, and a very large amount of amorphous phosphates. He is still taking bicarbonate of soda in half-drachm doses two or three times a day. He is leading a perfectly normal life, and except for meat he eats anything he likes.

CASE 3.—L. S., a nursing sister, had an outbreak of seborrhœic eczema in Malta three years previously. When I first saw her 15 months ago she had a very acute, weeping, and irritating dermatitis, involving chiefly her arms and legs. It took a pound and a half of cotton-wool a day to absorb the fluid from the lesions. I ordered her to bed and put her on medium doses of bicarbonate of soda and potassium citrate. I gave her no local treatment whatever. She begged to be allowed to apply one of the many lotions she had been in the habit of using and complained bitterly when this was refused. In two days the lesions were healing and had quite cleared up at the end of ten days. Since then I hear that she had a slight relapse when she had an attack of influenza some months later, but on continuing the medicine, which she called "the magic draught," it completely healed up.

The cases described above illustrate very well the action of alkalis on seborrhœic eczema; they are only three out of over one hundred examples I could quote. Rarely one meets cases that do not clear up easily under alkalis, even with the help of local treatment. These cases are due to a skin sensitisation to a staphylococcus, fresh lesions breaking every now and then at a distance from the original focus. This staphylococcus is usually *S. aureus*, sometimes *S. albus* or even *S. citreus*. These cases require to be desensitised by injections of autogenous vaccines, peptone injections, low carbohydrate dietary and other means. These have been described by Dr. Barber. Cheiropompholyx I place in the same category as the above, the action of alkalis is just as remarkable, and no local treatment is usually required.

Seborrhœa.—The action of alkalis on seborrhœa, wherever it is situated and whatever the type may be, is a very great aid to, but can never replace, local treatment.

Acne.—Here, again, local treatment must be energetically carried out. One case will serve to describe the change that takes place when alkalis are administered.

J. M., a girl, aged 17, had been treated for acne since she was 11. For the past three and a quarter years she had been under the direct care of a distinguished dermatologist. Every form of modern treatment had been tried in her case, including the administration of an autogenous vaccine and radiotherapy. When first seen by me her face and back were covered with typical acne. The pH value of the morning urine was 5, and the evening specimen 5.1. Three days after the administration of alkalis, when the pH value had been raised to 5.3, she started to improve. At the end of a week the change was very marked. What especially impressed her mother at this time was that the scalp and skin were no longer greasy and no fresh "spots" had appeared. At the end of a fortnight she was well on the way to recovery. I noticed that the deep-seated pustules had worked their way to the surface. In four weeks she was clear of active signs, and all that remained were a few healing scars and some small comedones.

Other Skin Conditions.—Amongst other skin conditions that have an abnormally high pH value and that greatly improve or are cured by administering alkalis are prickly heat, carbuncles, abscesses, boils, and a generalised prurigo. This latter condition is often seen in cases that have, to all intents and

purposes, a normal-looking skin. I find in these cases that before the itching is relieved the pH value of the urine has to be pushed up to 7.5 or 8.

The Urine and the Action of Alkalis in Other Diseases.

It is with diffidence that I write on the high pH value of the urine in other diseases than those of the skin, and it is really to suggest the lines that research workers might follow that I state my limited experiences. In gout and rheumatism the pH value is high and alkalis give marked relief. Neurologists might test out the acidic value in their cases. Epilepsy, neurasthenia, and hysteria are examples of diseases in which I have found a high percentage of abnormal acidic urines. It would be of great interest if independent observers would record their researches in the large group of psychic and other ailments of the central nervous system, many of them involving a derangement of the autonomic system, vago- and sympathicotonic, and which in many cases exhibit cutaneous manifestations. It would seem worth while if the pH value of the urine of all patients admitted to hospital was ascertained, as alkalis are of such remarkable value in diseases as far apart as blackwater fever and broncho-pneumonia. It may account for the benefit some people derive from taking proprietary salts, and attendance at alkaline spas.

I have recently examined the urine in the cases that have shown a marked reaction to vaccination, injections of T.A.B. vaccine and serums. They all show a pH value of from 5 to 5.6, even when they were well again. If alkalis are given to cases that have a high hydrogen-ion concentration to their urine, I find that when their urine is approaching the normal limit the patient generally volunteers the statement that any symptom of stiffness after exercise, headache or heavy feeling, previously complained of, has gone, and that he wakes up fresh in the morning, and getting up is no longer any trouble to him. Chronic dyspepsia is greatly relieved or has absolutely disappeared, also, in some instances, certain articles of diet which before caused inconvenience or even rashes or other toxic symptoms, can now be eaten with no bad after-effects. Strawberries and bananas are two instances.

Treatment with Alkalis.

In each case it is necessary to experiment before the exact dose can be gauged. Dr. Barber and Dr. Semon, in the article quoted above,¹ state how difficult it often is to bring the urine to the normal limit. Here my experience in the treatment of gonorrhoea was useful, especially that gained when I was experimenting with acriflavine, which has to be given with the patient's urine alkaline. The mixture which I now always start with, and which I call mist. acidosis (for want of a better name), is a modification of Dr. Langdon Brown's mixture for the treatment of the acidosis in diabetes. It consists of:—

R	Sod. bicarb.	..	..	gr. 30
	Pot. bicarb.	..	..	gr. 25
	Pot. cit.	..	..	gr. 20
	Tinct. card. co.	..	..	min. 30
	Aquam menth. pip.	..	..	ad oz. 1

This is given three times a day, between meals, increasing or decreasing the dose according to the pH value of the urine.

My best thanks are due to Dr. Barber for his advice and help, to Dr. Lyn Dimond for his interest in my work and for his skill in carrying out the pathological side of the investigations, and also to Major R. E. Todd, M.B., R.A.M.C., for many useful suggestions and his help and encouragement.

References.

1. Barber and Semon: Jour. Roy. Army Med. Corps, 1919, xxxvii., 244.
2. Sutton, Richard L.: Diseases of the Skin, fourth edition, London: Henry Kimpton, 1921, p. 910.
3. Sweiter and Michelson: Arch. f. Dermat. and Syph., Chicago, 1920, ii., 61.

THE PREVENTION OF A HIGH MATERNAL MORTALITY FROM PUERPERAL SEPSIS.

By ETHEL CASSIE, M.D. EDIN.,
D.P.H. EDIN. & GLASG.,

CHIEF MEDICAL OFFICER FOR CHILD WELFARE, BIRMINGHAM.

MUCH attention has been directed recently to the fact that maternal mortality in childbirth remains almost unaffected by the general fall in the death-rate, and that the most important single factor in maintaining this high mortality is puerperal sepsis. In spite of the attention directed to the subject and its importance, a certain vagueness and lack of focus appear to prevail in the attitude adopted to the condition. There still seems to be considerable disagreement as to its nature, its evidence, and as to the methods of prevention.

The history of our knowledge of the condition has been retailed so frequently of late that no further recapitulation is required. It is unnecessary to go further than Dame Janet Campbell's recent report on Maternal Mortality, in which a brief and admirable historical summary is given. It is rather surprising, however, to find a little further in the report the statement "we have not as yet exact knowledge as to the causation of the infection." As long ago as 1910 Dr. A. W. W. Lea, in his valuable book "Puerperal Infection," set forth what is the accepted modern view, which simply considers puerperal sepsis as a wound infection, and therefore due to any organism capable of producing a septic infection. The variation in the organisms found is therefore what one would expect. Unfortunately, there still appears to be a widespread idea that puerperal sepsis must be a specific infection. This belief is, I believe, a mischievous one, since it affects the attitude of the attendants on the patient, and leads to mistakes in both preventive and curative methods. Considering the condition then as a wound infection, the points of interest are how far infection depends on the varying factors involved: on environment, on injury, on hæmatogenous infection, on insufficient drainage, and finally, how much it is influenced by the resistance of the patient. These are important points and have been much debated; it is possible, however, that there may be some interest in considering them afresh in the light of a special and close investigation carried out in every case of puerperal sepsis notified in Birmingham during a period of 12 months. The whole interest of the inquiry centred on the question of prevention, methods of treatment were noted, but their relative value was not contrasted.

It is first necessary to consider the position in Birmingham as regards the midwifery service. There are 196 certified midwives in practice, whose work is closely supervised by the public health authorities. These women undertake a large proportion of the midwifery. During 1922 they attended 13,128 women in childbirth, representing 66 per cent. of the total births in the city. The larger proportion of the remaining cases were attended by medical practitioners assisted by the midwives or handywomen. Unfortunately, a very large proportion of women are still permitted by the medical practitioners to engage these handywomen to assist actively at the confinement and in the nursing during the puerperium. In addition the maternity hospital dealt with 787 cases; these were either primiparae or cases where some abnormality was present or suspected, while a rather larger number were confined in the Poor-law hospitals, there being no restriction as to admission. There are several small maternity homes, including a municipal maternity home. Puerperal sepsis cases are treated at the Women's Hospital in a special ward. Cases are also treated in the Poor-law Hospitals. The patients in all three institutions are under the care of skilled obstetricians, and no case is refused admission. In consequence of this excellent provision for treatment

the number of puerperal sepsis cases notified in Birmingham per 1000 of the population is higher than in other cities—e.g., Leeds and Liverpool—where the only provision is a ward in the infectious disease hospital; while in Nottingham, where no special provision appears to have been made, the case incidence was at a minimum. The mortality per 1000 births from puerperal sepsis is a more reliable figure than the case-incidence, and in this Birmingham is below all the larger cities except Bristol. (Table I.)

TABLE I.

—	Case-incidence.	Mortality.
	Per 1000 of population.	Per 1000 births.
England and Wales ..	0.06	1.38
London ..	0.08	1.42
Birmingham ..	0.11	1.21
Manchester ..	0.23	1.94
Liverpool ..	0.07	1.83
Leeds ..	0.07	1.28
Sheffield ..	0.12	1.68
Bristol ..	0.08	0.60
Nottingham ..	0.03	1.30

The number of cases notified during the period of 12 months (October, 1921, to October, 1922) amounted to 129. Of these 129, 35 were abortions, and the remaining 94 pregnancies in which the period was over seven months. Of these 94, five were not cases of puerperal sepsis. These five were of some interest from the point of view of diagnosis and are given below: 1. Pyelitis (chronic). 2. Scarlet fever (previous case in house). 3. Mammary abscess (pyrexia on the fifteenth day). 4. Acute bronchitis. 5. Chronic nervous disease (probably disseminated sclerosis, though a final diagnosis was not made. It was taken for a cerebral embolus, with puerperal sepsis, owing to the incomplete history).

Incidence.

In 1922, 19,850 births were notified in Birmingham, and the number of cases of notified puerperal sepsis was 137; this gives a percentage of 0.69, which is, of course, a very low incidence, but may be taken as an average. Consideration of this figure raises the question, "What is the true incidence of puerperal sepsis?"

Obviously the notified cases give no real indication of the condition, since only the severe cases requiring hospital treatment, or those who cannot well be treated at home for other reasons, are notified. Some indication can be obtained from the number of midwives' cases in which medical help was called for pyrexia. This is not, of course, an absolute guide, but the figures are very suggestive as shown by subsequent inquiry. It should be noted that only a small proportion of these cases are included among the notified cases of puerperal sepsis. The midwives sent for medical help for rise of temperature alone in 111 cases during 1922.

In 30 of the midwives' cases investigated in this inquiry medical help was called for during the puerperium; this may be taken as an average figure, for though the period does not absolutely coincide it is near enough for the purpose. It may then be taken that roughly two-thirds of the cases in which midwives summon medical help during the puerperium for rise of temperature are not notified as cases of puerperal sepsis. The majority of these cases are undoubtedly cases of mild sepsis. In addition it is probable that many rises of temperature are overlooked by the midwives, owing to their habit of visiting once a day only, and that in the morning. Taking everything into consideration, it would probably be fairly correct to state that at least three times as many cases of puerperal sepsis actually occur as are notified. The majority of these are undoubtedly mild cases, but a proportion are certified as dying of pneumonia or some other secondary complication. In addition many cases of phlegmasia

alba dolens are known to occur, and are never notified, although these are, of course, cases of puerperal sepsis. Many practitioners who write of having delivered so many hundreds of women without a single case of puerperal sepsis have been extraordinarily lucky, or have failed to consider any case septic unless the condition was a severe general septicæmia or pyæmia. The whole question is one of definition. A clear and authoritative pronouncement is needed, and has not yet been made.

Environment: (a) Attendance at Labour.

TABLE II.

Doctor and handywomen ..	14	Doctors' cases .. 38
Doctor and midwife ..	10	
Doctor and midwife (hospital) ..	11	
Doctor and relative ..	3	Midwives' cases .. 51
Midwife alone ..	30	
Midwife and doctor (called during labour) ..	12	
Midwife (institution) ..	5	
Medical students and midwife ..	4	

From the figures in Table II. it will be seen that omitting the institutional cases and those attended by medical students, doctors were primarily in attendance in 27 cases, or 30 per cent., and midwives in 42 cases, or 48 per cent. This must be taken with the fact that the midwives normally attend 65 per cent. of all confinements, so that the percentage of puerperal sepsis in midwives' cases is not unduly high.

Nature of Labour.

Normal (no interference beyond vaginal examination) ..	52
Instrumental ..	29
Version, manual removal of placenta, &c. ..	8
Total ..	89

These figures show that the presence of the doctor does not under present conditions in any way safeguard the patient. Dame Janet Campbell has drawn a picture of the methods employed by the medical practitioner which is absolutely accurate for working-class practice as a whole, and which has been confirmed in this inquiry. The use of gloves and sterilised gowns is quite exceptional, while the preparation of the bed and of the dressings, &c., is primitive, when considered in the light of modern surgical procedure. As a rule, too, all swabbing and cleansing of the patient is left to the nurse, who is frequently an untrained handywoman. The methods of the midwife leave much to be desired, but a higher standard could be obtained from her if a better example were set. The attendance during the puerperium is equally important with the attendance at labour, and here again both doctor and midwife are inclined to do too little. The doctor in a large proportion of cases leaves all the nursing to the handywomen, frequently not even taking the temperature. The midwife in her turn, though more efficient than the handywomen, is inclined to visit only in the morning and to omit Sunday. There is no suggestion here of the need for careful dressing, and the securing of efficient drainage for an open wound or wounds. No change in procedure is attempted even with a severe perineal or cervical laceration. After the ministration once in 24 hours of the midwife, the woman is allowed to change her own dressings and do what she can with the help of a neighbour.

The importance of careful nursing in the puerperium is well illustrated in the cases studied in this inquiry. In 52 of the 89 cases labour was normal, with no interference beyond the usual vaginal examinations, yet in 36 of these normal labours there was injury, incomplete evacuation, or both. Where the cervical injury occurred alone, as it did in nine cases, its presence was not even suspected, while the presence of placental and membranous fragments in utero was not considered possible, even in cases where considerable quantities were subsequently evacuated. The importance of careful dressing and observation during the puerperium, with early and energetic treatment, is obvious. The attendance and nursing in domestic midwifery practice are far below the hospital standard,

and taking this into consideration the actual amount of sepsis is very low.

(b) *Home Conditions.*—The small influence of the general environment of the patient on the incidence of puerperal sepsis is at first sight somewhat remarkable, but it is after all only another illustration of the greater liability to infection from a personal agent which is being so widely recognised in infective conditions generally. Probably the only important influence of environment on the incidence of puerperal sepsis is through the effect on the general health with a consequently lowered resistance, but even here the effect is seen less on the incidence than on the death-rate. Thus:—

<i>Health of mother in all cases (total 89)—</i>			
Good, 64 (71%)		Poor, 15	 Bad, 10
<i>Health of mother where death followed (total 19)—</i>			
Good, 11 (59%)		Poor, 3	 Bad, 5

The home conditions appear to be in themselves an almost negligible factor apart from the type of attendance and nursing available. In only three instances in this inquiry was it possible to account for the infection by the environment alone.

Local Conditions.

(a) *Injury.*—It is not easy to exaggerate the importance of this factor in the liability to puerperal infection. It is the most frequent cause of phlegmasia alba dolens and cellulitis. Very many cases of prolonged disability follow both these conditions, while no one can overlook the disability resulting from a badly torn and unrepaired perineum. The great majority of these cases are not notified as puerperal sepsis. It is only the more severe and generalised infection which is notified, yet among the 89 cases under consideration injuries were present in 44, or 49 per cent., and in 11 the injury appeared to be the only cause of the infection, there having been no undue interference or incomplete evacuation. The nature of the injuries was as follows:—

Perineal tear alone		11
Cervical injury alone		9
Cervical and vaginal injury		5
Vaginal injury		2
More than one injury including perineal tear		17
<i>Severity.</i> —Very extensive, 4; very severe, 12; severe, 15; slight, 13.		

Such injuries are in a majority of instances inevitable, but their presence should be ascertained, and when ascertained suitable treatment applied. The point is that no special care is employed to obviate or minimise infection with the result indicated. At the same time, there can be no doubt that with adequate antenatal care, including careful abdominal examinations, the larger proportion of the severe injuries could be eliminated, and with them the gravest risks to the patients.

(b) *Imperfect Drainage and Incomplete Evacuation.*—In this inquiry 49 cases, or 52 per cent., showed incomplete drainage or evacuation. This varied in degree, but in 25 cases considerable placental fragments were subsequently removed. It appears certain that in far the largest proportion of cases injury and imperfect emptying of the uterus play a predominant part. In fact, in only 25 of the 89 cases were neither present—i.e., in only 28 per cent.

While injury of a severe type was naturally found to a predominant extent in instrumental labours, it must be emphasised that such labours form only a proportion of those in which the two factors under consideration play a part in the onset of sepsis. The number in which both or one occurred was 65, or 73 per cent., and in 36 of these cases the labours were apparently normal without interference of any kind beyond the usual vaginal examinations.

(c) *Presence of Tumours.*—This is a comparatively rare complication, but it is one that should not be overlooked. Two cases with fibroids occurred in this series, and in both the tumours became infected, leading in one case to death. Both women were elderly multiparæ, and this serves to indicate the importance of antenatal examination even in this

class of patient, since this would have obviated much of the risks.

General Health and Hæmatogenous Infection.

Reference has already been made to this under "Environment," and it is obvious that a lowered resistance must result from any condition leading to general debility. Rather unexpectedly, however, the effect appears as making the prognosis worse after infection has occurred, rather than increasing the risk of sepsis. These women if they escape sepsis suffer from post-puerperal anæmia and debility, but no evidence is available that in the absence of other factors they suffer from a greater liability to sepsis. This modifies one's views as to the part played in hæmatogenous infection in puerperal sepsis. Probably with a local factor the presence of an infective nidus elsewhere increases the liability to, and the severity of, a puerperal infection, but without a local factor its occurrence appears problematical, since septic foci of one kind or another, especially of the mouth, exist in such a high proportion of mothers with no ill-effects. In this series one case was very suggestive. The patient suffered from a whitlow at the onset of labour, and subsequently died with a definite septic endometritis and thrombosis in the left broad ligament. There was, however, placenta prævia, and a bipolar version was performed, considerable hæmorrhage occurring.

Epidemic Form of Puerperal Sepsis and the Rôle of the Carrier.

Undoubtedly the part played by the carrier in puerperal sepsis is now of considerably less importance than in the past. Owing to the general recognition of the danger and the strict supervision of midwives, outbreaks are less frequent, but they still occur. The danger of carrying infection through an attendant from patient to patient is, of course, a very real one, and is constantly being illustrated in small and inefficiently run maternity homes. There is, however, another type of carrier infection which is in a sense even more dangerous since it is not so clearly recognised—viz., where the attendant suffers from an infective condition, such as a septic throat, a nasal catarrh or a sinusitis, and produces septic infection among her patients. These may be mild cases or the reverse. In this series such an outbreak occurred. A probationer nurse doing her district training attended, while suffering from a cold and sore-throat, several confinements which subsequently developed symptoms of mild sepsis. One of these cases was notified. The patient suffered from marked parametritis and phlegmasia alba dolens with considerable pyrexia. Medical officers whose duty it is to supervise the work of midwives are familiar with this type of puerperal sepsis; it is difficult to guard against, as the possibility of its occurrence is not sufficiently emphasised in midwifery training.

Early Diagnosis and Treatment.

The above may be taken as the main factors concerned in the onset of puerperal sepsis. Sepsis having actually occurred, however, the important thing is the prevention of death, disability, and spread. Of the last nothing more need be said, but the importance of early recognition and treatment is so paramount that insistence on any point bearing on them cannot be omitted. In this connexion the time of onset is of interest. In the cases investigated in this inquiry the onset in 79 of the 89 cases was in the first week, while in 52 cases, or 57 per cent., the onset was within the first three days. Yet of the 72 cases sent to hospital only 32 were sent in the first week. There is undoubted delay in many cases. On the other hand, in eight cases the onset definitely occurred after the eighth day, and these late cases are important, since an impression appears to be prevalent among midwives that puerperal sepsis does not occur after the eighth day. The death-rate in this series was 21 per cent. Nineteen women lost their lives. Contrasted with the death-rate of other

infections this is very high. Among these deaths, the points which call for special comment are the high proportion of normal labours, 49 per cent., and the high proportion of women in bad health, 42 per cent.; 25 per cent. of the deaths were in primiparæ. The actual cause of death was general peritonitis in 42 per cent. of the cases. In all but one case there was delay in securing hospital treatment, which certainly in a proportion of the cases was apparently responsible for the fatal result.

Antenatal Care.—In no case was any antenatal examination made by a private medical practitioner nor was the urine examined. In 19 cases the patients had attended clinics at hospitals and child welfare centres, and in four cases midwives had examined the urine. This was the extent of antenatal care in this series.

Abortions.

During the period of the inquiry 35 abortions were notified as puerperal sepsis; of these 25 were septic cases, and four deaths occurred. Abortions, however, present rather a different aspect of the problem and should be considered separately. One point requires emphasis, however—the need for early and skilled treatment.

Conclusions.

It is clear that the prevention of puerperal sepsis and a diminution in its mortality are dependent upon an improvement in (a) management of and attendance at childbirth; (b) nursing in the puerperium; (c) provision for treatment; (d) antenatal care.

(a) *Improved Management of and Attendance at Childbirth.*—A normal labour is a physiological event and so the presence of the medical attendant is not required. It borders, however, on the pathological, and for this reason a skilled and highly trained midwife should be in attendance, capable not only of using surgical cleanliness during labour but of readily diagnosing any untoward happening requiring medical intervention. Such medical intervention, when required, should be given by an obstetrical surgeon specially trained for the work, since his aid is sought only when the case is already pathological. It has recently been suggested by Prof. Louise McIlroy that the situation should be met by appointing whole-time obstetricians in the public health service who could be called in by the midwife. While agreeing with Prof. McIlroy that it is only the obstetrical surgeon who can suitably deal with these cases, one cannot agree with her as to the method of supplying the need. The public health service, as at present constituted, is not a national service, all its activities depending on local authorities, whose views diverge widely on every medical question, and few of whom can be relied on to take long views. We already have a national medical service which is uniform throughout the country, and which is centrally controlled and guided—viz., the National Insurance Medical Service. Under the insurance scheme something is already being done for maternity, in the form of maternity benefit. Additional benefits—e.g., dental benefit—are being included in the scheme. There appears to be no sound reason why an approved maternity service should not be provided, replacing if need be the present maternity benefit. Under such a scheme a panel of midwives could be arranged whose work would require to conform to a definite standard, and at the same time a panel of obstetrical surgeons with special training and experience could be arranged, not only to attend the difficult cases but to undertake antenatal care in every case. Antenatal care should not be left to the midwife. She can do a limited amount, and should be expected to do that amount, but a thorough medical examination is required in every case in the later months of pregnancy. There appears to be no reason why public health authorities should not when possible allow suitable child welfare centres to be used for such antenatal work where such an arrangement is considered convenient. Such a service would put midwifery practice on an entirely new basis. While encouraging younger medical men

and women to specialise in obstetrical work, it would be no hardship as far as those doctors are concerned who are already specially interested in this work. It need not be a condition that other forms of practice are necessarily given up, but it should be clearly understood that a general panel of more than 500 is not allowed. It is not possible to combine specialised obstetrical work with a large panel practice. In rural areas some modification of such a rule may be required, but there should be no serious difficulty in cities. The need for more maternity beds is constantly being emphasised, and is an obvious and urgent feature of any scheme for an improved midwifery service. The cost of such a scheme need not be prohibitive, while its influence not only on maternal mortality in childbirth but on the incidence of neonatal deaths among infants should be considerable.

(b) *Improved Nursing in the Puerperium.*—A detailed consideration of a series of cases must impress the importance of this factor on any observer. The proportion of normal labours is so high that some other factor must come into play apart from the mismanagement of labour. It is a point on which sufficient stress does not appear to have been laid. Probably medical opinion has failed to realise the actual circumstances, not so much from lack of knowledge as from lack of visualising the conditions. This has already been dealt with, however. Under present conditions no midwife can give adequate attention in the puerperium. In order to earn her living she must take an excessive number of cases. If improved nursing is to be secured improved payment is essential. It becomes once again a financial question.

(c) *Improved Provision for Treatment.*—The provision made by many local authorities for the treatment of puerperal sepsis is inadequate and unsuitable. It is not possible for the medical attendant to insist on his patient consenting to removal unless he feels that such removal will lead to satisfactory treatment by skilled obstetricians. The mortality of the condition cannot be lowered without improvement in this direction.

(d) *Improved Antenatal Care.*—While antenatal care is probably of less importance than the previous factors, there is no doubt that a considerable percentage of cases could be prevented by ascertaining the likelihood of a difficult labour and making suitable preparations. The importance of antenatal care is seen even more markedly in the other causes of our high maternal mortality. A better training in midwifery for both doctors and midwives is being urged in every direction, and it is undoubtedly the first and most important step. But in this paper an attempt has been made to consider other aspects of the problem.

OBSERVATIONS ON SOME CASES OF POST-ENCEPHALITIC PSYCHOSES.

By P. K. McCOWAN, M.D. EDIN., M.R.C.P. LOND.,
D.P.M.,

ASSISTANT MEDICAL OFFICER, WEST PARK MENTAL HOSPITAL,
EFSOM.

UNDER an arrangement originally emanating from the Board of Control the majority of cases of post-encephalitis in L.C.C. mental hospitals have been transferred to West Park Mental Hospital. A study of these cases has been made in the hope that some new light might be cast on the intricate problem of mental sequelæ in this disease. The number of cases collected is surprisingly small, even allowing for the fact that not all cases have so far been sent to West Park. Nine male and three female cases comprise the total number. In the case of three of the males the diagnosis is very doubtful, and in another, a man of 63 years of age, paralysis agitans is present, but unless the theory is held that this and encephalitis lethargica

are one and the same, there is nothing to suggest that the condition is post-encephalitic. This leaves eight cases which have undoubtedly suffered from encephalitis lethargica, and the following observations concern these only.

The two points on which I think these cases throw light are, first, the supposition of the progressive nature of this disease, and second, how far these psychoses can be regarded as true sequelæ of encephalitis lethargica (E.L.). No fewer than five of the eight cases support the contention that the virus continues present and potent in the central nervous system for considerable periods after the subsidence of the acute symptoms, somewhat as in the case of "parasyphilis."

Cases Illustrative of this Supposition.

CASE 1.—A woman, aged 36, married, had E.L. in 1920, when she was in deep stupor for two months. Admitted to Cane Hill Mental Hospital August 1st, 1922, with Parkinsonian syndrome present, right pupil dilated and practically fixed, left pupil normal. She had good insight into her condition, appreciated the enfeeblement of her self-control, was apathetic, but exhibited little or no dementia, and could give a good account of her illness. She has gradually become worse, is now totally dependent, faulty in her habits, very apathetic, and exhibits much dementia. She improved for a time on hyoscine, but this only delayed her downward course temporarily.

CASE 2.—A single man, aged 50, E.L. in March, 1924, with drowsiness, giddiness, diplopia, macropsia, ptosis, nystagmus, irregular sluggish pupils, restless and fidgety especially at night, drowsy by day, sleepless by night, sometimes an occupational delirium. He slowly improved and was sent to a convalescent home in May. Three weeks after being sent home apparently well, in July, he became depressed and attempted suicide by cutting his throat, and was sent to Claybury Mental Hospital. His physical signs are now very slight. His pupils are small, equal, irregular, react sluggishly to L. and A., convergence fair, lateral nystagmus; slight incoördination of upper extremities; slight paresis of facial muscles; deep reflexes normal, superficial including palatal and pharyngeal absent. He now exhibits a paranoid psychosis, is depressed and agitated, has auditory hallucinations and delusion that he is accused of "messing about with little children," and other immoralities, and thinks he has enemies who are plotting against his life. He is drowsy by day and sleeps badly, but is capable of occupying himself in the grounds. He is a mental defective who only reached standard II. at school, and his intellectual enfeeblement is doubtless due to his mental deficiency. Hyoscine appeared to aggravate his mental symptoms and had to be discontinued after a few weeks.

CASE 3.—A single man, aged 30, had attack of E.L. in March, 1924, with constipation, fever, herpes left shoulder, diplopia. After three consultations, one at St. Bart's, it was decided that this was not E.L. He improved rapidly, and had returned to work by end of April. A robbery which took place at his workshop upset him very much and aggravated the "neurasthenia" present, and another consultation now led to a diagnosis of E.L. His present physical signs show the distinct progressive nature of his disease with involvement of region of third nucleus (ptosis, diplopia), pyramidal tracts (K.J.'s +, Babinski), facial nerve nucleus (facial flaccidity). His emotional facility and dementia show the involvement of his basal ganglia and cerebral cortex respectively. He is acutely depressed, full of morbid fears, has hypnagogic hallucinations which usually take the form of grotesque animals, and which terrify him though he recognises their hallucinatory nature. He is much occupied by pains in his abdomen and chest which he describes as "pulling." His memory is very bad, and he gives a very poor account of himself and his illness. He is often difficult with his food, sometimes faulty in his habits, and is continually asking to be allowed to die. Hyoscine seemed to make him worse.

CASE 4.—A single man, aged 50, had E.L. in May, 1920, or in the patient's words he was "ill with influenza and went dotty." He showed inversion of sleep rhythm, and was very noisy by night. After five weeks he was sent to Claybury Mental Hospital, but was discharged after six months and returned to work. He still felt "nervous and dull," however, and had to attend Guy's Hospital as an out-patient with the following symptoms: Insomnia, feeling of agitation, fear of traffic, attacks of "shaking all over," constipation, and retention of urine for 36 hours on one occasion. He had to discontinue work after four months, and seven months later he was again certified and was sent to Long Grove Mental Hospital. He now exhibits Parkinsonian syndrome with its

mask-like face, general spasticity, festinant gait, retropulsion, pill-rolling movements, cramps in legs, athetoid movements in arms, coarse tremors of hands, slight intention tremor, slurring monotonous articulation. His deep reflexes are sluggish, his superficial normal; pupils moderate size, R. > L. irregular, react sluggishly to L. and A. Mentally he is dull, depressed, solitary, only speaks when spoken to and then in monosyllables, is morbidly introspective, very childish, very dependent, and exhibits emotional facility. He is of degraded habits, very untidy and given to spitting about on the floor. He has a very bad family history, one brother being insane, another having died insane, also a paternal uncle; his mother was a drunkard. Hyoscine 1/150 gr. daily makes him feel brighter and less spastic.

CASE 5.—A single man, aged 22, had E.L. in March, 1924, with lethargy, ocular symptoms, &c. He was able to return to work in July feeling quite fit, but in September he had to give up work and has become progressively worse since then. He now presents the Parkinsonian syndrome with its characteristic gait, attitude, articulation, &c. In addition he has myoclonic jerks in all four limbs. He is extremely depressed and miserable, is aurally hallucinated, and has delusions of persecution. He has made two determined attempts at suicide by strangulation, and still harbours strong suicidal tendencies. There is no dementia in evidence.

In Cases 1 and 2 there has been no progression as far as the physical signs are concerned, whereas in Cases 3, 4, and 5 these have become more extensive, and especially in Case 3. In all four have the mental symptoms become more marked, and if these psychoses are true sequelæ in the sense of being due to changes in the central nervous system caused by the virus of E.L., then it must be supposed that the virus has continued present and actively potent in the cerebral cortex of these patients. Certain significant facts, however, are present in two of these five cases to throw doubt on the nature of their psychoses. I refer to the stability of the central nervous system of these patients prior to their attack of E.L. Thus Case 4 has an insane heredity, and Case 3 is a mental defective, and his psychosis is very typical of a form of mental disease often got in mental defectives from mental stress.

Of the three other cases two are mental defectives, so that out of the eight cases five may be regarded as having been of unstable mental equilibrium prior to their attack of E.L., and in these cases it is very possible that their psychosis is not a true sequela, but should rather be regarded as of psychogenic origin, the mental stress due to their illness being in the nature of a psychic trauma. One of these mental defectives is a woman of 35, who exhibits the Parkinsonian syndrome, and a definite dementia superimposed on her mental deficiency. The other is a boy of 10 years of age, who had his attack in May, 1924, with ocular symptoms, inversion of sleep rhythm, myoclonic twitchings of the legs, &c. He passed into the "apache" type of Hall, with homicidal and suicidal tendencies. He attempted to cut his throat with a large knife. Under institutional life his behaviour has improved considerably, but he has periods lasting for several hours, and especially frequent by night, when he is aurally hallucinated, confused, restless, talkative, and noisy.

It is of interest to note that three of these eight cases attempted suicide and that another has strong suicidal tendencies. Suicide is regarded as an extremely rare occurrence in epidemic encephalitis. Some authorities hold that a true systematised delusional state is not got in post-encephalitic cases, but Cases 2 and 5 exhibit this state. As previously noted, it is, of course, possible that the psychosis of Case 2 is not a sequela in the true sense of the word. Some observers hold that dementia is not got as a post-encephalitic mental sequela. Cases refuting this statement have been recorded in the present series.

The mental symptoms observed in the acute phase of the disease are largely of toxic origin, and if a definite psychosis results it is very similar to cases of toxic psychoses from other causes—e.g., typhoid fever. One of the female cases in this series was of this nature, and she has recently been discharged, her

mental symptoms having cleared up, though she still presents the Parkinsonian syndrome.

Conclusions.

1. Certifiable insanity is extremely rare as a sequel to E.L. 2. It is highly probable that the virus of E.L. has the power of remaining in the central nervous system in a potent form long after the subsidence of the acute symptoms. 3. Many cases of insanity following E.L. may not be true sequelæ, the encephalitis merely acting as a precipitating psychic cause. 4. The possibility of suicide following E.L. must not be lost sight of. 5. Systematised delusions and dementia are sometimes found in post-encephalitic psychoses. 6. Psychotic symptoms during the acute phase of the disease are toxic in origin and of much better prognosis than post-encephalitic psychoses. In the very rare event of a recovery in the latter it is practically certain that the case would not be one of a true sequela but of the secondary psychic type.

I take this opportunity of thanking the medical superintendent of West Park Mental Hospital for permission to publish these preliminary observations.

GLYCOSURIA AND PRURITUS

DEPENDENT UPON LATENT DISEASE OF THE APPENDIX.

By W. SOLTAU FENWICK, M.D.

A SURVEY of the clinical notes of 4000 cases of visceroptosis which had come under the writer's observation brought into prominence several interesting results of this abnormal location of the abdominal organs. Colitis existed in about 30 per cent. of all cases after the age of 30 years, although in many instances it was so slight in character that it would have escaped attention had it not been for the exaggerated importance attached to the presence of a little mucus in the stools. Appendicitis was noted in 23 per cent. of all cases and was equally common in the two sexes. In rather more than one half of the cases the appendix had already been removed, in some instances for definite symptoms of inflammation, but more often, apparently, with the expectation of curing the coexistent dyspepsia. The fact that chronic inflammation of the appendix in visceroptosis is usually an expression of a diffuse catarrh of the entire colon serves to explain why the operation is rarely followed by permanent amelioration of the gastro-intestinal disorder. When the appendicular disease remains free from clinical manifestations for many years it is sometimes accompanied by at least two interesting phenomena which do not seem hitherto to have attracted attention—namely, glycosuria and pruritus.

Glycosuria.

The ætiological connexion between sugar in the urine and disease of the appendix was first brought to the writer's notice in 1902 by the case of a young man who had exhibited intermittent glycosuria for five years. At the end of that time an operation was performed for acute appendicitis, with the surprising result that the sugar disappeared from the urine within a month and never returned. The same sequence of events ensued in four other cases, and further experience seems to indicate that the condition is not so rare as the writer had supposed it to be. In all the cases seen by him up to the present time the patient was the subject of congenital gastro-coloptosis accompanied by mild chronic gastric hypersecretion. No history suggestive of appendicitis was ever obtained nor were any signs of the disease detected. Male subjects exceeded the female by nearly three to one, a fact which is noteworthy in view of the much greater liability of women to visceroptosis. The average age at which the patients came under observation was 22 years, and in several

instances the sugar had first been detected at a medical examination for life insurance. Thirst and polyuria were never prominent symptoms, and the amount of urine voided in 24 hours seldom exceeded 60 fluid ounces. As a rule, complaint was made of general debility, lassitude, mental depression, sudden variations in the weight of the body, and occasionally of pain in the lumbar spine. A sudden access of muscular weakness, attended by loss of weight, frequently heralded a recurrence of the glycosuria. The amount of sugar in the urine usually varied from 0.08 to 0.3 per cent., and its existence was never accompanied by any notable increase of the sugar in the blood. It was more often detected in the urine passed before midday than at other times, and frequently disappeared entirely for several weeks in succession. At operation the appendix invariably showed signs of chronic inflammation, but no calculus, ulceration of its mucosa, or peritoneal adhesions were recorded unless there had been a recent attack of acute inflammation. After operation the sugar disappeared from the urine and did not recur in the cases which remained under observation, which in one instance extended for nearly 20 years. It seems probable that the gastric hypersecretion excites inflammatory changes in the pancreas in persons who possess a proclivity to such disease, in the same way that other varieties of the gastric disorder are often followed by glycosuria and even by genuine diabetes.

Pruritus.

Another rare and peculiar condition which sometimes develops as a result of latent appendicitis is intense itching of the skin. Four characteristic examples occurred among the series of cases to which reference has been made, and several others of a similar type have more recently come under the writer's observation. The complaint seems chiefly to be confined to women about middle age, and when once established it remains persistent and defies all ordinary methods of treatment. Its characteristic feature is excessive irritation of the skin over the lower part of the abdomen, which develops about one hour after the patient has retired to bed and continues with scarcely any intermission for several hours. The irritation is often described as being "under the skin," and was likened by two patients to the sensation of a maggot burrowing its way through the subcutaneous tissues. It is never accompanied by a visible eruption, and the most energetic scratching and rubbing afford no relief; but the application of pressure or hot fomentations occasionally allays the pruritus for a time. In other cases, or at other times, the sensation is one of intense scalding or burning, sometimes accompanied by hyperæsthesia of the skin, while occasionally the irritation attacks in succession the buttocks, flexures of the forearms, popliteal spaces, or the interscapular region. In one case a woman's existence had become almost intolerable by reason of the itching of the skin of the abdomen which occurred one hour after going to bed and persisted until 5 o'clock in the morning, when she was suddenly seized with acute appendicitis which necessitated removal of the appendix. A week later it was found that there had been no nocturnal pruritus since the operation and since then the complaint has never recurred. The same result ensued in the other cases. In yet another instance where the typical pruritus over the abdomen at night led the writer to advise appendicectomy, the patient was attacked with appendicitis in the country, which subsided under medical treatment. On her return to town six months later she stated that the irritation had gradually subsided during convalescence and was then a negligible symptom. In this case it would seem that the acute inflammation of the appendix had either destroyed the source of some special toxin or had so impaired the nervous elements of the appendicular mucous membrane as to inhibit the production of reflex phenomena. In more than one case the appendix after removal was found to be packed with faeces of stony hardness.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF PSYCHIATRY, NEUROLOGY, EPIDEMIOLOGY, AND DISEASES OF CHILDREN.

A COMBINED meeting of these Sections was held on Jan. 27th, Dr. R. H. COLE, Vice-President of the Section of Psychiatry, in the chair. The adjourned¹ discussion on the

MENTAL SEQUELÆ OF ENCEPHALITIS LETHARGICA

was opened by Dr. J. C. SPENCE, who approached the subject from the aspect of the child patient and of prognosis. In his experience 30-40 per cent. of the cases were under 12 years of age, and the after-results could be divided into two groups according to whether the incidence was before or after the third year. In infants under 3 a severe amentia was usual, but after the fourth year a true idiocy had never been seen by him, and the impairment of the intellect was not a marked feature, such cases being characterised rather by emotional and volitional defects. In the Parkinsonian type there was apathy, accompanied by diminished volition, lack of initiative and interest, while in the difficult or apache child there was perversion of volition accompanying the restlessness, noisiness, and impudence. Dr. Spence stressed the danger of pronouncing a cure prematurely, quoting a case which showed a relapse to the "difficult child" condition five years after the acute attack, and after three years of apparent normality. In the epidemic in Newcastle in the spring of 1924 they had found that the old oculo-lethargic type of case no longer occurred, the common onset being of an acute painful myoclonic type, with difficulty diagnosed from acute rheumatism or an acute abdomen. Such cases showed widespread involvement of the spinal cord post mortem, but were less liable to mental sequelæ. Dr. Spence referred to a statement made by Dr. Donald Paterson and himself (*THE LANCET*, 1921, ii., 491) to the effect that the longer the acute stage of the illness the greater the degree of mental disturbance to be anticipated; this he no longer believed to be true; severe permanent damage to the intellectual functions might result from an acute illness of two days' duration only, but the great factor in prognosis was the night restlessness, which seemed to be directly proportional to the subsequent mental derangement. The persistence of physical symptoms—i.e., Parkinsonism, rigidity, stolidity of features—was accompanied by some mental sequelæ—apathy at least, if not more marked mental failure. Diagnostic pitfalls, in addition to the well-known ones of acute rheumatism, influenza, &c., included juvenile general paralysis, cerebro-spinal fever, and pellagra, cases being on record where these latter conditions had been taken for encephalitis lethargica.

Dr. C. WORSTER-DROUGHT agreed with previous speakers that certifiable conditions were rare, taking the form of progressive dementia, delusional states or hallucinatory confusion if present. The minor degrees of psychosis were, however, common, with apathy, lack of spontaneous interest and initiative, and rapid fatigue on mental effort. He believed that the apathy was often more apparent than real, and that there was very little impairment of intellect, the main feature being a retardation in the somatic efferent component of the nervous system. He referred to the experiments carried out by Dr. D. N. Hardcastle and himself, an account of which appeared in the *Journal of Neurology and Psychopathology* for August, 1924. They had found that the psycho-motor reaction was distinctly lengthened (by 50 per cent.), but that the cerebration

time for selection was normal or a little less than normal. Only three of their 19 cases had shown a subnormal result in general intelligence tests, and these had presented defects under the headings of Reason and Memory. He considered that the psychoneuroses following encephalitis lethargica were due to diminished inhibition, rendering manifest a condition previously latent, but controlled. The symptoms were generally apprehension, undue self-consciousness, a sociability or terror-dreams. Moral deterioration was probably to be ascribed to the same cause, and the prognosis in this condition was good. He agreed with the necessity for giving a very guarded prognosis, and referred to a case showing mental lapse after four years of apparent recovery.

The Psychological Aspect.

Dr. D. N. HARDCASTLE remarked that 17 of the 19 cases experimented on by Dr. Worster-Drought and himself were of the Parkinsonian type. The aspect he particularly wished to stress was the psychological. Twelve of the cases showed psychoneurotic symptoms such as anxiety, phobias, and terror dreams, and in two of these cases the phobias and anxiety had been removed by psychotherapy, a marked improvement in their condition being thus produced. No alteration to the organic brain lesion could have been effected by such measures, and Dr. Hardcastle suggested that the mental changes in this type of case were not so much dependent on direct injury to the cortical areas as on a failure of adaptation to the environment, which was rendered a much more difficult task by the crippling lethargy and psychomotor retardation. Prof. Arthur Hall had likened the difficult child to a psychasthenic, and Dr. F. C. Shrubbsall had called attention to similar psychoneurotic symptoms following influenza—viz., rapidity of fatigue, lack of concentration, failure of continuity of attention, &c. The characteristic disturbance of the sleep-cycle had also been noted among shell-shocked soldiers. Referring to the statement that there was impairment of memory for the period of the illness, Dr. Hardcastle stated that he had not found this to be the case in any greater extent than is usual in other serious illnesses with delirium. Patients gave detailed histories of their attack, broken only by the periods when they were actually asleep. The onset of the mental changes did not coincide with the onset of fever or with defervescence. Often there might be an intervening period of apparent normality before the lethargy was established and with it the first appearance of mental symptoms. Dr. Hardcastle agreed with the observation of Jones and Raphael that a psychoneurosis latent before the illness might become apparent after it, and he applied this also to a latent psychosis.

Dr. E. MAPOTHER reported on 45 cases which had come under his care at the Maudsley Hospital. These he divided into three groups: (1) Mental anergia, ranging from difficulty in sustained attention to morbid sleep; (2) morbid restlessness; and (3) demoralisation. He pointed out that the latter two groups were far more likely to behave in a manner necessitating conveyance to a mental hospital, and that therefore the proportion of this type met with in such institutions did not give a true picture of the proportion occurring on the whole. Dr. Duncan, in following up the after-histories of cases at the London Hospital, had formulated the rule that positive mental symptoms at the onset were negligible for prognosis, but that negative early symptoms were very ominous; this ruling had not been supported by experience at the Maudsley, and no satisfactory formulations had been obtained. Marked restlessness was most common in children under 8, and demoralisation in cases between 8 and 20 years of age. Both were rare in adults, in whom anergia was the commonest symptom. Anergia seemed to be most commonly present in association with organic Parkinsonism, which was not usually coincident with marked restlessness, but in both cases the reverse condition was sometimes met, and both anergia and restlessness might be paroxysmal

¹ See *THE LANCET*, Jan. 24th, p. 181.

or even alternate. He agreed with previous speakers that none of the post-encephalitic cases resembled the ordinary psychoses, the chief symptoms being very marked conative disturbances, with spontaneous variations from time to time. In the absence of somnolence, negative intellectual disturbances were slight, and were mostly to be explained by inattention. Delinquencies were the result of the failure of inhibition, the wish passing almost directly into the act, while the individual recognised abstractly the nature of his behaviour. The children were markedly free from fear, the strongest of the inhibitions. There was no evidence of delusions or hallucinations or of dreams in the drowsy states, with the exception of one case—a barman who ejaculated at intervals "Time, gentlemen, please!" The lying met with seemed to be conscious lying; unlike the hysterical phantasy, half-believed by the patient. On the whole, apathy seemed commoner than excess. The one case of attempted suicide ascribed her effort to her distress at her total loss of feeling. The spontaneous variations in the symptoms suggested a continuous active process and was responsible for the rarity of certification; the cases only needed institutional treatment if they were incapable of self-support or a nuisance to their neighbours. The diagnosis from functional conditions was very hard and should depend on the presence of physical signs—Parkinsonism or nerve palsies—however tempting mental symptoms might be. There was much increase of capacity possible with increased attention and effort, habit and automatism playing a distinct part in the maintenance of symptoms of inefficiency.

Dr. J. G. FORBES referred to three cases in which encephalitis lethargica complicated epilepsy, and to the difficulty of distinguishing between post-epileptic conditions and the lethargy of encephalitis.

Dr. A. GILMOUR described two cases of late mental sequelæ after apparent recovery.

Dr. H. CRICHTON-MILLER referred to the beneficial effect of hyoscine on apathy and anergia and asked how this action was explained, since there seemed no other instance of reintegration of the psyche resulting from the administration of a sedative.

Dr. ALICE M. HUTCHISON asked if there was any consensus of opinion as to how long children should be kept from mental work after an attack.

Dr. WORSTER-DROUGHT remarked that he had had four cases of epilepsy following encephalitis lethargica attending the West End Hospital. He had found that hyoscine lessened tremors and rigidity, but that it was necessary to continue its administration permanently.

Dr. P. C. P. CLOAKE observed that there was very often some history of psychic trauma at or about the time of onset of the disease. He disagreed with Dr. Worster-Drought's conclusions as to the absence of psychic retardation, believing that tests designed to eliminate motor phenomena showed considerable psychic involvement, acting primarily in the region of the psychic "flat" which sets an action going. He had found hyoscine active only on injection, and ascribed its effect to the sedative action on the cerebrum and motor nerve-endings in muscle, and doubted whether it had any effect on the psychic condition. He considered that the longer children were kept from school the better, and reiterated the opinion expressed in his earlier paper, that the essential feature of the disease was the organic injury to the cortex resulting from the action of a toxin, whereby the highest functions (e.g., inhibition, adaptation) were most damaged.

Dr. COLF, in concluding the discussion, raised the question of the infectivity, and the reluctance of some institutions to admit cases for this reason. He also pointed out the difficulty of deciding whether a child had better be certified under the Lunacy or Mental Deficiency Act, and expressed the opinion that hyoscine should be used in emergencies only, as it had a deteriorating effect on the nervous tissue and

made the patient very uncomfortable. Although it undoubtedly did good in Parkinsonian cases, he thought the cure worse than the disease. He advocated the use of urotropine.

SECTION OF UROLOGY.

A MEETING of this Section was held on Jan. 29th, Mr. CYRIL A. R. NITCH, the President of the Section, being in the chair, when Dr. N. S. FINZI opened a discussion on

RADIOTHERAPY AND ELECTROTHERAPY IN DISEASES OF THE BLADDER AND PROSTATE.

He said he considered that there was a great future for radiotherapy, at any rate in diseases of the prostate. Radium could be used on the skin, over the skin in the region of the pubes and sacrum, and even the perineum, the latter being extraordinarily sensitive to radiation. Used in this way, however, radium was ineffective unless given in large quantities and by several ports of entry. There must be protection afforded by a pad of felt or wax 2 cm. from the skin. A dose of 500 millicuries should be used. Radium had also been used per rectum, but on account of the sensitiveness of the rectal mucous membrane and the fact that burns occurred without effective result, it had now been given up. Still, in 1909 he succeeded in securing a successful result by this method in a case of tumour of the prostate region. The tumour was probably a recurrence of a teratoma of the testicle, the testicle having been removed some time before in South Africa, and the notes of the case could not be obtained. That patient was certainly alive two years ago and probably was still living. Seven years after the treatment there was a degree of rectal stricture.

In attempting to give effective doses of radium per urethram so much sloughing resulted as to constitute a danger; he believed this route had been generally abandoned in prostate cases. Even as an adjunct to other methods, the urethra tended to receive too large a dose, and outlying regions of the prostate too small a one. He suggested, in 1910, the perineal route for burying radium in the prostate, but he was unable to get it carried out. During the last few years that method had been used in Brussels, platinum needles being introduced by an incision in the perineum. Multiple needles ensured a more uniform distribution of the irradiation over the required area.

With regard to X rays, the modern method was to use greater filtration—i.e., 0.5 to 0.8 mm. of copper with 3 mm. aluminium, and at the same time to use more penetrating rays by employing a higher voltage. Also, some eight or ten portals of entry were used. Where multiple portals could not be used, and the front, back, and two sides were the only directions available, the tube was placed at a greater distance and larger fields secured. This was the means used when the disease was widely spread in the pelvis. In some cases a combination of radium and X rays was of distinct value, as also was a combination of diathermy and radium.

The Choice of Methods.

For simple enlargement of the prostate radium had not been largely used, as its external application had little advantage over X rays, and since very large quantities would be required, expense was a consideration. For this condition the embedding of radium in the prostate possessed no definite advantages over ordinary operative procedures. Moreover, if applied per urethram, it might cause ulceration, as also if used per rectum. X rays constituted a very suitable method of treating these simple enlargements, and possessed certain advantages over operation, such as (1) there was practically no primary mortality; with careful administration of the rays it was less than 0.1 per cent.; (2) there was not usually a prolonged convalescence, and the patient need not lie up; (3) no suprapubic opening was needed, and if complete retention was imminent a catheter could be tied in; (4) there was no danger of hæmorrhage afterwards, and the only skin damage resulting was a slight erythema.

There were some disadvantages attaching to X ray treatment of simple enlargements. Though in his cases one treatment had sufficed, it might not be so in every case. If subsequent operation should be required, it was conceivable that a previous application of the rays might make such surgery more difficult, on account of the fibrous formation around the prostate. The full benefit of the rays was not secured until three months after the application. And there was the possibility of treating in this way a case which was malignant. Small doses of X rays might increase cystitis and other inflammatory conditions. Considerable cystitis contra-indicated the use of the rays.

For malignant prostatic disease, multiple needles embedded in the prostate were being used in Belgium, and often in conjunction with X ray irradiation from the exterior. The perineal route was employed, and the asepsis must be most rigid. X rays by new means gave much promise for malignant prostate; he had seen improvement continue for a year after the use of the rays. For cases with a few papillomata of the bladder diathermy had supplanted radium. The difficulty was to secure homogeneous irradiation to the involved area.

In malignant disease of the bladder he had seen great relief follow the use of radium. It was used via the urethra, being placed in position under the guidance of the cystoscope, and was sometimes supplemented by doses per rectum or vagina. Subsequent applications had much less effect than the first. If operable, cases of malignant disease of the bladder should receive surgical treatment, and papilloma of the bladder was best treated by other methods, unless too large a surface of bladder wall was involved.

Discussion.

Dr. J. H. D. WEBSTER said that malignant disease of bladder and prostate constituted most difficult problems because the radiologist was not consulted until symptoms had lasted two or three years, so that the most promising stage had long passed. In only 2 per cent. of prostatic cases was the disease, when seen, confined to the prostate. In some reported cases, two weeks after radium had been employed in the form of small tubes for 900 mg. hours there was no evidence of malignant disease left, though in some of the sections a number of viable cells were still found. In America a preliminary X ray irradiation was given from umbilicus to symphysis, back and front, the dose being as large as the skin would stand, short of causing a burn. Radium needles were then inserted suprapubically or through the perineum. Americans removed growths of the bladder by diathermy first, then buried radium tubes into the base of the ulcer. Post-operative irradiation seemed to hold out some hope.

Dr. REGINALD MORTON said the radiologist did not confine himself to one technique. In malignant disease he was strongly in favour of giving a full dose of X rays at the earliest possible moment, as in cancer dissemination was the greatest complication which could arise. So long as the lesion remained local there was some hope. He was against temporising by giving fractional doses in these cases. Simple adenomatous enlargement of prostate responded well to treatment, and with proper technique good results ensued in nearly every case. He was not now speaking of fibrous enlargements due to infection. A single full dose ensured good results in three to six weeks; it was not necessary to administer such a large dose as to cause definite reaction. In the Erlangen method much stress was laid on accurate measurement of doses, though there was always a possible 15 per cent. margin of error. The manner in which a particular case would behave could not be forecast. More must be done in the way of preparing patients beforehand for irradiation and looking after them subsequently; 95 per cent. of the malignant cases passing through his hands were so far advanced that nothing beyond temporary amelioration could be expected. No real progress could be made in this department of work unless cases were seen at a

much earlier stage, when there could be some hope of success; there should be an earlier and closer co-operation between the surgeon and the radiologist. As a class he considered that malignant disease of the prostate was favourable for radiation. He had not had such favourable results in malignant disease of the bladder; a large proportion of those cases were infected, and this complication rendered them hopeless. Success in this treatment depended on a healthy and vigorous reaction of tissue.

Dr. BROWN CARFIELD spoke of using 50 mg. of radium bromide enclosed in a tin tube for prostatic disease. He discouraged hurried treatment with radium and said it was important to avoid any destruction of tissue. Radium seemed to act by causing constriction of blood-vessels. He did not view with favour the use of a number of radium needles.

Mr. CLIFFORD MORSON said he thought it would be agreed that suprapubic prostatectomy in the hands of an expert was attended with excellent results, and could be regarded as a radical cure. He asked whether the radiologist could produce by his means the same result as the surgeon did. If he could, what was his evidence? An authority should cystoscope to ascertain the condition of the bladder before treatment, a renal function test should be carried out both before and after treatment, and it should be determined how much residual urine was present in the bladder before treatment, and again after that had been carried out. Sometimes the radiologist said the symptoms to a great extent disappeared after irradiation, but rectal examination showed that the prostate was still enlarged. Symptoms associated with an enlarged prostate were not entirely confined to the urinary organs. Cases which had been treated by X rays and had afterwards come to him for surgical measures had been complicated by (1) retention of urine, (2) by cystitis. Mottram had shown that after the application of X rays mucous membrane revealed definite degenerative changes, and his own experience confirmed the fact that degenerative changes followed inflammatory ones. Another complication was cystitis. The bladder mucous membrane was devitalised by the rays, and so was an easy prey to infective processes. The mere removal of prostatic obstruction was only half the treatment; the other half consisted in dealing with the changes in bladder and kidneys. In malignant disease of prostate he thought the only chance of eradication of the disease was by means of surgery, as in other organs of the body. He had been experimenting recently with a new electrical instrument on the lines of the cautery punch of Young, and his treatment of enlarged prostate by this means had been disappointing. In about 1 per cent. of prostate cases diathermy was of value—namely, those in which post-prostatectomy obstruction had taken place.

Prof. A. FULLERTON (Belfast) spoke of a case of carcinoma of the rectum in a woman, aged 36, who had deep X ray therapy applied by Dr. Morton two and a half years ago, and was now perfectly well with nothing remaining but a scar. One man with a large hard prostate had two doses of rays, and after the second he died; the speaker asked why such deaths occurred after deep therapy. He had tried radium tubes for papilloma of the bladder, but there was little radium in Belfast, and by the time the emanation reached him it was much reduced in strength. For these cases of papilloma he thought diathermy was the best method to date. For malignant disease of the bladder he did a large operation, removing a large slice of the viscus—even if the growth was small—and taking away the lymphatics.

Mr. FRANK KIDD said he agreed with Moynihan that cancer was a local disease. In adenoma of the prostate the results of prostatectomy were so good that it was for the radiologists to present accurate data concerning large numbers of cases treated by their methods for purposes of comparison, and in order that the profession could assess the value of their contentions. There

should also be a systematic following-up of cases and a comparison of after-histories. This was especially necessary in regard to cases treated by deep X ray therapy. In six cases of carcinoma of prostate so treated the result had been absolutely nil, although at first there seemed to be improvement, the prostate appearing to be smaller and softer. But he could not convince himself that the patient would live longer than if it had not been applied. He described a number of cases. He had only selected for X ray treatment cases of carcinoma of the bladder which he considered quite inoperable by surgical means. In one such case the man thought he had been cured by the rays, but examination showed he was still passing blood, and skiagrams showed that the growth had divided into two and gave more comfort for that reason. After two or three applications the X rays seemed to lose their power over the growth. It seemed that the irradiation knocked out certain cells, but the tumour then developed a type of cell which was unharmed by the rays. He was sure he had seen cases in which X ray applications had stimulated the enlargement, so that when the patient presented himself for operation he was in a very serious condition.

CHELSEA CLINICAL SOCIETY.

Exhibition of Cases.

A MEETING of this Society was held on Jan. 20th, with Dr. GORDON LANE, the President, in the chair. The evening was largely occupied with the demonstration of clinical cases.

Dr. A. FEILING showed two boys with marked signs of pseudo-hypertrophic muscular paralysis.

Mr. LAWRENCE ABEL showed a boy who possessed osteomata on the phalanx of one of the fingers and on the metacarpal of the thumb. He considered that they had been always bony. He showed a case of osteomyelitis, and one of osteogenesis imperfecta associated with multiple fractures. He also showed a case illustrating the advantage of avoiding the lacrymal apparatus in resection of the upper jaw for malignant disease; and a man with osteo-arthritis of the sternoclavicular joints and of one hip.

Mr. A. R. THOMPSON showed a girl with bilateral renal calculi and evidence of stunted growth, associated with the renal trouble; also two men who had had the penis amputated for epithelioma, in one case four years ago and in another case five years ago. One of the patients had become the father of a child since the operation.

Mr. IVOR BACK showed an interesting case of dermoid of the floor of the mouth, and also a specimen of sarcoma of the fibula. This was a very rare condition.

The PRESIDENT showed a case of blackening and hypertrophy of the nails of the hands and to a less extent of the feet, which he suggested might be due to a psychic influence, as the patient gave an interesting account of a most gruesome occurrence during the late war.

Dr. ERNEST YOUNG gave an admirable demonstration of his duodenal tube, which had been of much service in cases of gastric trouble, and could also be used for medicaments and food, distributed to the duodenum without the intervention of the stomach. —The paper was discussed by Dr. G. H. HUNT.

Dr. J. D. ROLLESTON gave an account of a case of erythema infectiosum, which he illustrated with photographs. He suggested the name of "Fifth Disease" for it, thus carrying on the name of Fourth Disease, of which he said there were undoubted examples. He suggested that there might be epidemic conditions of the disease, but so far it had not occurred in epidemic form in England.

Reviews and Notices of Books.

A GLASGOW MANUAL OF OBSTETRICS.

By SAMUEL J. CAMERON, M.B., F.R.F.P. & S. Glasg., Lecturer in Clinical Obstetrics, University of Glasgow; ARCHIBALD N. MCLELLAN, M.B., L.M., Assistant to Regius Professor of Midwifery, University of Glasgow; ROBERT A. LENNIE, M.B., Assistant Obstetric Surgeon to the Glasgow Royal Maternity and Women's Hospital; and JOHN HEWITT, M.B., Assistant Obstetric Surgeon to the Glasgow Royal Maternity and Women's Hospital. London: Edward Arnold and Co. 1924. Pp. 573. 21s.

A TEXT-BOOK emanating from a group of men working at the same special hospital is always of interest, especially if the distinctive features of a certain school of thought and practice are exemplified. Dr. Cameron, in collaboration with three of his colleagues at the Glasgow Maternity Hospital, has written this book as a companion volume to his "Manual of Gynaecology." Glasgow is a city notorious for the prevalence of rickets and associated obstetrical difficulties; the experience gained by those attached to a teaching hospital there must be unusually varied, and the fruits thereof as here set out are likely to be of great value to students and practitioners. The book is essentially practical in character, while containing, except perhaps for the section on embryology, sufficient theory to fulfil the requirements of the student for an examination of the standard of the Final M.B. The subject-matter is lucidly expressed, and follows, for the most part, the accepted lines, whilst attention is paid to recent researches and their comparative value discussed. In the section dealing with toxæmias of pregnancy an excellent account is given of the various biochemical methods of clinical investigation, including a short description of the different tests of hepatic and renal function. In the section dealing with post-partum hæmorrhage attention is drawn to the value of modern methods of combating shock; an account is given of the technique employed in blood transfusion and also in the preliminary grouping of the donor's blood. There are useful chapters on the treatment of contracted pelvis, injuries and disease of the newborn, and the causes of stillbirth and neonatal death.

On p. 61, where the statement is made "that inability to touch the promontory with the middle finger denotes that the conjugate is normal," no mention is made of the difficulty in palpating the promontory in a generally contracted pelvis. Again, on p. 538, where Watson's method of inducing labour by quinine and pituitary is described, no word of warning is given that the pituitary must be discontinued should labour supervene before the series of injections have been completed.

The book, without being exhaustive, appears to contain all that is necessary for the needs of ordinary practice. It is clearly printed in large type and excellently illustrated by well-executed and original drawings.

PYE'S SURGICAL HANDICRAFT.

Ninth edition. Edited and largely rewritten by W. H. CLAYTON-GREENE, C.B.E., M.B., F.R.C.S. Eng., Surgeon to St. Mary's Hospital; Lecturer on Surgery in the Medical School. Bristol: John Wright and Sons. 1924. Pp. 619. 21s.

IF, in the surgery of the present day, there is one thing more striking than the widening of its outlook, it is the decline in handicraft of those who practise it. The very facility with which operations can now be performed under modern conditions of asepsis and anaesthesia have made of less importance the manual dexterity of the surgeon, or rather they have obscured the supreme value which must always attach to perfect

surgical technique. Without that technique it is perfectly true that a surgeon's patients may survive his attack, but they will be deprived of at least half the advantage which the progress of surgical science has rendered available.

The first edition of "Pye's Surgical Handicraft" appeared in 1884, and for 40 years it has held a unique position in surgical literature. To generation after generation of house surgeons it has been a friend in need, and in all its nine editions it has steadily kept abreast of surgical progress. The present volume, edited and largely rewritten by Mr. Clayton-Greene, well maintains the great record of its predecessors. Whilst still keeping the many valuable details to be found in the earlier works it finds room for elaborate and precise directions for the most modern methods of blood transfusion, for the diagnosis and treatment of syphilis, and for innumerable other details which would astonish its first author. No attempt is made to describe every method, but in each instance some well-tried and established technique is described in such detail that it should present no difficulty even to the novice. The series of articles on fractures strike us as being especially good and of particular value to many besides the embryo surgeon. But, indeed, there is scarcely a page in the book from which even the experienced surgeon may not gain some hint towards the perfection of his art. Personally, we should be glad to see the day when surgical handicraft formed a definite and important portion of every qualifying examination. We only wish that chirurgery might have remained more true to the great ideal expressed by Walter Pye in the preface of the first edition of his work, that it had held more closely to its etymology *χειρ έργον*, and that its devotees held in higher regard the pure craftsmanship of their profession.

To every student, unqualified or qualified, young or old, we would most earnestly recommend a careful study of this epitome of his craft.

ANÆMIA: ITS CAUSES AND MODERN TREATMENT.

Second edition. By ARTHUR W. FULLER, M.D. Edin. London: H. K. Lewis and Co., Ltd. 1924. Pp. 138. 6s.

THOUGH the title of this book is simple, the subject is a difficult one. It is no small matter to take a common symptom such as anæmia and in the compass of some 120 pages to explain its causes and its treatment. Treatment especially is difficult, for to treat the symptom we must describe the treatment of all the diseases that cause that symptom. For this reason the book cannot be considered in any sense a complete record of what we know of anæmia; it can only be looked on as a pleasant chat on the subject with many useful hints which the wide experience of the writer has taught him. What we believe he has in his mind and wants to tell us is that, where we get difficult indefinite cases, a blood count should be made, for we may get much help from it. The standard he suggests, of blood counts in all cases, will hardly be reached even though it may be recognised that a blood count occasionally gives unexpected and helpful results. It seems a pity to have added an incongruous chapter on neurasthenia to a book otherwise devoted to anæmia.

DISEASES OF THE KIDNEY AND URETER.

Die Chirurgischen Erkrankungen der Nieren und Harnleiter. By Prof. Dr. MAX ZANDEK. Berlin: Julius Springer. 1924. Pp. 254. 12 gold marks.

THIS text-book of diseases of the kidney and ureter gives, on the whole, a straightforward account of such affections, agreeing with generally accepted teaching. It is interesting to note that the author gets good results in certain cases of acute pyelitis by leaving a ureteric catheter in situ, and treats others by decapsulation and scarification of the kidney. He also

recommends neosalvarsan on occasion for chronic pyelitis. He advises against the cauterisation of the vesical opening of the ureter to facilitate the passage of ureteric stones, on the grounds that the sphincter at the lower end of the ureter is thereby destroyed and a stricture may supervene.

The book has some defects. There is no mention of the valuable method of reaching the lower ends of the ureters by median sub-umbilical incision. There is also a certain lack of that detailed information which one expects in a treatise on a limited part of surgery. Thus there is no guide given as to how long expectant treatment in ureteric calculus is advisable or justifiable; no rule is laid down as to what degree of delay in the excretion of indigo-carmin is to be regarded as pathological, to mention but two illustrative examples. Omissions of a similar kind would be easy to rectify in subsequent editions, as revision would speedily detect them.

ESSENTIALS OF PRESCRIPTION WRITING.

Third edition, revised. By CARY EGGLESTON, M.D., Assistant Professor of Pharmacology, Cornell University Medical College, New York City. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 146. 7s. 6d.

THIS is a useful little book, somewhat expensive for its size and contents, and, as is generally the case with American pharmaceutical books, not altogether adapted to English terms and measures. Here its weakness ends; the concise Latin grammar, which explains the recognised prescription terms and structure, is excellent. The construction of the prescription is explained without any of the facts and fancies which betoken the theorist rather than the practising physician, and the conversion of one system of measures to the other is made as simple as possible. Many interesting points are noted with regard to incompatibility and the way drugs should be administered.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—In the issue of November, 1924, the question as to whether counter-shock is of use as a method of resuscitation following electrocution is discussed by A. Campbell and L. Hill. They experimented with cats, but found that counter-shock methods proved useless. They conclude that the cause of death in electrocution is ventricular fibrillation, and that the only method of resuscitation which can be usefully employed by a layman is Schäfer's method of artificial respiration. —An investigation into fatigue in the washing departments of steam laundries is reported by M. R. Mayers, who subjected the operatives to careful clinical examination. The work carried out was heavy, for which only the strongest are fit; those with least capacity drop the work and, of course, would not be found employed when the medical inspection took place. Certain definite symptoms of cardiac strain were detected, such as abnormally high blood pressure and pulse-rate, with some cardiac hypertrophy. The signs were least prevalent in laundries of the better type. The author concludes that washing departments of all but the very best laundries are definitely injurious to health, throwing a strain on the vascular system as a whole. She points out that the method of examination employed has general applicability to other industries where muscular work is heavy and the hours are long.—H. M. Vernon and T. Bedford report upon a preliminary investigation of atmospheric conditions in coal-mines. Their observations are based upon kata-thermometer readings taken in the workings at different temperatures and air velocities. They found places where the air was stagnant with conditions adverse to efficiency. The inquiry is one of considerable interest and the need for its

extension is clear; further observations are to be undertaken.—The scheme of medical care for natives on the gold mines of the Witwatersrand is described by L. E. Hertslet. The natives undergo a careful examination before they are engaged, their housing and dietary are under supervision, while medical treatment is supplied when they are sick or sustain accidents. Accurate records are kept; hence the results of the work can be estimated. A fall in the total death-rates from 24.4 in 1913 to 14.5 in 1923 is eloquent testimony to the success achieved; of this gain a fall of 8.8 is due to deaths from disease and 1.1 to deaths from accident. Among the diseases the death-rate from pulmonary tuberculosis has fallen from 3.2 to 1.9, and that from pneumonia from 7.5 to 2.7. The money thus spent in attention to the well-being of the native labour is an economy, as well as a benefit to the natives and the white community.—In the issue of December, 1924, is a monograph dealing with the hygienic significance of nickel which occupies practically the whole of this issue. Its authors are K. R. Drinker, L. T. Fairhall, G. B. Ray, and C. K. Drinker. The first part consists of an exhaustive review of previous work relating to the physiological and toxicological properties of nickel. No such valuable summary has before been published; it includes a bibliography containing 100 references. The main conclusion to be drawn from this review is that nickel as an ingredient of cooking utensils is harmless. The position, however, is far different when nickel gains access to the body in gaseous form as nickel carbonyl, of which there is risk during the manufacture of the metal. This gas is toxic, and fatal cases have occurred. But no such danger is attached to the domestic use of the metal. The second part deals with the detection and estimation of minute amounts of nickel in organic material. Here the authors favour a colorimetric method based on the reaction of nickel with potassium di-thio-oxalate, which they consider can be used with greater facility and accuracy than older methods described in literature. The third part consists of observations on the elimination of nickel ingested with food cooked in nickel containers. Three families were observed whose kitchens were equipped throughout with nickel utensils, so that all cooking and food handling was done with nickel. The experiment lasted for three months. The nickel was corroded to some degree during the cooking operations, but probably less than would have been the case with tin or aluminium. The metal was detected in the urine of those observed, but the amount was too low to be a possible source of kidney damage. No symptoms of any kind resulted.

Reports and Analytical Records.

"VULPRO" WATERPROOF SHEETING.

(MANUFACTURED BY VULTEX PRODUCTS, LTD., GENERAL BUILDINGS, ALDWYCH, LONDON, W.C. 2.)

THIS is a sheeting of a fine texture, dull cream in colour and coated with a preparation containing rubber. It weighs 20 g. per square foot, which is equivalent to 6½ oz. per square yard. Portions were submitted to the following tests and then compared with the original material:—

	Result.
Dry heat at 100° C.	No change.
Steam heat at 100° C.	"
Boiling with soap and sodium carbonate . .	Fabric not quite so plastic.
Contact with faeces and urine for 24 hours at blood heat	No change.
Contact with lysol	"

These results may be regarded as very satisfactory. A microscopical examination showed that the fabric was evenly woven and uniformly covered with the waterproofing medium. The material itself is water-

proof. Its lightness and its tendency not to form creases, with consequent cracking when folded, render this sheeting well adapted for a variety of purposes.

SACRATINTA (SACRAMENTAL WINE).

(SACRATINTA, LTD., 20, SUFFOLK-STREET, PALL MALL, S.W. 1.)

When this wine was analysed the following results were obtained:—

Alcohol by volume	15.56 per cent.
Total solids extractives, not including mineral matter . .	21.6 " "
Ash	0.5 " "
Total acidity as tartaric acid . .	0.6 " "
Volatile acidity as acetic acid . .	0.08 " "
Sugar	20.5 " "

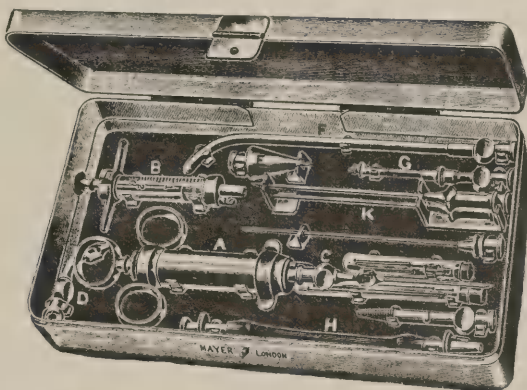
The preservatives sulphites, borates, salicylates, and formalin were tested for, but found to be absent.

This is a wine of a full-bodied and sweet character, and is no doubt well adapted for its somewhat special requirements. The analysis is in fairly close accord with one we made formerly (THE LANCET, March 28th, 1908).

New Inventions.

A COMBINED UROLOGICAL SYRINGE.

THE apparatus shown in the illustration consists of a 10 c.cm. metal syringe and a 2 c.cm. glass Record syringe. The nozzle of each has a cone-joint with external bayonet fitting to which any of the accessories can be attached. If required, a 10 c.cm. glass Record syringe can also be supplied. (c) and (D) are straight and curved adaptors for fitting interchangeable needles. The syringe can then be used for local



anaesthesia or for accurate hypodermic, intramuscular, and intravenous injections. (E) is a nozzle for injecting the anterior urethra and (F) a small metal catheter for injecting the posterior urethra. (G) is employed for injecting fluids through the ureteral catheter into the pelvis of the kidney. When attached to the syringe this is carried out by manual pressure. But for those who prefer to do this by gravity, the part (H), consisting of two metal ends connected by a variable length of rubber tubing, is supplied. The piston of the syringe being removed, the barrel of the syringe is used as a burette. One end of (H) being attached to the nozzle of the barrel, the other to the part (G), by varying the length of the tubing the barrel may be placed at any desired height. (K) consists of two spinal needles and a cannula. It can be used for lumbar puncture, and for spinal anaesthesia by attaching the syringe (B) to the cannula. (J) is used for the instillation of some fluid into the bladder after the completion of a cystoscopy. Such a syringe can be used for urethral injections, instillations into the bladder, pyelography, intravenous and hypodermic injections, and local and spinal anaes-

thetia. It has been designed largely for urological work, but with slight modification it can be adapted to any branch of surgery. All the parts can be boiled. It is of the greatest importance to have accurately-fitting joints, and the best workmanship is essential. The initial cost is somewhat high for a syringe, but, as only one syringe will be required, it means in the end a great saving. Since it will be in more or less constant use, it is not put aside and forgotten until the parts have become rusty and out of action. There is also the advantage that all the parts are in one box; and the surgeon should never find himself in the position of being without an important syringe when operating away from home.

The apparatus has been made for me by Messrs. Mayer and Phelps, Chiron House, New Cavendish-street, London, W.

Cardiff.

T. E. HAMMOND, F.R.C.S. Eng.

SIR JAMES MACKENZIE: THE LATER PHASES OF HIS WORK.

By R. McNAIR WILSON, M.D.

THE wider significance of Mackenzie's work, as is indicated in the memoir published in THE LANCET last week, may not yet have found full expression. His ideas were very simple and thus were apt to be overlooked. His fundamental departure from previous teaching lay not in the realm of cardiology but in that of physiology. It may perhaps be expressed by means of an illustration, dangerous as this method admittedly is. "Suppose," he once said to the writer, "that a man struck you a blow, two things might happen: (1) you might fall down unconscious or dead, (2) you might, on receiving the blow, react to it and fight the aggressor. In the first instance the 'symptoms' presented would be slowing of the pulse, pallor, and unconsciousness, complete muscular weakness, and so forth; in the second instance they would be quickened pulse, flushing, increased acuity of the wits, and increased muscular weakness. Both sets of symptoms may be described as arising from the same cause. But such a description is misleading. The truth is that the blow has produced in both cases the same effects. It has slowed the heart, emptied the cutaneous vessels, weakened the muscles. But, whereas in the first instance reaction has not occurred to these effects—which thus remain evident, in the second case reaction has occurred instantaneously and the whole clinical picture is changed."

It appeared to Mackenzie to follow from this that stimuli are lethal in their essence, and that, were the body bereft of the power of reaction, every stimulus—light, sound, tactile stimuli, and so forth—would necessarily cause death. The heart would "stand still" as a result of any of them. Thus he was led to investigate the nature and meaning of reaction as the real key to symptomatology—this word, reaction, being used in a special sense. For example, a quick pulse may be an expression of reaction to a cause primarily tending to slow down or stop the heart.

He saw that stimuli—the "blows" of life—must determine the degree and nature of the reactions made to them. Thus any circumstances increasing the strength or effectiveness of stimuli must render necessary more active reactions in response to them. This conception led him to include in his survey the organs of special sense—the receptors of stimuli of all sorts, the organs of transmission—the nervous system generally, and finally the organs receiving the stimuli—the heart, liver, stomach, muscles, and so forth. For example, if a stimulus, a slap, is applied to the uninjured skin the response or reaction may be no more than a slight quickening of the pulse; but if the same slap is given to an area of skin rendered hyperæsthetic by injury, the response may be violent with great cardiac acceleration and muscular activity.

Thus the condition of the special senses has a most important bearing on the heart's action and responses. The child sickening for measles, with photophobia is intensely sensitive to light and may develop a very rapid pulse as a consequence of exposure to it. The same light would not influence the cardiac rate in the same child when well. Further—and Mackenzie never lost sight of this fact—a high degree of sensory excitability may so exaggerate a stimulus as to make reaction impossible altogether. Thus a slap on a raw area of the skin may result in the immediate "fainting" of the recipient with strong cardiac inhibition, muscular weakness, and so forth.

Consequently the condition of the sense organs must, he saw, have an important bearing on every case of functional cardiac trouble, and indeed of functional trouble of any organ.

Exactly the same reasoning was applied to the nervous system, which conducts the stimuli to the organs. Drugs and toxins acting on the nerves or centres modify the nature of stimuli passing along or through these. The alcoholic is a case in point: another case is the victim of a toxæmia. Such modified stimuli demand different kinds of reactions or responses from normal stimuli, and so give rise to different kinds of "symptoms." Thus a symptom is a modified reaction, and from a study of it the nature of the modification may be inferred.

It will be seen that this view was widely different from that of the specialist whose interest centres in the heart muscle, in valves, or even in the cardiac innervation. Organic disease, indeed, seemed to Mackenzie, in his later years, to be a relatively small matter; one, merely, of many possible reasons why reaction was changed or rendered excessive or incomplete or prevented altogether.

His study of stimulation and of stimuli and of the reactions made to them brought him, in the last year of his life, to ask himself the question: What is the nature of the impulse which flows along the nerves to the organs and evokes their responses? Prolonged meditation and observation led him to think that it must differ widely from any of the electrical stimuli used by experimental workers to imitate or replace it. For these electrical stimuli produce, as is known, "all or nothing" responses in organs, whereas the natural impulses produced graded responses of an almost infinite variety. He, therefore, postulated a "vital force"—returning, in this, to an old and apparently discredited view—and began an attack on the very fundamentals of experimental physiology.

It would be idle to pretend that physiologists took him seriously or that even his own disciples were ready to agree with him. His challenge, however, had a substantial foundation and will be assuredly taken up.

Mackenzie changed his views about heart disease and disease generally as new knowledge came to him. Ten years ago he spoke always about the myocardium, which he regarded then as the key to the study of heart affections. His early work on arrhythmias was interpreted by him from this point of view. In his last years the myocardium had become for him but a factor in the general process of reaction. His interest had left the heart and was centred in the much larger question of the reception and conduction of stimuli and the organic responses made to them. Great numbers of other workers cultivated the field of his early pioneering activities and reaped a harvest of results—the discovery and identification of auricular fibrillation by Sir Thomas Lewis is a case in point. But these researches in no sense invalidated any of Mackenzie's discoveries. They merely fulfilled them. On his last great enterprise, which again arose naturally out of his first labour, he journeyed practically alone. The academic—using that word in no unkind sense—simply did not know what he was talking about, and often frankly told him so. Again and again he was advised to confine himself to his "own subject." He expected this and was never dismayed by it. General practitioners, on the other hand, usually understood him at once because their daily problems were presented to them in a new light.

*A cup of
chocolate*

MADE
WITH



BOURNVILLE COCOA

RECIPE ON
THE LABEL

SEE THE NAME "Cadbury" ON EVERY PIECE OF CHOCOLATE

BRANDY for

ILLNESS *means*

MARTELL

A Necessity
in
The Hospital
The Nursing Home
The Sick Room

Invaluable
to
The Physician
The Surgeon
The Patient.

Extract from a Report on the use of

DIMOL SNUFF

in the treatment of

Common Colds

by a Nose and Throat Specialist of over 30 years' experience.

"The discomforts of nasal catarrh are known to everybody, especially in the fluctuating temperatures of an English winter, but there is no reason why any type of this common ailment should not be dealt with promptly and

- (1) Aborted in its incipient stages,
- (2) Ameliorated in its active stages, and
- (3) Quickly cured

with the aid of Dimol Insufflation Powder, used as a Snuff.

"The simplest and most effective method is to tumble a little of the powder from the glass container, in which it is sold, on to the back of the closed left hand in the little hollow between the fore and middle finger knuckles, and inhale vigorously into each nostril. It gives immediate relief to the congested lining membrane, thins the heavy viscid discharge, and clears the nose and frontal sinuses of the dull aching always accompanying a severe 'head' cold.

"The Snuff should be taken every hour during the acute stage of the catarrh, and every two or three hours when the symptoms have abated.

"The latest Public Health reports on the present mixed infection of the nose and throat clearly indicate the use of this powerful bactericidal powder.

"Dimol Snuff is an extremely fine powder of high antiseptic and bactericidal power; it is guaranteed by the manufacturers to have a Rideal-Walker Co-efficient equivalent to 20 per cent. pure carbolic acid, and to be free from all deleterious action on the mucosa.

"The Snuff, taken three or four times a day during an epidemic of influenza, should be a perfect and pleasant preventive to the insidious settlement of the pervading bacillus in the nose and throat."

In bottles at 1/6 each, and in tubes at 6d. each.

Literature and Samples may be obtained from—

THE ANGLO-FRENCH DRUG CO., LTD., 238a, GRAY'S INN ROAD, LONDON, W.C.1

Cables and Telegrams: "Ampsalvas, London."

Telephone: Museum 4029.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 7, 1925.

MEDICINE IN PARLIAMENT.

THE House of Commons meets again after the Christmas adjournment on Feb. 10th, to begin the duties of a session which may be an unusually calm one, but which may be speedily interrupted by certain waves of political feeling which have already appeared on the surface. In this House of Commons there will sit as large a number of qualified medical men as have ever sat there, and they represent various shades of political thought, being drawn from all parts of the British Isles and from all ranks of medicine, professional, official, and academic. They will, therefore, be recognised in the House of Commons, as they should be, not merely as standing for a sectional interest, but as able and willing to speak from knowledge and experience on the wide issues of public and personal health, in which an increasing number of their colleagues are taking interest. And some of these issues should speedily come to the front, so that the faces of the medical Members should shortly be familiar to Mr. Speaker, who has always recognised with great courtesy the right of the representatives of medical science to take part in discussion involving medical matters. We print on another page the portraits of these representatives.

We commend now to the consideration of medical Members of the House of Commons the need for early action in regard to the sale of patent medicines. Such action is in the best interest of the community, and will be dictated by no narrow professionalism. Unless something is done to stem the continued supply of remedies which are no remedies, boosted by assertions which have no basis in fact, it will be difficult for any scientific measure dealing with health, whether of public or personal application, to have its fair and right effect. The evil is perfectly well recognised: only the most regrettable chance prevented an appropriate sequel to the Report of the Select Committee on Patent Remedies, which was rendered in 1914, and there is no need whatever to go over the whole ground again of inquiry, for convictions which were then reached remain unchanged or have been more widely confirmed. One little measure, favoured by everybody, ought to pass the quicker. The Therapeutic Substances Bill, which seeks to standardise the quality of vaccines, serums, and other substances such as salvarsan, insulin, and pituitary, by regulating the manufacture and sale of them under licence, has since been introduced in the House of Lords where it was given a third reading. At present stuff which the United States or France or Denmark rejects as not good enough for them is good enough to be dumped on us. And other legislative measures which should fairly command attention came up at the important interview between the Minister of Health and an influential deputation from

the Peoples' League of Health on Jan. 27th. This deputation was the aftermath of an International Health Conference held in May of last year at the Wembley Exhibition, when two sessions were devoted to the consideration of legislative reform with regard to health matters, and a series of resolutions were moved.¹ Mr. NEVILLE CHAMBERLAIN assured the deputation that he was prepared to accept generally the recommendations of the Food Preservatives Committee, which would shortly be circulated in draft. He was proposing to consolidate the existing legislation as to food and drugs, but in the meantime to carry out many recommendations which could be done without delay. A day or two ago, in reply to a deputation from the London Chamber of Commerce, which suggested that no evidence had been produced to show any actual prejudice to public health from preservatives in food, Mr. NEVILLE CHAMBERLAIN insisted on the possibly cumulative effect of consuming many kinds of food containing preservatives, and the important fact that some sections of the trade were now getting along without preservatives at all. He foreshadowed an amending Public Health Bill which would give local authorities much needed powers to remove tuberculous cases which were proving centres of infection, especially to children. Most important of all, he stated the Government's intention to reform the Poor-law as soon as possible. The delay in dealing drastically with the available hospital bed supply of the country has paralysed largely the abundant efforts made by so many parties to render hospital treatment available and effective to the whole of the community.

These matters are so far-reaching that in comparison with them many important proposals may have to wait; but these other measures should not be lost sight of. An agreed Bill was available last session so to modify death certification that no registration of death should take place unless and until the registrar has received a medical certificate, first of the fact of death, and secondly of the cause of death. The Factories Bill, which was read a first time last Parliament, to consolidate and amend enactments relating to factories, contained much that was needful in order to bring the factory life within the purview of the public health system in the country. The new knowledge of ventilating and lighting principles must in fairness be applied to all sections of the industrial population, not excepting those who are doing clerical work. No doubt the Bill as it stands will be represented as a crushing handicap on struggling manufacturers, and to obtain any measure of consolidation it may be necessary to compromise over cubic air-space. No medical man or woman, least of all those who are actually in Parliament, will imagine that legislative changes are going to have a great effect unless the people of the country are roused to a sense of the importance of obeying the laws of hygiene. A commendation made at the Wembley Health Conference by Miss MARGARET BONDFIELD, then a Member of the Labour Government, remains valid, that voluntary workers who have the time to talk about health matters can render great service by removing the issues from the area of crankdom. And this should be all the easier now that there is a clear vista of possible health legislation in the immediate future. Those who represent medicine in Parliament can deal worthily with the great responsibilities likely to fall upon them, and their views will be appreciated by the House of Commons.

¹ Report of the First International Health Conference, The People's League of Health Headquarters, 12, Stratford-place, London, W. 1. Pp. 240.

PROGNOSIS IN CHRONIC DISEASE.

IT IS a curious fact in practical medicine that the doctor is valued by the laity as much for his power of prophecy as for his skill in healing. A sick man wants to be well, but he wants as much or more to know whether he is going to get well or not. In acute illness the doctor's great function is to assume the responsibility, in normal circumstances belonging to the patient, for deciding the course of life, and the nurse's part is to take responsibility for ordering its minute details, while the patient's share is to yield all his will to these guardians and be "a good patient." In chronic sickness the patient asks for assurance about what is to come almost as much as for immediate relief; here in particular he needs someone else to take the burden of his future. With the progress of hygiene and good living the proportion of creaking doors in the population has much increased; instead of dying by the means which are "natural" when his tissues begin to decay, modern man is disappointed if he cannot live twice as long as his primeval ancestors. Add to this the rise in the demanded standard of "feeling well," which has naturally followed the general increase in healthiness, and it is easy to understand why the patient is so anxious to know whether he will get well, and if not when may he expect to die; and if the answer is that he may anticipate a partial restoration to health, how well he may expect to be and when.

As Dr. M. O. RAVEN points out on another page, in acute and subacute diseases, where the whole history is easily grasped in one view, prognosis is relatively simple and has reached a standard which is for the moment not unsatisfactory; and whether the outlook is good or bad its comparative certainty alleviates much human misery. The certainty of death in inoperable cancer is in its way as helpful a piece of knowledge as the certainty of recovery in chicken-pox, and the wretchedness of a migraine or an acute lumbago would certainly not be taken in the light-hearted way in which they are commonly received, were the sufferers not fully assured from their own or their friends' experience that a few hours or days would see an end of their pain and be succeeded by a period of almost certain immunity from another attack. But in a great number of disease processes, often very ill-defined in their early stages, prognosis remains more dubious and speculative than it should be. As consequential events become more widely separated in time, so it becomes more and more difficult for the human mind to apprehend that there is a connexion between them. Man has long since passed the stage when he discovered that the sowing of a seed was causally related to the springing of a plant, but there are still considerable difficulties in viewing the facts of 20 or 30 years of slight and slowly progressing ill-health as a whole; the past is dim and not very clearly remembered, the best of notes cannot be complete, and a host of similar processes have intervened and obscured the view. Patients move about and change their doctors, and

our centres of medical research have the most inadequate methods for finding out what ultimately happens to the patients who pass through the wards; and here it may be interjected the follow-up systems of some American hospitals deserve study, for it is surely possible to reach, for other diseases, some of the success which has accompanied the organised attention paid to tuberculosis. Administrative exigencies seem to have wiped out the high hopes which were entertained of the knowledge which would come from the history of war pensioners. At the moment everyone will be thinking of the shining example set by JAMES MACKENZIE; that there is a fruitful road which can be travelled he showed plainly enough, but there is no doubt that it is a rough path and requires grit and genius, if it is to be pursued to any definite end.

If, then, there are singularly few facts on which the prognosis of chronic disease can be based, are there any general principles which may be helpful till more definite data are available? Dr. RAVEN indicates one which seems to rest on a good basis. Disease is a process, not a state, and it must therefore progress in one direction or another. The natural history of the acute infectious diseases is so well known that, in defiance of Mr. YULE, a typical course for the rise, fastigium and decline of each of them is defined in the text-books; something is happening all the time. Of thoroughly chronic diseases we can think of two kinds, one in which degenerative processes begin slowly and more or less steadily progress till the economy can no longer compensate for its defects, the other in which with a relatively sudden onset a substantial degree of illness is reached which proceeds slowly and gradually to complete or partial cure. The rules which summarise the history of these cases are no doubt discoverable; and are possibly as precise as those which enable prognosis of acute conditions to be as good as it is. And it seems more or less obvious that the whole duration of the processes must be proportional to the rates at which they are proceeding at any time. What the proportion is we do not know, for we do not know the rules which these rates of change follow. The progressive destruction of the liver in cirrhosis may likely be expressed graphically by a straight line with some deviation due to compensatory overgrowth; the healing of a periostitis more probably follows a logarithmic curve, rapid at first and becoming slower and slower as the restoration to normal is approached. But it seems evident that for a first trial a measurement of the time in which a just perceptible change takes place gives some sort of gauge of the time which will be occupied by the whole. In any case the establishment of the fact of change indicates active advance or retreat, as was elegantly illustrated by DREYER when he pointed out that variations from day to day in the agglutinin titre of the blood would distinguish a genuine case of enteric infection from some similar pyrexia in a man who, in consequence of antityphoid inoculation, gave a positive Widal test but without any material changes in titre over a week or more. Similarly, the absence of perceptible change over a period of months or years must signify that for practical purposes the advance or retrogression of the process has gone as far as it means to. It seems as if it is along some such lines as these that data could be obtained from which the mathematicians might ultimately tell us how chronic disease goes along. But it is no simple matter.

THE TREATMENT OF PULPLESS TEETH.

TECHNIQUE in treating pulpless teeth, though primarily the concern of the dental profession, is also of interest to the medical practitioner, who may be witness of the infection supervening on dental treatment. The broader aspect of pulpless teeth and their possible relation to systemic infection was touched on incidentally only in the interesting paper read by Mr. L. E. CLAREMONT before the Odontological Section of the Royal Society of Medicine on Jan. 26th. Both Mr. CLAREMONT and those who joined in the discussion took up the attitude that while the treatment of pulpless teeth is not always satisfactory, yet there is no valid reason for refusing to treat such teeth under suitable conditions and within definite limitations. The fact that focal infection has assumed so important a place in modern medicine has placed a heavy responsibility on the dentist, but it has not laid an embargo on his treatment of pulpless teeth to the extent of making it a pathological offence to conserve teeth which have no longer a vital pulp. Even taking at its highest value all that has been said in condemnation of dental infection, it is legitimate and, indeed, desirable that the dentist should save rather than extract teeth. But conservation must be attempted after careful consideration of many factors, and should imply a standard of technique which is often lacking at present.

The pulpless tooth may be considered from two points of view. There is the tooth in which the progress of caries has led to an exposure of the pulp. Here treatment involves the extirpation of the pulp and filling the root canal. Secondly, there is the tooth in which the pulp has died as a result of inflammation, and an infected and septic condition of the pulp-root canals has been established, often extending beyond the apex of the tooth into the peri-apical tissue. With regard to the first class, the fact that the pulp is still vital does not of necessity imply that it is free from bacterial contamination, for, as Mr. J. G. TURNER in this country, and HENRICI and HARTZELL in America, have shown, even the pulps of teeth free from caries may contain bacteria. Yet there is every reason to think that any infection is only superficial and has not penetrated into the dentine lining the root canal or beyond the apex. Provided that an adequate technique is employed there is every reason to believe that the pulp can be removed and the canal filled in a way to render it free from infection and reasonably immune to subsequent bacterial invasion. Unfortunately, clinical experience shows that in a certain number of cases infection follows, and may result either in an acute abscess or more commonly in a chronic infection leading to a painless apical rarefaction which may only be discovered if the teeth are radiographed. There are no statistics to show how often this occurs; all that can be said is that it is not uncommon. Although infection via the bloodstream is a possibility, it is much more likely that it is introduced by the operator in the process of extirpating the pulp and filling the root. A knowledge of what may be regarded as the average root canal technique bears out this hypothesis. Indeed, it is not too much to say that it is surprising that infection does not occur more frequently. This sounds like a severe indictment of dental technique, but it does not overstate the case. Aseptic dentistry is an impossibility for many reasons, but a greater degree of antiseptic dentistry is undoubtedly possible. Mr. CLAREMONT outlined a careful method of treating devitalised teeth which though not absolutely proof against failure, would certainly make it much less common. There is no doubt, however, that the standard of root canal treatment has progressively improved during the last decade, and that an increasing number of dentists are adopting methods which are deliberately planned so as to exclude infection during the stages of root canal treatment. In this matter dentistry is much indebted to Mr. J. B. PARFITT, who has elaborated a method which is logical and thorough, and

yet not so exacting as to place it without the scope of the usual conditions under which dentistry is performed. In spite of a certain number of failures, many of which could undoubtedly be prevented by a more scientific technique, there seems no reason to adopt the pessimistic attitude of some who argue that it is unwise to retain in the mouth any tooth which has not a living pulp. A dentist who is aware of the potential dangers of an infected tooth and shapes his treatment accordingly so as to exclude avoidable infection, during the process of treatment, is justified in treating and saving teeth with exposed pulps. It would be a wise precaution, however, to have the teeth radiographed periodically to provide against the contingency of apical infection later, for a pulpless tooth is undoubtedly less resistant than a vital tooth.

The problem of the tooth already pulpless and with infected canals is much more difficult, and there is more to be said for the attitude of those who are so impressed by the difficulties of sterilising the peri-apical tissues that they do not consider it justifiable to subject their patients to the risk of leaving infection behind, the more especially as it is usually painless and may, therefore, give no local signs of its presence. Mr. CLAREMONT took up a guarded attitude on this subject. Provided that certain essential conditions were fulfilled, he thought that it was legitimate to undertake the treatment of such teeth, and that it was often possible to do so with success. Treatment is most likely to be successful on the anterior teeth with single roots. It should only be attempted on teeth which have healthy periodontal membranes and do not show any signs of marked apical infection. A radiograph should precede treatment, and the teeth when filled should be regarded as being on probation and examined at intervals, and, if possible, radiographed. The ideal treatment should logically include cultures from the root canal to ascertain when they were free from infection. Mr. E. C. SPRAWSON, in the discussion which followed, stated that this step is being introduced at the London Hospital Dental School as a routine procedure. This is an admirable innovation, the educational value of which to the student should be considerable. As a practical addition to private practice it is scarcely feasible, for it would add so much to the cost and length of treatment as to make it prohibitive except to a favoured few. It was noteworthy that though the discussion revealed a wide variety of methods of attempting disinfection of septic root canals, there was a very general endorsement of Mr. CLAREMONT's moderate attitude, that though the treatment of infected teeth presents great difficulties and places a great responsibility on the dentist who undertakes it, yet there are cases in which treatment is fully justified and is often completely successful as judged by both clinical and radiographic tests. Indeed, even the presence of apical rarefaction may not be a barrier to successful treatment, for bone regeneration is possible, as was shown by some excellent radiographs exhibited by Mr. CLAREMONT.

To put it shortly: the forceps is not the only way of treating dental sepsis. In many cases extraction is the only possible remedy, but in others it is possible to remove the infection and still leave to the patient the use of his teeth. The amount of attention which is being paid to this aspect of dental surgery leads us to hope that the conservative treatment of dental infection will become increasingly successful.

INDEX TO "THE LANCET," Vol. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Annotations.

"Ne quid nimis."

THE HUMAN PEDIGREE.¹

DURING the week a new edition has appeared of Sir Arthur Keith's famous book surveying the story of man's pedigree from an infinitely past date as evidence in support of the theories comes up and receives confirmation. The book first appeared ten years ago, and in spite of the fact that at that time the whole world was convulsed with the efforts of modern men to destroy each other, there was a wide recognition that knowledge of the material which was being disintegrated by thousands had the deepest interest for all. In its first form four editions were issued, so that the work has been duly reviewed in these columns; but the latest impression is practically a new book so much has it been revised and enlarged, while during the interval of a decade much has happened which necessitated recasting of material, and, as the author frankly allows, modification or change of opinion. Discoveries have been made in this country, in France and Germany, in the United States, Australia, and Java, and notably in South Africa, which compel an alteration of judgment in regard to many general conceptions, and notably in the estimates of geological time. Again, the popular view of racial emigration has to be altered in view of the belief that such movements played only a minor part in shaping human evolution. Prof. Keith believes that the distribution of modern human racial types, as seen at the dawn of history, cannot be accounted for unless we presume that they have been evolved in or near the regions of the earth which they now occupy or even occupied at the beginning of time, although, with his enormous range of knowledge, we may be certain that he would not disregard evidence which in particular cases cut across the generalisation. In these volumes attention is focused on the prehistoric sites in turn, which means that evidence is examined in series and matters are discussed more or less as they come up for consideration; but a full and explicit index will give the careful reader an opportunity for a systematic examination of the facts and a comprehension of the broad conclusions. A vast amount of detailed information is contained in every chapter, and the clear presentation is well illustrated by the sections which deal with the discovery of the Piltdown skull, and which explain how far fossil fragments can yield reliable evidence in respect of man's evolutionary history. The author half apologises for introducing what he describes as dry technicalities concerning the Piltdown skull, but no chapter better exemplifies than this one the labour, the accuracy, and the conscientiousness which have gone to the making of the big treatise. In this brief notice it is only intended to advise our readers of the intellectual treat which has been provided for them.

RELAPSE IN WASSERMANN REACTION AFTER TREATMENT.

THE failure of mercurial continuation treatment to keep a negative Wassermann negative in syphilitic out-patients has recently been noted by Prof. Ernest Glynn, Dr. R. E. Roberts, and Dr. Phoebe Bigland. Working in connexion with Dr. F. P. Wilson's clinic at the Royal Infirmary they studied the Wassermann relapse incidence in 503 patients whose reaction was negative after the standard admission course of six doses of salvarsan and eight of intramuscular grey oils, and communicated the results to a pathological meeting held at the Liverpool Medical Institution on Jan. 15th. About two-thirds of the 503

patients received continuation courses of either grey oil or mercury tablets—the latter usually prescribed to sailors or other "wanderers"—to keep their W.R. negative. About one-third received no treatment for a few or many months, because of irregular attendance. The authors were therefore able to compare the Wassermann relapse incidence in the three groups. The patients were classified into five periods dating from the beginning of their negative W.R., viz.: 0-6 months, 503 patients; 7-12 months, 382 patients; 13-24 months, 264 patients; 25-36 months, 100 patients; 37-48 months, 27 patients. There were 185 "first" Wassermann relapses among these; six cases of reinfection were excluded. The Wassermann relapses were classified into complete and partial, the technique being No. 4 M.R.C. report. The authors expected to find that patients receiving no treatment relapsed more frequently than those treated. But exactly the opposite occurred, as shown by the following examples:—

Examples of Partial (P.) and Complete (C.) Wassermann Relapse Incidence in 503 Patients.

Period in months.	No treatment.		Grey oil.		Mercury tablet.	
	P.	C.	P.	C.	P.	C.
0-6 and 7-12 combined	9.5	13	28.2	20.3	15.6	13.0
13-24	6.6	9.2	No cases.		12.5	7.8

One hundred and nine of the 185 patients with the "first" Wassermann relapse became negative again on further treatment—usually with salvarsan and grey oil. They were classified in the same manner. Thirty-five relapsed a second time, and in general the incidence of the second relapses in the three groups was the same as that in the first relapses. In both series complete and partial relapses were more frequent after grey oil than after mercury tablets. These unexpected results were not due to the influence either of (a) selection by clinicians; (b) Wassermann on admission; (c) the "delay period"—viz., time elapsing between original infection and patient's arrival at clinic; (d) occasional deviations from standard continuation treatment or other variable factors. P. Fildes and R. J. G. Parnell, unknown to the authors, had independently come to a similar conclusion in 1919 on the failure of mercurial continuation treatment after salvarsan by the study of the Wassermann relapse in 129 syphilitic patients at Haslar; while Sir Patrick Watson, of Edinburgh, 40 years ago did not advise the administration of mercury to prevent the occurrence of the manifestations of syphilis at a later date.

The various factors which might account for these unexpected results were next considered by the collaborators. They held that it was wrong to assume that because mercury is often beneficial in treating active syphilis with a positive W.R., therefore it must be beneficial in latent syphilis with a negative W.R. The pathological conditions were absolutely different. Evidence was produced that the increased Wassermann relapse incidence after mercury might be partly explained by the development of mercury-resistant spirochaetes, sometimes by a provocative reaction, but chiefly, as the statistics suggested, by a lowering of the patient's immunity. This last was more likely to occur if the mercurial continuation courses began, as usually happened, about six to eight weeks after the end of the admission course of salvarsan and grey oil, from which it sometimes took the liver six months to recover. Evidence was next produced that the Wassermann relapses were injurious, partly because the complete relapses were associated with clinical relapses in 6.7 per cent. of the "no treatment" cases, in 9 per cent. of the mercury tablet cases, and in 16.9 per cent. of the grey oil cases. In order to try to prevent the occurrence of Wassermann relapses, it was advised that two or possibly three continuation courses of salvarsan

¹ The Antiquity of Man. Revised edition. By Sir Arthur Keith, M.D., F.R.S. London: Williams and Norgate, Ltd. 1925. Two volumes. With 266 illustrations. Pp. 753. 25s.

should be given during the two years, controlled, if necessary, by the Van den Berg lævulose tolerance and other tests, the first being given about six months after the admission course. The dormant, but inaccessible spirochaetes were more likely to be finally destroyed by the intensive administration of this powerful remedy than by the prolonged courses of mercury, a drug now recognised as much less efficient in the treatment of active syphilis.

TAPE-WORMS AND FLUKES IN EGYPT.

MANY fundamental discoveries in tropical disease, more particularly concerning the life-histories of intestinal parasites which afflict man in Egypt, have emanated from Cairo during the past century. The classical investigations of Looss on *Ankylostoma duodenale* and of Leiper on the schistosomes are still fresh in our memory, and now Dr. M. Khalil, a distinguished pupil of the last-named investigator and a student of the London School of Hygiene and Tropical Medicine, has summarised¹ the recent progress of anthelmintic work in Egypt, for which he himself appears to have supplied the stimulus. Up to 1913 no united efforts had been made to check or treat ankylostome or schistosome infections in Egypt. Ankylostomiasis has probably been endemic in that country since the earliest times, but it was not till 1847 that the infecting worms themselves were discovered in Cairo by Pruner. Recent improvements in the therapeutics of ankylostomiasis, culminating in the discovery of carbon tetrachloride as an anthelmintic, have made it possible to subject the population to "mass treatment" on an extensive scale.

Schistosomiasis, too, has been indigenous in Egypt from the dawn of history, for the eggs of these parasites have been demonstrated in the tissues of ancient Egyptian mummies. The trematodes themselves were discovered by Bilharz in 1852 and their curious life-history was already suspected by Sonsino, who dissected large numbers of the intermediate hosts, fresh-water snails, the elucidation of this problem being finally effected by Leiper in 1915. The world is indebted to Christopherson for the tartar emetic treatment of schistosomiasis which he introduced in 1917 and which is now being used with great effect in Egypt, and it is with this aspect of the subject that a section of Dr. Khalil's report is concerned. We learn that the number of intravenous antimony injections given during a day by a single medical officer sometimes exceeds 400, and so skilled do they become that 150 patients may be injected within an hour. The prosecution of a vigorous ankylostomiasis and schistosomiasis campaign is carried out by the organisation of special camps, or annexes, composed of tents and wooden huts where large numbers of patients are received for examination and treatment. Educational measures are regarded as of special importance, popular propaganda amongst the villagers being carried out by means of leaflets, educational lectures, and particularly by sensational posters. For the prophylaxis of these diseases the coöperation of religious teachers is sought, directed especially against the pollution of water-courses which is an offence condemned by the sayings of the Prophet; village latrines are being established, and the diseases themselves stamped out by mass treatment.

The attempt to exterminate the fresh-water snails may well be successful, for the system of irrigation in Egypt lends itself, during the summer rotation, to the drying up of the smaller irrigation channels where the mollusca soon die when exposed to the sun, while the small amount of water left in the deeper channels can be treated with copper sulphate, which appears to be lethal to these creatures, even in a dilution of 1:4,000,000. The report also includes an interesting

survey of parasitic infections of a single Egyptian village in the Delta; the intensity of parasitism may be judged from a photograph of a fellaheen boy holding a board on which are pinned 81 mature ascaris worms expelled after one dose of 3 gr. of santonin. The report, which is extremely well written, concludes with the description of a new trematode parasite of the rat—*Echinostoma aegyptiacum*—by Khalil and Abaza, and an investigation on the complement-fixation reaction in bilharziasis using an extract of *Fasciola hepatica* as antigen, by A. T. Shousha, who finds that the serum of bilharziasis patients give a positive reaction in 67.6 per cent.

SOME PROBLEMS OF HOSPITAL ADMINISTRATION.

A RECENT number of *The Modern Hospital* (December, 1924) contains an article on Some Fundamental Problems in Hospital Administration, by Dr. E. M. Bluestone, assistant director of the Mount Sinai Hospital, New York, which is calculated to produce hard thinking on the part of those engaged in hospital practice and hospital administration. The writer suggests that many physician-superintendents visualise hospital administration in terms of hotel management, and the larger the hospital the more likely is the necessary differentiation and division of labour to produce this result. A comparison of British and American methods might lead to instructive lessons. The position of a medical superintendent in American hospitals differs in many respects from his position in this country, and even here there is a wide divergence of method—our teaching hospitals for instance, have not the same highly-organised medical administration centred in one person as have our State mental hospitals or Poor-law institutions. But when allowance is made for these differences there is much that is common to all hospital administration wherever it is found. The fear that "paper work," as Dr. Bluestone terms business organisation, may overshadow the clinical aspects of medicine is a real one. Statistical inquiries into everything which concerns the hospital and the patient become more elaborate every year, and inasmuch as the staff cannot, for financial reasons, be correspondingly increased, most hospital officers find themselves involved in a large amount of clerical work. It is difficult to see how this can be avoided in dealing with a system which is continually increasing in complexity, but it is none the less clear that we shall have to be very much on our guard if the human aspect is to be retained. Nothing is easier than a perfunctory filling in of forms and compilation of figures, and generally speaking, each additional form added on to the organisation means that the patient himself gets less attention. Physicians who have to deal with State-aided patients in the tuberculosis departments of hospitals, for instance, know well how real this danger is.

There is, moreover, the ever-present difficulty that the patient is apt to lose his identity and become merely a case, occupying a bed with a number. Dr. Bluestone deals with a firm hand with all examples of this failure to realise that the patient is a sick person and not an inanimate case. He cites as examples from his own personal observation in American hospitals the list of tonsil operations which have to be worked through and are done at times in a perfunctory manner, the difficulty of maintaining interest in the so-called chronic cases in which there is no question of differential diagnosis or hope of treatment, the unnecessary clinical manipulations for purely demonstration purposes, the preparation of patients for the weekly operation list when they are not likely to be dealt with, the discussion of details of illness, especially regarding hopeless prognosis, in the presence of the patient, and lastly short cuts which save time but not the patient's feelings, or which increase operation risks. In all this Dr. Bluestone is at pains to point out that he has no intention of

¹ Ankylostomiasis and Bilharziasis in Egypt. Ministry of the Interior, Egypt, Department of Public Health. Reports of the Public Health Laboratories. No. 6. Government Press, Cairo, 1924. Pp. 196. Price P.T.30.

belittling the work of science which has written so many bright pages in the history of mankind, but that he is anxious rather, as an administrator, to keep the human side of medicine always to the front. He pleads for less of the cold emphasis on quantity production and for a broader interpretation of hospital service, and in conclusion he raises the question whether we are right in herding the sick together in such large institutions. In this last matter he seems to have touched upon a very real and serious question in hospital administration. It is true that a small hospital must have high over-head charges, but it is equally true that a very large hospital may over-emphasise quantity production in the administrator's office, and eliminate the human factor still further.

POSTURE AND REST.

THE distinctive feature of modern industrial practice is the elimination, so far as it can be effected, of heavy manual labour. Great advantage to health and the economics of production comes therefrom. Nevertheless, the time is distant when recourse to human physical effort will be abandoned; it still holds, and must continue to hold, an important place in industries. While, however, much scientific attention has been directed to the laws which govern the use of mechanical power, curiously little thought has been expended on the best methods of employing human power. The latest report¹ of the Industrial Fatigue Research Board is an effort in this direction; it deals with the effects of posture and rest in muscular work and comprises two interesting studies. The first deals with weight carrying, a process of prehistoric antiquity. The investigator, E. M. Bedale, has taken eight ordinary methods in common use and determined the net working metabolism involved in each case. The methods were (1) weights placed on a tray held in front of the body, (2) weights on a tray supported by shoulder straps, (3) equal weights carried in either hand, (4) weights carried on a board on the left shoulder, (5) weights on a tray supported on the left hip, (6) weights placed in a rucksack, (7) weights in pails on a shoulder yoke, (8) weights on a tray upon the head. The loads, which varied from 20 lb. to 60 lb., were carried along the level at an even pace for 100 yards, after which metabolism was ascertained by the Douglas bag method. No attempt was made to determine the maximum load or the mechanical efficiency of the work. The results obtained, which are given in detail, are fully discussed and shown in graphic form; they indicate conspicuously low metabolism costs for yoke-carrying; appeal to ventilation-rate, pulse, and blood-pressure changes show that this method involves less physiological disturbance than any of the others. A critical point, for the individual (a female) observed, was noted at about 40 lb. for the maximum load for rucksack-carrying and tray-carrying, but not until 60 lb. was reached for yoke-carrying; this critical point is important and calls for further extended inquiry, since work becomes more costly in metabolism for heavier loads and is, therefore, economically more expensive. A complex interaction of four disabling factors—local strain, posture, gait, and chest freedom—is concerned in each method, and where these factors are least concerned the method is physiologically least expensive. This investigation suggests that a load should not exceed 35 per cent. of body-weight, but further work in both laboratory and factory is needed before a definite rule can be laid down.

The second section of the report, contributed by Dr. H. M. Vernon, deals with strength of pull, or weight-lifting power, as determined by a dynamometer, the spring balance of which registered up to 500 lb. The handle could be fastened at different heights above the floor level; the power of pull was

found greatest with the handle at 28 inches from the floor, and fell off above and below this height, but below 15 inches it became increasingly greater as floor level was approached. Standing on one leg instead of two only diminished the pull by 2 per cent., while using one hand instead of two nearly halved the pull. Rest pauses of varying duration were introduced; but the total work then done was less than without the rest pauses, so long as the subject remained motionless during the rests; but, if he changed his posture by bending his shoulders or moving his arms, and by so doing influenced his circulation, the total work done was decidedly greater, while no greater acceleration of the pulse occurred. In fact, capacity for work was far more beneficially affected by change of posture during an interval than by the length of the interval. Hence the deduction is drawn that postural changes should be encouraged in industrial work; thus for many processes which can be done equally well sitting or standing, alterations in posture should be the rule; while apparently unnecessary and undesirable movements indulged in by operatives at repetition work may be introduced unconsciously by them in order to promote circulation through fatigued muscles.

THE LIMITS OF MICROSCOPY.

THE labours of professional microscopists in the latter part of the nineteenth century, stimulated and encouraged by the vitality of such bodies as the Royal Microscopical Society, have resulted in production of such simple, cheap, and efficient instruments that no student and no practitioner of medicine has any valid excuse for not possessing one and making practical use of it. Indeed, the microscope has become something of a cult and has been regarded as the end rather than as a means. Possibly "the microscope" is not held in such awe nowadays as it was by the latest Victorians, but there is nevertheless a tendency to look upon it as the last court of appeal. And in medicine this, no doubt, is fairly true. In bacteriology, for example, it is the highest court we have, though it would astound the general public to know how small amount of his time the bacteriologist devotes to microscopical work. But it is the last word in the study of much disease.

But all know that slavish dependence on the microscope has definite dangers. Microscopic technique is not entirely without its difficulties. Even for the simplest procedures a certain amount of training and practice is necessary, while for more advanced work the necessary apprenticeship may well extend into years. For the majority of medical men this apprenticeship is impossible; but they can compensate to some extent for lack of skill in the use of the more complex instrument by learning to employ a simple hand lens. What is commonly lost sight of is that the microscope merely increases the range and power of normal vision. But only to a certain extent. It enables us to distinguish the present biological unit, the cell, but it does not go very much farther than this. If we wish to gain information about the structure of the ultimate, or penultimate, units of matter we must use other methods and other instruments. Sir William Bragg¹ has recently described in language so clear and simple that even the most uninstructed layman cannot fail to understand him, how by the use of the X rays it is possible to study the actual structure of molecules. Our mental vision can, as it were, actually see the smallest body which we can imagine. But this takes us a long way from ordinary medical practice. If having eyes we see not, neither the microscope nor X rays will help us, and for much the same reason that a high ocular merely intensifies the defects of a poor objective. The first duty of a medical man is to train his senses so that, unaided, they may inform him as exactly as possible about

¹ The Effects of Posture and Rest in Muscular Work. Industrial Fatigue Research Board. Report No. 29. H.M. Stationery Office. 1924. Price 2s. 6d. Pp. 55.

¹ Concerning the Nature of Things. G. Bell and Sons, Ltd. 7s 6d.

his surroundings. Confronted with any particular problem in diagnosis he should be able to collect all the relevant facts which may be recognisable by his unaided senses. Only if these are insufficient to answer the question should he resort to adventitious aids. And it is as well to realise that the microscope will reveal quite a new range of facts. It may be that the single one which is necessary to solve the problem will be immediately apparent; but it may equally well happen that the new facts will complicate the matter still further.

It is a safe rule in microscopy, as in other things, never to "press." As the expert golfer always drives well within his powers, but can pull out an extra 30 or 40 yards if necessary, so the expert microscopist likes to keep a few magnifications in reserve. Every teacher of histology knows the difficulty of making his students use the lower powers of their microscope. The tyro instinctively starts with the highest powers available; the expert invariably begins with the lowest. As a general rule, the higher the magnification, the more complicated and specialised does the picture appear, the more difficult is it to appreciate the wood for the trees. Very often a hand lens is all that is required, and it has the advantage of being a far less dangerous weapon than the compound microscope. Dr. Erwin Christeller² has recently reverted to the subject of histo-topography in an article describing a new method of preparing sections of whole organs. The article, which is profusely illustrated, demonstrates very clearly the value of this link between anatomy and histology. While the natural limitations of naked-eye anatomy may fail to demonstrate the structural alterations underlying a pathological process, a too limited adherence to histology may also fail in that it tends to obscure the sense of perspective. But a combination of the two will very often show all that is required. Only those who have paid attention to histo-topography realise how valuable a method of study it can be. Sir Lenthal Cheate has familiarised us in this country with the use of the large section in his study of mammary and other carcinomata, and it is a matter for regret that greater use is not made of the technique.

RECENT RESEARCH ON DISEASES OF THE BLOOD.

WORKERS along associated lines in this country will welcome the summary of recent papers on blood diseases, compiled by members of the staff of the Huntingdon Memorial Hospital of Harvard University under the names of Isaacs, Minot, and Buckman, in the *Boston Medical and Surgical Journal* of Jan. 1st, 1925. The scope of the summary is extensive and indications are given of the nature of the progress made. Under histopathology 40 references to recent publications are given and each element of the blood receives due attention. In Addison's anæmia the great frequency of the following signs and symptoms are recalled in 25 references—namely, the nervous and mental manifestations, the specific gravity fixation of the urine with the increased output during the night, leucopenia, achlorhydria, the presence of macrocytes and megaloblasts in the blood-stream, and the yellow tint of the serum and plasma. The subject of purpura hæmorrhagica (essential thrombocytopenia) receives wide attention, and about 40 cases treated by splenectomy are stated to have been recorded. The results admittedly constitute one of the most striking advances in the therapy of blood diseases of recent years. In this country splenectomy in this disease has been practically untried—indeed, the only cases familiar to us are two which were shown at the Royal Society of Medicine in December last by Dr. G. A. Sutherland. Under leukemia observations on the effects of more adequate irradiation methods in 78 cases of chronic myelogenous

and 50 cases of chronic lymphatic leukæmias show that symptomatic improvement occurs in 95 per cent. of cases. Life is only slightly prolonged however. The basal metabolic rate is shown by several workers to be a better indicator of the severity of the disease than the white cell count per se. The importance of differentiating the fatal condition of acute leukæmia from infective mononucleosis, from which spontaneous recovery is the rule, is stressed. Erythræmia (Vaquez-Osler disease) is next considered from the conclusions of 18 published papers. The familial factor is greater than is supposed. The analogy to leukæmia and the white-cell marrow and erythræmia and the red-cell marrow respectively is made, and the symptomatic group (erythrocytosis) receives attention. Roentgen ray treatment offers some means of controlling the disease, and six workers state that benefit is greater where large doses of short wave-length therapy are given over the long bones. Splenic treatment alone gives little effect. The administration of blood-destroying drugs such as benzol and phenylhydrazin has been tried. Blood disorders in infancy and childhood are extensively summarised from a bibliography of 67 publications. Besides the various diseases, reference is made to little known features, normal and abnormal, of the blood in early life such as coagulation time, bleeding time, volume index, and colour index. The value of this summary of diseases of the blood is heightened by the fact that the bibliography is almost entirely drawn from publications which have appeared during the past four years.

THE CENTENARY OF JOSEPH ROLLET.

THE centenary of the birth of Joseph Rollet, the eminent surgeon of the Antiquaille Hospital at Lyons, was recently celebrated at the Faculty of Medicine of that city, when the various aspects of his life and work formed the subject of addresses by MM. Thibierge, Jeanselme, Nicolas, and Justin Godard, the Minister of Labour and Hygiene. We are indebted to Prof. Nicolas¹ for the following account of his achievements. After graduating at the Paris Faculty of Medicine in 1848 with a thesis on traumatic intracranial hæmorrhages, Rollet came to Lyons, and after unsuccessfully competing for the post of director of the Hôtel Dieu, was appointed in 1850 surgeon-major to the Antiquaille Hospital. Among his predecessors in that office had been two celebrated pioneers in syphilology—namely, Baumès, whose name is often associated with Colles in the well-known law relating to the immunity of the mother suckling her syphilitic offspring, and Diday, the author of the classical work on congenital syphilis. During the nine years that Rollet remained at the Antiquaille, he revolutionised the study of venereal disease as follows. In the first place he proved the erroneousness of the two views for which Ricord had been responsible—viz., the identity of syphilitic and soft chancre and the non-contagious character of secondary syphilis. Secondly, he established the existence of the mixed chancre or the association of syphilis and chancroid, which served to explain the occurrence of constitutional syphilis after what was apparently only a soft sore. Thirdly, Rollet's work was of considerable value in its therapeutic, prophylactic, and medico-legal applications, particularly as regards the dangers of syphilitic infection in the case of glass-blowers and wet-nurses, as well as in arm-to-arm vaccination. Rollet's work was all the more remarkable as it was carried out in the pre-bacteriological era without any laboratory assistance but by his unaided clinical observations. Rollet died on August 2nd, 1894, shortly after he had been appointed professor of hygiene at Lyons and on the very day on which he was to have presided over the Congress of Dermatology. Prof. Nicolas concludes his address by describing him as the greatest syphilographer in the course of three centuries, and one of the prime benefactors of humanity.

² Virchow's Archiv, Bd. cclii. Julius Springer, Berlin.

¹ Bulletin Médical, Dec. 10th and 13th, 1924.

OVERCROWDING AND INFECTION.

THE medical officer of health for Sheffield, Dr. F. E. Wynne, regards the overcrowding in that city as more acute than in other urban centres. In the country generally, in spite of the admitted shortage, there was, on the evidence of the Registrar-General, an actual increase between 1911 and 1921 in the number of rooms per person, whereas in Sheffield there was a decrease of 0.04. Much of the worst overcrowding occurs in sublet houses or houses let in lodgings. It is, he thinks, probably unequalled since the 'forties of the last century, and in a paper which he read before the Epidemiological Section of the Royal Society of Medicine on Jan. 22nd Dr. Wynne discusses whether the "frightful influence" of overcrowding, as feared by Lord Shaftesbury and Cobden, still holds in the same measure. Some 40 years ago Dr. J. B. Russell¹ was able to demonstrate a high degree of correlation between the incidence of zymotic disease and overcrowding, the rate per 100,000 of population being 478 in 1-2 roomed houses, 246 in 3-4 roomed houses, and 114 in houses of 5+ rooms. Dr. Wynne has made an analysis of the incidence of scarlet fever and diphtheria in Sheffield according to the number of rooms available, and although the figures are not strictly comparable with Dr. Russell's, yet they seem to Dr. Wynne to justify the suspicion that overcrowding per se has become a less important factor in the spread of infectious disease than it was 40 years ago. In Dr. Russell's figures the increase in incidence of zymotic disease in the worst houses as compared with the best is 419 per cent. In the Sheffield figures, which we reproduce here, the increase is 37 per cent. in the case of scarlet fever and 87 per cent. in the case of diphtheria.

Table showing Incidence of Scarlet Fever and Diphtheria in Sheffield under Different Housing Conditions During the Year 1923.

Invaded households. (I.H.)	Total occupants.		Cases under 15 years of age.	Attack-rate.	
	All ages.	Under 15 years of age.		Per 1000 at all ages.	Per 1000 under 15.
<i>Scarlet Fever.</i>					
I.H. with less than one person per room	1,324	636	342	258	538
Total H. with ditto	145,724			2.35	
I.H. with one or two persons per room	3,694	1784	700	189	392
Total H. with ditto	275,938			2.54	
I.H. with more than two persons per room	1,279	677	186	145	275
Total H. with ditto	57,738			3.22	
<i>Diphtheria.</i>					
I.H. with less than one person per room	367	147	91	248	619
Total H. with ditto	145,724			0.62	
I.H. with one or two persons per room	1,302	615	232	178	377
Total H. with ditto	275,938			0.84	
I.H. with more than two persons per room	492	264	67	136	254
Total H. with ditto	57,738			1.16	

The figures given as the total occupants living under the different degrees of density of occupation in the city represent private families, and are approximate only, exact figures not being available in the Census report for 1921.

The total number of persons in private families was 479,400 (before extension of city), and the total population was 490,639.

Dr. J. Macmillan reported similar increased figures for Woolwich in his annual report for 1923. Should these figures bear criticism, and Dr. Wynne thinks they will, the explanation may be sought either in reduced virulence of the infecting agent or in increased

immunity of the individual attacked. After referring to the remarkable recent decline in the severity of scarlet fever and of small-pox and the practical elimination of enteric fever, Dr. Wynne expresses his belief that there are variations in the infectivity of many pathogenic organisms which make for a lessened incidence of disease quite apart from environmental conditions. He holds that the non-existence of destitution has removed one of the predisposing causes of infection; during all the post-war period of dislocation in trade and of unemployment everybody has been fed, and among the wage-earners and the unemployed fewer people (we are here quoting Dr. Wynne's words exactly) have been overfed. Enforced economy, he thinks, has probably a valuable effect on the selection of dietary in humbler households, and he finds some evidence that the work of Hopkins and Mellanby is percolating through various health agencies to produce a practical effect on the habits of the poorest.

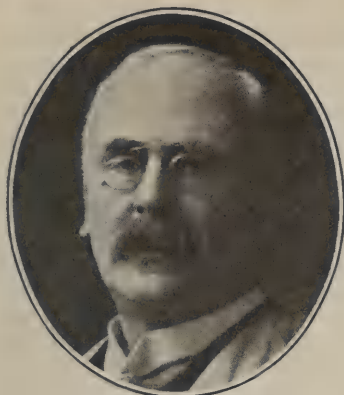
INTERNATIONAL CONGRESS OF RADIOLOGY.

UNDER the joint auspices of the Electro-Therapeutics Section of the Royal Society of Medicine, the Röntgen Society, and the British Institute of Radiology, a Congress of Radiology will be held in London from July 1st to 4th next. The object of this preliminary congress is to bring together radiologists from all parts of the world to discuss subjects of interest, and to secure the formation of a comprehensive international committee and the establishment of a full international congress to be held at stated intervals in different countries. Physics, electro-therapeutics, and allied subjects will be included in the scope of the Congress, to which radiologists from all countries have been invited. Radiological and electro-therapeutic societies are being asked to send approved representatives who shall be eligible to serve on the proposed international committee. In connexion with the Congress there will be exhibitions of apparatus and of radiograms, including dental radiograms. In the week following the Congress visits to other centres of interest will be paid. Arrangements are being made through an agency for travelling facilities and hotel accommodation. The President of the Congress will be Dr. C. Thurstan Holland, the Secretary-General, Dr. Stanley Melville, while Dr. J. E. A. Lynham and Dr. John Muir act as joint secretaries of a large organising committee under the chairmanship of Dr. Robert Knox. All papers intended to be read at the Congress must be sent, not later than May 1st, to the secretary-general, at the British Institute of Radiology, which will be used as the administrative centre for the Congress. Further particulars will be announced in due course. Correspondence and suggestions on any matter in connexion with the Congress are invited, and should be addressed to the Secretaries, International Congress of Radiology, care of the British Institute of Radiology, 32, Welbeck-street, London, W. 1.

It is with regret that we have to record the death of Dr. N. Kulchitsky, lecturer in histology at University College, London, which occurred on Saturday, Jan. 31st, as the result of a distressing accident in the new anatomy building of the College in Gower-street, three days previously. Dr. Kulchitsky, who was for some time professor at the University of Kharkov, Russia, was appointed lecturer in University College three years ago.

CHADWICK PUBLIC LECTURES.—A lecture, illustrated by epidiascope, on International Hygiene will be given by Prof. E. W. Hope in the house of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Feb. 16th, at 5.15 P.M. Sir James Crichton-Browne, F.R.S., will preside. Admission is free.

¹ Quoted by Sir Arthur Newsholme in "Elements of Vital Statistics," third edition, pp. 162-3.



SIR GEORGE BERRY
(Combined Scottish Universities).



CAPT. WALTER E. ELLIOT
(Glasgow: Kelvingrove).



COL. F. E. FREMANTLE
(Hertford: St. Albans).



DR. L. HADEN GUEST
(Southwark, North).



SIR HENRY JACKSON
(Wandsworth, Central).



DR. E. G. GRAHAM LITTLE
(London University).



SIR RICHARD LUCE
(Derby).



DR. ALFRED SALTER
(Bermondsey, West).



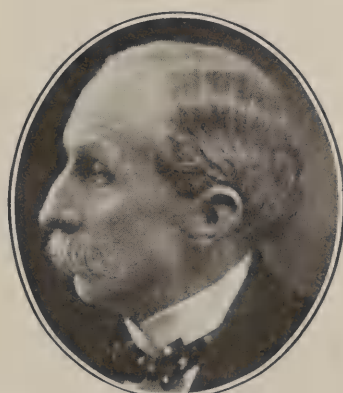
DR. DRUMMOND SHIELS
(Edinburgh, East).



PROF. THOS. SINCLAIR
(Queen's University, Belfast).



DR. THOS. WATTS
(Manchester: Withington).



DR. J. H. WILLIAMS
(Carmarthen: Llanelly).

MEDICAL MEMBERS OF THE HOUSE OF COMMONS.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CVIII.—THE TREATMENT OF ANAL FISSURE.

ANAL fissure, though one of the minor and common rectal conditions, can cause an extraordinary amount of suffering. The prolonged periods of pain, and fear in anticipation of succeeding actions of the bowels, combine to produce a real vicious circle.

It is now generally agreed that fissure results from over-distension of the anal canal during defaecation: a split occurs, usually posteriorly, and if the injury is repeated the tear tends to become deeper and indurated with increasing chronicity. The view originally advanced by Sir Charles Ball that fissure results from tearing down of an anal valve is probably only true in a very small percentage of cases: most anal fissures are at the extreme lower end of the anal canal well away from the line of the anal valves, and, moreover, one sees numbers of cases of enlarged anal papillæ which have not caused fissures.

In women, about 5-10 per cent. of fissures occur anteriorly. There is a troublesome class of case in which multiple superficial fissures tend to occur; this seems to be due to abnormal narrowness of the anal canal, whether as a congenital defect or resulting from contraction of scar-tissue.

Before deciding on the line of treatment to be applied in a given case, it is essential (1) to decide if the fissure is a simple one, (2) to ascertain the local characteristics of the fissure, whether shallow or deep, soft or indurated, and (3) to exclude any other rectal lesion.

Simple fissures form the very large majority of cases seen. The differential diagnosis is not difficult. A tuberculous ulcer has the characteristic discoloured undermined edge of tuberculous lesions elsewhere, and on close examination may be found to be spreading up into the anal canal and down to the peri-anal skin in a manner quite foreign to the chronic simple fissure. Anal fissures occurring in syphilis are generally multiple and associated with condylomata; there will probably be other evidence of the disease and the W.R. will confirm the diagnosis. It may be difficult to differentiate a squamous carcinoma arising in the anal canal in an early stage from a very indurated simple ulcer; in a suspicious case in an elderly subject a section for microscopic examination should be taken through the margin of the ulcer.

Indurated Fissures.—The determination as to whether the fissure is or is not indurated is of vital importance from the point of view of treatment. Induration is a mark of the chronicity of the lesion and a sign that inflammation is taking place around it. The characteristic smooth inflamed tag at its lower margin is due probably to infection and lymphatic stasis, and offers an insuperable barrier to effective drainage of the ulcer apart from operative treatment. A large majority of anal abscesses are found to originate in a chronic fissure which has pocketed; a submucous abscess forms and makes its way externally, pointing just outside the anus. If the fissure is not palpable with a finger, it is clearly a superficial lesion which may heal under palliative treatment.

Associated Rectal Lesions.—It should be the rule in every case of fissure to make a thorough digital examination of the rectum as soon as practicable so as to ascertain whether the fissure is the only rectal lesion. Sometimes it may be impossible to do this except under general anaesthesia, but in most cases, by adopting the methods presently to be described, it will be found possible, either immediately or after a short course of palliative treatment, to pass a finger and perhaps a speculum into the rectum. It is essential to discover if associated conditions such as piles, polypi, proctitis, &c., are present before embarking on any set line of

treatment. The most important condition to exclude is the presence of a carcinoma. The following case is an example of the difficulty in diagnosis in certain cases without general anaesthesia:—

A man, aged 29, came up to St. Mark's Hospital with a typical history of severe pain on defaecation accompanied by slight bleeding. On examination a dorsal fissure could just be made out but was so painful that digital examination of the rectum could not be effected; palliative treatment was given. A week or so later he attended again and was found to have developed an ischio-rectal abscess. He was recommended for admission and was shortly after operated upon under general anaesthesia: when a finger was passed into the rectum the presence of the fissure was confirmed, but above it there was an extensive inoperable fungating growth which was proved in due course to be a carcinoma.

Method of Examination.

Inspection of the anus may show the characteristic oedematous "sentinel" pile, and on separating the anal margin the lower extremity of the fissure may be seen; the stretching may cause it to bleed slightly. Associated conditions such as external piles, evidence of fistula, &c., will be noted.

Palpation of the fissure and digital examination of the rectum should then be attempted; sensitiveness in a very painful fissure can be reduced by local application of a 5 per cent. solution of novocaine, by insufflation with anæsthesin (Ritser) or by injecting its base with 5 per cent. novocaine. The finger, well greased with vaseline and with the pulp facing the fissure, is then passed, and pressure made on the surface remote from the fissure. It should then be possible to differentiate a recent superficial abrasion from a chronic indurated and possibly infected fissure, and also to locate palpable rectal lesions such as foreign bodies, and polypi and other tumours.

Finally, if possible, a small tubular speculum ($\frac{3}{4}$ in. diameter) should be passed and the lower rectum examined. As the speculum is withdrawn the fissure will come into view and very often fibres of the external sphincter muscle will be seen transversely at its base. Sometimes a bead of pus is seen emerging from the fissure: this indicates most certainly that pocketing has occurred and that a submucous abscess has formed, and is a definite indication for operation.

Palliative Treatment.

Only superficial non-indurated fissures can be expected to heal under palliative treatment; the same treatment should, of course, be given to indurated fissures as a temporising measure pending operation, and if for any reason operation is contra-indicated.

(a) *Relief of Constipation.*—Constipation must be relieved and the motions rendered soft and regular. An initial dose of castor oil, 1 oz., is often advisable, followed by paraffin liq., $\frac{1}{2}$ oz. t.d.s., with senna or cascara at night, p.r.n. It is a good plan to instruct the patient each night to run into the rectum through a small rubber catheter and funnel about 3 oz. of warm olive oil; this may be retained all night with the help of a pad of wool and a T-bandage, and will render the morning stool smooth and painless.

(b) *Relief of Pain and Sphincteric Spasm.*—General treatment in the way of pot-bromide, gr. xx. t.d.s., with aspirin gr. x. nocte will be useful. Local treatment consists in the application of sedative ointments and suppositories. The following ointments are suitable for introduction after each action of the bowels either digitally or by means of an ointment introducer attached to a collapsible tube: Bismuth subnitrate, $\mathfrak{z}$ ii.; cocaine, gr. x.; lanoline, $\mathfrak{z}$ i., or hydrarg. subchlor., $\mathfrak{z}$ ss; pulv. opii co., gr. x.; extract belladonna, gr. v.; lanoline, $\mathfrak{z}$ i. At night a suppository containing extract of belladonna gr. 1 may be inserted, with addition to it of morphine acetate gr. $\frac{1}{4}$ if pain is severe.

(c) *Local Applications* at intervals of a week or two may be given to the fissure through a speculum to stimulate healing and form a protective covering to the raw surface. Pure ichthyol may be applied on a glass rod, or the fissure touched with silver nitrate or nitric acid (Hilton in "Lectures on Rest and Pain").

Operative Treatment.

Thorough preparation is most important seeing that the majority of these cases are very constipated, often with hard scybalæ impacted in the rectum. Castor oil, 1 oz., is given two nights before operation, followed by a dose of salts in the morning. On the evening before the operation a soap-and-water enema is given, and an astringent mixture by the mouth containing tincture of opium (℥ x.) and tincture of catechu (℥ss). A half-pint rectal wash-out of plain water is administered on the morning of operation and is repeated if necessary. The usual hypodermic injection of morphia and atropine is given before operation.

The operation of incision of a fissure is designed simply to give drainage. After careful antiseptic preparation with ether soap and lysol solution (3i. to Oi.) an incision is carried from the upper end of the fissure out on to the peri-anal skin to the extent of about 1-1½ inches. The safe rule in this connexion is to make the external part of the incision double the length of the internal. A few of the fibres of the external sphincter may be divided, if it seems necessary, to secure adequate drainage. Complete division of the sphincter is never required. The lateral skin margins are then excised, including the sentinel tag, leaving a flat oval-shaped wound. Any accompanying rectal polypi, hypertrophied papillæ, or piles are removed at the same time. Some sterilised vaseline is injected into the rectum: a piece of drainage tubing and dressing with dry cotton-wool complete the operation. The wound is left to granulate. It is

unwise to attempt a primary suture of the wound as the results of this operation are most uncertain.

After-treatment.—Careful attention is given to local cleanliness. The bowels are opened on the third day and after this the patient should have a warm bath twice daily. The wound is dressed with flat cotton-wool swabs moistened with dilute perchloride or carbolic lotion; they should be inserted so as to keep the skin margins separated until healing takes place, which should be in about three weeks. If healing is slow, brilliant green or scarlet red ointment may be applied. As an alternative to general anæsthesia, operation may be performed under spinal, sacral, or local anæsthesia. If the last method is decided upon the external sphincter should be put out of action by injecting into it on each side of the mid-line posteriorly about 5 c.cm. of 2 per cent. novocaine. The perineal branch of the fourth sacral nerve and part of the inferior hæmorrhoidal nerve will be blocked and a good degree of relaxation obtained. The operation can then be continued in the usual way after infiltration of the operation area.

The old operation of "stretching" the sphincter is now rarely performed. It is unsuitable for a chronic fissure and in a recent fissure a deep laceration is liable to occur—moreover, the sphincter is liable to be torn rather than stretched. The object of operation in a chronic fissure can be summarised in the one word—drainage.

W. B. GABRIEL, M.S. Lond., F.R.C.S. Eng.,

Assistant Surgeon, St. Mark's Hospital; Surgical Registrar, Middlesex Hospital.

Medicine and the Law.

REX v. BATEMAN IN THE COURT OF CRIMINAL APPEAL.

IN the Court of Criminal Appeal on Feb. 2nd Dr. Percy Bateman was granted leave to appeal against his conviction for manslaughter at the Central Criminal Court on Dec. 9th, 1924, when he was sentenced to six months' imprisonment in the second division. The application was made on behalf of Dr. Bateman by Mr. Norman Birkett, K.C., with whom was Sir E. Marshall Hall, K.C., and Mr. Arthur Davies. The court was composed of the Lord Chief Justice (Lord Hewart), Mr. Justice Salter, and Mr. Justice Fraser.

The prosecution, as will be remembered, arose out of the death of Mary Anne Harding, a woman patient of Dr. Bateman, whom he attended in childbirth, having been called in by a midwife in consequence of complications having arisen, and who afterwards died. Facts not disputed by the defence were that the death followed and was due to the removal of the uterus of the deceased in the course of delivery by the accused, following a complex presentation, and that the accused took no steps to have his patient taken to a hospital until some days later; also that at the hospital she survived her removal by 30 hours. It was, however, denied by the defence that the avulsion of the uterus was caused by criminal negligence on the part of Dr. Bateman, and it was equally part of his case that the delay in removing the woman to the hospital had not accelerated her death or diminished her chance of recovery, and was not due to any desire to cover up his conduct. It was urged on his behalf that immediate removal in the condition in which she was would have been accompanied by grave risk of causing her death.

The matters formally stated by the appellant as the grounds upon which he desired to appeal were that the verdict was not in accordance with the evidence of the medical experts, that Mr. Justice Shearman had misdirected the jury on the law and on the facts, that evidence had been wrongly admitted, that the judge had dealt with matters which were for the jury to

decide, and that the verdict was against the weight of evidence.

Mr. Birkett began his argument with a brief statement of the facts bearing upon his application, calling particular attention, with regard to the question of removing the patient to a hospital directly her condition was realised, to the fact that she lay in a room on the fourth floor approached by a narrow staircase. He was arguing that there had not been shown at the trial that there was any negligence in the delivery of the child, when the Lord Chief Justice interposed, saying that there was evidence of pulling, and pointing out that, after it had been made plain that the uterus had come away with the placenta, the accused took no steps and had concealed the matter. With regard to this it was pointed out by counsel that the words admitted by the accused as having been said to the midwife were to the effect: "We had better keep this to ourselves and not tell the relatives," and that his only wish had been not to distress the relatives by informing them of what had happened. Mr. Birkett proceeded to argue that in summing up to the jury Mr. Justice Shearman had said that, in order to convict of manslaughter, there must be proof of gross and culpable negligence, without instructing the jury as to what, for the purpose of a criminal charge, was implied by the qualifications "gross" and "culpable." He referred to *R. v. Doherty* (16 Cox, 306), *R. v. Williamson* (3 C. & P. 635).

In *R. v. Doherty* (in which the charge arose out of a man having shot another with a revolver) Mr. Justice Stephen said (at page 309): "Manslaughter by negligence occurs when a person is doing anything dangerous in itself and conducts himself in regard to it in such a careless manner that the jury feel that he is guilty of culpable negligence and ought to be punished." As an illustration Sir Fitzjames Stephen suggested that if a man performing a surgical operation, either because he lost his head or from forgetfulness, did something he ought not to do, or omitted something that he ought to do, there would be negligence, but that, if there was only the kind of forgetfulness common to everybody, it might furnish a ground for claiming civil damages, but not for making a criminal charge. It would be otherwise if, for example, the surgeon went to attend the case when drunk, and through his drunkenness caused the loss of his patient's life. In *R. v. Williamson* a

man-midwife was on trial for manslaughter having torn away part of the prolapsed uterus of a patient supposing it to be part of the placenta, through which the patient had died. Lord Ellenborough told the jury that in order to substantiate the charge of manslaughter, the prisoner must have been guilty of criminal misconduct arising either from the "grossest ignorance or the most criminal inattention." Lord Ellenborough added: "It would seem that, having placed himself in a dangerous situation, he became shocked and confounded. I think that he could not possibly have committed such mistakes in the exercise of his unclouded faculties, and I own that it appears to me that if you find the prisoner guilty of manslaughter, it will tend to encompass a most important and anxious profession with such dangers as would deter reflecting men from entering into it."

Mr. Birkett submitted that there had been no evidence of negligence at the delivery of the deceased, and that the case should not have been left to the jury.

Their Lordships having consulted, the Lord Chief Justice intimated that counsel, whom he complimented on his able argument, had shown that there was a substantial question to be argued, and that the court would give leave to appeal. Mr. Birkett then referred to the great importance of the case to the medical profession, and to letters that had appeared in THE LANCET since the trial, which suggested that fresh evidence might be available as to the medical questions raised.

Lord Hewart said that if, in addition to the evidence taken at the trial, the appellant's counsel brought fresh evidence to the Court of Criminal Appeal, the question whether it should be admitted might then be decided according to the course taken by the appeal.

It is presumed that argument on the appeal will be heard on Feb. 9th or on some subsequent Monday.

Special Articles.

ON THE ABSENCE OF PROGNOSTIC CRITERIA IN CHRONIC INFLAMMATION.

BY MARTIN O. RAVEN, M.D. OXF., M.R.C.P. LOND.,
MEDICAL OFFICER, ST. MARY'S HOME, BROADSTAIRS.

THERE is a need of criteria in determining the course and prognosis of chronic inflammatory disease. It will generally be found, from the perusal of text-books and other general works on medicine, that in the case of those diseases which spread themselves out over periods of months and years, the question most nearly affecting the patient, namely, "When will he be well again?" or, more technically speaking, the questions of the course and prognosis of these diseases—these questions are left to the imagination of the reader for answer, aided by the preceding pages devoted to symptomatology and diagnosis. Here and there certain symptoms and signs are mentioned as arising during the course of chronic inflammatory disease—e.g., albuminuric retinitis and pulsus alternans, which are pointed out as unfavourable omens, but the general result of an outlook which omits a detailed analysis of the time element in disease is necessarily a hand-to-mouth treatment and a day-to-day prognosis.

Absence of Outlook.

Now the reason for this existing outlook or absence of outlook is not very difficult to discover: patients suffering from chronic disease often change their abode and change their medical attendant and thus make continuous observation difficult, and a clear image of the course of a chronic inflammation can only be built up by continued observations made upon slowly-altering physical signs: such images

are too likely to be overshadowed by those of more acute diseases unless studiously preserved, and the result is that there are very few of them presented to the readers of medical text-books to-day. That there are exceptions to this rule, especially in tuberculosis, will be emphasised later.

Now, chronic inflammatory diseases may conveniently be divided into two groups of unequal size: (1) A smaller group, in which we have direct medical or surgical means of attacking a known cause of the inflammation: examples are syphilis, chronic appendicitis, and many cases of tuberculous adenitis of the neck. (2) A far larger class, in which the inflammatory agent may be either unknown or known, but in which only indirect treatment is possible. In these cases we can only place the patient in such a favourable environment as, we hope, will enable the natural forces of the body to overcome the inflammation. The following examples may be given: Most forms of tuberculosis; chronic bronchitis; hyperplastic colitis; fibrosis of the lung; carditis following upon rheumatic infection; chronic nephritis, parenchymatous and interstitial; and chronic mono- and poly-arthritis. In most of the above diseases it is impossible for the physician, in the present state of knowledge, to define a course or give an approximately accurate prognosis in a given case: indeed, the only cases where accurate definition of course and prognosis is forthcoming are usually so advanced as to make a favourable outlook impossible.

Tuberculosis an Exception.

In tuberculosis, however, we have a noteworthy exception to this general position. So much systematised work has been done both in phthisis and in surgical tuberculosis of childhood, that it may be said that, given the coöperation of the patient and the patient's family, and given sufficient time, a favourable result may be confidently anticipated in the majority of early cases: further, a length of time, generally of several years' duration, may be laid down, during which strictly systematised and graduated treatment must be adhered to, and moreover certain criteria may be defined, like milestones along the course of recovery, indicating the amount of retrogression of the inflammation and enabling appropriate modifications of treatment to be made. As examples of such criteria, we may take the cessation of sustained pyrexia after exercise in phthisis, and in tuberculous hip-joint disease the disappearance of the reflex contraction of the psoas muscle produced by eversion of the lower limb. These and other criteria mark the attainment of certain stages towards recovery, and have enabled a minimum time-limit for the whole illness to be laid down for the benefit of all cases of these diseases. Where, in tuberculosis, no such systematic management is adopted, the prognosis must be considered grave, and if a certain number of cases appear to effect a more or less spontaneous recovery, such recovery is the result only of the fortuitous interaction of unknown factors and reflects no credit upon the management of the patients.

This haphazard condition of affairs, which necessarily still exists in many thousands of cases of tuberculosis, prevails in a still higher proportion of other chronic inflammatory diseases, in which little or no systematic investigation into their course has been made. An enormous proportion of patients suffering from them drift about dependent for treatment upon symptoms and signs of very doubtful significance, and it may be doubted whether under such conditions the benefit to one individual of a spontaneous recovery is not outweighed by the danger to others from the undue optimism which it may engender in the mind of the medical attendant. The rheumatic diseases of childhood, which, as is still hardly comprehended, stand easily second to tuberculosis in destroying and shortening life in childhood and later life, are the most depressing example of a national disease which takes an enormous toll of life, because the patients necessarily set out upon a road of unforeseen pitfalls, leading too often to a disastrous end. The small

amount of systematic work which has hitherto been done in this disease points tentatively to the need to remove the patients from the environment in which they first became infected into fresh air for periods of at least six or eight months, and to secure for them a large measure of physical rest, if grave consequences to the heart are to be avoided. Further, during this course of treatment, certain criteria may be defined, marking the arrest of active infection of the myocardium and endocardium: the chief of these are disappearance of anæmia, the slow return of the pulse to normal, often associated with a return of its normal respiratory variation, and stabilisation of the physical signs given by the heart.

Definition of a Minimum Normal Course.

The subject may be opened further: is it not likely that systematic investigation would discover that in the case of other chronic inflammatory diseases there is a minimum normal course which may be anticipated provided that time and the most favourable environment possible be allowed to operate on behalf of the patient? Might not in them, also, certain criteria be elicited, defining the attainment of certain stages on the road to recovery? In tuberculosis and rheumatic disease, not until the constitutional signs have disappeared and the physical signs of the disease have ceased to vary, can it be said that a quiescent stage has been reached and that fairly complete rest may be allowed to be slowly modified; and it would seem that these simple principles may well be applied to other forms of chronic inflammation. Constitutional signs will, by common consent, always necessitate rest and care in every case, but physical signs are harder to observe accurately over long periods of time; the following are tentatively suggested as examples and as possibly able to furnish evidence of the cessation of active inflammation:—

1. *Nephritis*: Constancy in the amount of albuminuria on a constant diet; and constant blood-urea over a length of time.
2. *Colitis*: Cessation of mæna and diarrhoea.
3. *Arthritis*: Restoration of cleaner outlines of joint cartilage in radiograms.
4. *Fibrosis of Lung*: Quantity of morning sputum constant; X ray findings and clinical signs constant in three examinations spread over six months or more.
5. *Rheumatic carditis* (already referred to): Loss of excitability and rapidity of heart beat; stabilisation of physical signs of the heart; return of the respiratory variation of the pulse.

In these diseases, exactly what constitutes the most favourable environment for the patients is a question that only systematised investigation over lengths of time would show: hygienic conditions, however, especially as regards sunlight and fresh air, are of obvious importance; adequate warmth is essential in most cases, and, apart from colitis, a liberal diet is indicated. The requisite amount of rest is a far more debatable point, but in both tuberculosis and rheumatism it will be found that excessive activity is a great cause of relapse and recrudescence. Hence it seems that, while due consideration must be given to the view that the body to be healthy must be active, yet that activity should be so carefully graded as to represent in effect a gradual modification of the amount of rest considered necessary at the beginning of treatment. According to these principles, cases of carditis and nephritis should be allowed to get up little by little after a prolonged period of bodily rest; in colitis adequate rest is secured to the bowel by a reduction to a minimum of cellulose and other indigestible material; while in chronic arthritis a normal position of the joint may only be obtainable by some weeks of weight extension, following on which a slow return to normal activity may be allowed.

The course of chronic disease is a subject over which there is at present much obscurity. Prof. Hugh MacLean states in his monograph on Glycosuria and Diabetes (p. 157): "There are few, if any, chronic pathological lesions which tend to cure, no matter what the treatment, when they have been established

for a year or two." But, if once it can be shown that in a given disease there is a tendency towards a certain course being run (as in tuberculosis and, perhaps, rheumatic disease of childhood), so long as environment is favourable and established early: then the questions of prognosis, which are those which most nearly affect the patients, stand in some chance of being answered.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 188.)

THE Commission resumed its sittings on Jan. 26th. the Chairman of the Commission, Mr. H. P. Macmillan, K.C., presiding.

THE CASE OF MR. HOLMAN.

The case of Mr. Holman was further considered. Mr. Stewart again appeared for Mr. Holman, Mr. Dickens, K.C. (instructed by the Medical Defence Union as to five of its members), and Mr. Croom Johnson watched the proceedings on behalf of certain doctors concerned and Moorcroft Mental Hospital.

The Chairman said Mr. Holman had addressed a most improper letter to the Commission, casting reflections on a doctor who was to be examined, and he understood numbers of other letters had been received. That letters should be so addressed, or to any parties in the case, was most improper. The Commission wished to learn the reasons in this case for issuing an urgency order, instead of the usual, slower, reception order; also the manner and circumstances of the certification. This was mainly to see whether there were at present adequate safeguards against wrongful certification. Also the treatment in Moorcroft would be inquired into.

Examination of Sir Maurice Craig.

Sir Maurice Craig was called and sworn and examined by Mr. Dickens, K.C. He said he first saw Mr. Holman in January, 1915, in consultation with his own doctor, when a history of the condition was given him, from which it seemed that several members of the family were of unsound mind. He was stated to have been very excitable and talkative for two years, and to have been a good deal worried by the war. At one place he had tried to throw himself out of a hotel window, and later he cut himself, and eight persons were required to hold him down. At certain periods he thought he was liable to arrest and execution as a German spy, but at other times he seemed normal. While in the nursing home he never appeared to have attempted self-injury. He at this time lost a stone in weight and said he felt physically wrong. When Sir Maurice Craig saw the patient at Dr. Dempster's home the pupils were normal, but soon afterwards changes took place in the physical signs. In reply to a question, Sir Maurice Craig said he always took the human side and did his best to avoid sending people to a mental hospital. The patient's wife showed fear of having him back at home again. He was said to have got into bed on one occasion with his wife while he was wearing his boots, hat, and overcoat, was afraid of being in enclosed spaces, and, though married, showed much interest in a matrimonial agency. He wandered from one subject to another in conversation, his pupils were not reacting well to light, and his knee-jerks were sluggish and unequal. At that time Sir Maurice Craig had no reason to suspect syphilis. Dr. Adler found Wassermann reaction of the blood doubly positive, and that of the cerebro-spinal fluid also positive. There was a high lymphocytosis, about 86 per cent., indicating something pathological.

The witness was closely questioned concerning the significance and reliability of the Wassermann test and the usual behaviour in general paralysis of the insane. He said the result of the Wassermann would

not have influenced his view as to Mr. Holman's mental condition, but it afforded a valuable clue to the condition he was suffering from. He also stressed the periods of remission, during which the patient might behave in a more or less normal way; also the fact that some cases of G.P.I. did not progress beyond a certain stage.

As to why an urgency order was used, Sir Maurice Craig said the patient was at Dr. Dempster's house, and there was no power of restraint. Mr. Holman threatened to leave by himself, and the likelihood was that if that happened he would soon get into the hands of the police, as he was not in a fit state to take care of himself. Sir Maurice Craig tried once more to avoid sending the patient to a mental hospital by drawing up and getting signed by Mr. Holman an undertaking to carry out certain promises, but this was broken, simply, the witness considered, because he was unable to keep it. A certificate had already been obtained for his detention, but it was not used. Wishing to call in somebody to whom the case was quite new—Dr. Stoddart having signed the unused certificate—he asked Dr. Percy Smith to see the patient, and Dr. Smith had a long interview with him alone. What Sir Maurice Craig saw and knew of the patient certainly justified his detention in a mental institution.

Mr. Stewart commenced his cross-examination by asking as to certifying doctors' fees. Asked why he did not tell the patient he was suspected to be suffering from syphilis, Sir Maurice Craig said that in the circumstances he would not do it; a man disturbed in mind might easily have been made worse by such a remark. If syphilis were present in a patient in the primary infective stage it would be the duty of the medical man to inform the patient and ensure that others were not contaminated. Mr. Stewart questioned the witness to show that Mr. Holman having recovered, he could not have had G.P.I.; and Sir Maurice Craig said he had known a captain with the disease take his ship to Australia and back during a remission. At a subsequent stage the Chairman expressed regret that the opportunities Mr. Stewart was enjoying in cross-examining the witness were being largely wasted by this covering up with irrelevant matter, apart from the time of the witnesses and others being valuable. Sir Maurice Craig agreed that no one of the symptoms and things observed and stated on the certificate would, of itself, constitute a sufficient reason for detention as of unsound mind.

Mr. Charles R. Steel, a solicitor, spoke to visiting Mr. Holman at Moorcroft in the interest of relatives and executing a codicil revoking Mr. Holman's will in 1917. He did not think Mr. Holman was of unsound mind when he saw him at Moorcroft. Mr. Holman urged him to procure his release, but he took no steps to that end as he did not want to set his opinion against that of the doctors.

Examination of Dr. Stoddart.

Dr. W. H. B. Stoddart said he first came into contact with Mr. Holman in 1916, and produced the notes he made of his condition at the time, taken at the home of Dr. Dempster at Croydon. The question was as to whether he was in a condition to go unaccompanied to Brighton, as he intended doing, and the witness considered he should not go anywhere without proper supervision and control. He concluded that the patient had G.P.I., but it was an atypical case. The urgency order was rendered necessary by the patient's determination to leave and the fact that there then existed no power to detain him.

The witness was cross-examined as to his recently modified views in favour of Freudism, and admitted that he now looked at the pathology of mental disorders from a somewhat different angle. But this did not change his opinions on the question whether a given patient was certifiable. He added that there were impressions derived from a long interview with a patient which could not be adequately represented on the form of certificate. Answering the allegation, put

to him by Mr. Dickens in re-examination, that he certified because he was told to do so, Dr. Stoddart said no doctor would do that; all he was asked was his opinion, and he formed a very firm opinion.

Dr. R. J. Stillwell, of Moorcroft Mental Hospital, said this patient was associated there with patients of his own class and social standing, and he was one of the most talkative and one of the least normal of the whole of them.

On Jan. 27th Mr. Holman's case was further inquired into.

Dr. Percy Smith said he saw Mr. Holman in December, 1916, and the information supplied to him by three doctors added to what he himself found on examining the patient led to his decision that Mr. Holman was insane and that he should not longer remain at Dr. Dempster's house. Answering Mr. Stewart in cross-examination, Dr. Percy Smith said that within the limits of safety he would do his best, as he always did, to avoid actual certification. He did not give any warning to the patient that what he said might be material to justify his detention, it would have been detrimental. He had no regret for having certified Mr. Holman as insane.

Dr. Porter Phillips, medical superintendent of Bethlem Hospital, said Sir Maurice Craig asked him to see Mr. Holman. He did so, and found him restless, excited, and very talkative; the latter trait seriously interfered with questioning. The pupils were unequal, the reflexes exaggerated, and there was marked tremulousness. He was, in witness's opinion, of unsound mind. The patient said he was willing to go to a home, mentioned by the witness, for treatment, and it was decided to take advantage of this willingness to transfer him to Moorcroft, and this was done. It certainly was not a trap.

The Chairman intimated that there would be no need to call Dr. R. H. Cole, who was in attendance, as sufficient evidence had been already taken.

Evidence of the National Society for Lunacy Reform.

Mr. Montgomery Parker, chairman of the National Society for Lunacy Reform, was then called and examined. He urged that voluntary hospitals should be at once provided with a State subsidy and should be under the control of the Ministry of Health, through local authorities, and free of association with the Board of Control or other department of the Government. Also, general hospital wards should be adapted for dealing with incipient mental cases, and those with temporary derangement associated with an acute physical condition. The Society also wished for an arrangement in infirmary wards which would permit of a more efficient classification of cases and their observation. He further asked that, on the legal side, methods of certification and the issue of reception orders should be unified, and pressed for removal of distinctions between private and rate-aided patients. There should be adequate representation of the patient at all stages. Improved methods of curative treatment and better environment of patients, where necessary increasing the nursing and other staffs to ensure this; a statutory requirement on all institutions to appoint a body of authorised visitors, independent of lunacy administration, and licensed; and the introduction of the judicial authority within asylums were further points submitted. The Society also favoured the independent access of medical men to patients. The senior medical officer of an institution should not, the Society considered, be charged with administrative duties. After discharge there should be an extension of opportunities and facilities for after-care.

On Jan. 28th Mr. Parker's examination was continued.

The Chairman said that when a patient recovered from a mental illness it was difficult to determine the exact date of convalescence, and in many cases it would not be wise at once to restore the patient to his former conditions of life. One solution was to make the patient a voluntary boarder when this stage of progress had been reached; another was to use the

parole system, though this would mean some contravention of the law, as a patient on parole had not the same freedom as a sane person.

Mr. Parker said he would make such a patient a voluntary boarder; he realised the necessity of inquiring as to a patient's home conditions before returning him to them. For rate-aided patients the only course seemed to be to send them back to the infirmary. His Society was anxious that a more judicial character should be given to all the proceedings prior to detention, and there should be the right of cross-examination at the inquiry, and the power to call rebutting evidence.

The Chairman pointed out that a similar requirement was urged by the British Medical Association.

Mr. Parker said his Society did not favour doctors passing on their responsibility; what was required from the medical man was a medical report, for which he would be held responsible.

In answer to the Chairman, Mr. Parker agreed there might be cases in which it would be inexpedient to disclose the medical opinion to the patient; if the judicial authority functioned efficiently, the proposals of the National Society for Lunacy Reform would be modified to that extent. He did not think disclosures in regard to lunacy were any more serious than those in divorce, and residence in a mental hospital would become known generally, sooner or later. One strong recommendation was that the patient and his friends should know what steps were open to him to defend himself. Also statements made on hearsay should be brought to the notice of the patient, as they might be susceptible of a reasonable explanation.

Lord Russell pointed out that if the patient were of unsound mind his denial or explanation could not be accepted, and the witness said he meant that a statement of a patient, for instance, should not be regarded as a delusion until it had been investigated, and hearsay should not be accepted without the same process of checking.

The witness quoted a case in which an alleged lunatic insisted on her own moral unworthiness, and it appeared clear that she had a strong religious bent and displayed that moral subjugation which was a condition precedent to Divine pardon. He thought it very necessary that, except on an emergency order, the judicial authority should see every patient.

The Chairman said that point need not be laboured, as there had been a complete consensus of testimony on it. If the judicial inspection was efficient, not perfunctory, he did not see that two medical certificates were necessary; he would be satisfied with the power to call in a second doctor if required. This, he hoped, would be a deterrent to an inexperienced man in lunacy acting in this regard. The certifying doctor should see the patient a second time—i.e., with the justice after he had certified him—and could be required to explain any ambiguous statements on his certificate. The doctor should be able to give evidence on hearsay, as witnesses could not be brought for the purpose from any part of the country. At the second visit the doctor could usefully advise as to the institution the patient could be sent to. The magistrate could compel the attendance of relatives. He agreed that some statements about a patient's condition and prospects could not be made in the patient's presence; and the justice could not exercise discretion in the matter, as he would not know what statements were likely to be made.

Sir David Drummond questioned the witness as to whether he had any cases to bring in which it was alleged patients were wrongly certified, and Mr. Parker said there were cases in which the mental disturbance was of only short duration and the cases should not have been dealt with by certification. Sir David Drummond asked that certificates in one case might be brought in which this was alleged, and the witness promised to comply.

Another contention of the witness was that when a patient was capable of making rational statements an inquiry into his case should be conducted publicly, and Earl Russell asked whether it was really desired that

in addition to the relatives and other parties interested, the local reporter should be present, and serve up for the public all the medical and other details. The witness agreed there were difficulties surrounding this requirement, but such a condition as delirium in an acute physical illness, as in pneumonia, was an improper ground for certification. Earl Russell and the Chairman agreed. Finally, the witness said nothing was to be gained by publicity if the judicial authority could be relied on to function properly.

Mr. Parker said few of the public, and not many practitioners, seemed to know what rights a patient possessed under the Lunacy Act, and they were not in a position to secure a copy of the Act when required. There should be a copy of the Act in the possession of every medical officer of health, and it would be a valuable step to have printed for popular use on a card or in pamphlet form the main provisions of the Act in simple language.

The Chairman and Earl Russell agreed this would be a very important document to issue.

The remainder of the sitting was occupied with a discussion of Mr. Parker's proposals for greater liberty in the matter of correspondence for the patients. It was pointed out that in a number of asylums there were locked letter-boxes, and some—the great majority—of the letters written by patients were not fit for anybody to read, hence the censorship which was exercised. The witness considered that if letters were written making complaints, the writers were penalised.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

THE PROVISION OF MEDICAL BENEFIT.

THE official account of the Scope and Administration of Medical Benefit (Section C of the Appendix) was supplemented by the oral evidence of Mr. L. G. Brock, C.B., Assistant Secretary in charge of the division of the Ministry of Health administering the medical benefit provisions of the Acts, and by Dr. J. Smith Whitaker, the Senior Medical Officer of the Ministry concerned with this work.

Central and Local Administration.

The local administration of medical benefit is in the hands of committees, called Insurance Committees, set up for each county and county borough.

(Q. 897.) The statement gives the impression that these Insurance Committees have not much independent voice in making the arrangements for the provision of medical benefit in their respective areas. Is that the case?—A. That is so. . . . The medical profession at a very early stage insisted on central negotiation in regard to the settlement of the capitation rate, and even if it had not been [so], it would, I think, in practice have been quite impossible for Insurance Committees to carry on negotiations in their own areas and to make the sort of arrangements that were contemplated by the original Act with all Approved Societies.

Representatives of Insurance Practitioners.

(Q. 899, 900.) The body representing the medical profession with which the Ministry negotiate is the Insurance Acts Committee formed by the British Medical Association. Constitutionally it has the position requisite for doing so. In every insurance area there is a statutory body (the Panel Committee) elected to represent the insurance practitioners of that area. These Panel Committees, in conjunction with the Local Medical Committees set up under the Act of 1911, elect delegates to conferences held from time to time, and those conferences have since about 1915 recognised the Insurance Acts Committee

* In a previous article the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8.) References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

appointed by the British Medical Association as their executive body. The Insurance Acts Committee reports formally to the conference, the report is laid before all Panel Committees, and their delegates are instructed with reference to that report, so that the authority of the Insurance Acts Committee to represent insurance practitioners is constitutionally derived from the insurance practitioners by a direct chain.

(Q. 929.) Asked whether the consultation with the British Medical Association (or, in the case of chemists, with the Retail Pharmacists' Union) has had the effect of diminishing the importance of the local Insurance Committees, Mr. Brock said:—

I do not think it can be said to have diminished their importance because it is work which they never did. It has made them, I think, considerably less important than the framers of the Act contemplated that they would be.

Cost of Local Administration.

The total cost of insurance committees' administration in England and Wales is £360,000 per annum, or rather less than 5 per cent. of the cost of medical benefit. (Q. 914.) It includes the cost of day-to-day administration and the investigation of complaints; in the main it represents expenditure on the maintenance of various indexes which are necessary, firstly, to prove the title of the insured person to medical benefit; secondly, to attach him to a doctor; and, thirdly, to calculate what is the amount of work, or rather the number of patients accepted by a doctor, and therefore, what share of the total pool available to the area should be allocated to him.

Ready Access to the Insurance Committee.

On the question whether it would be more economical and equally efficient if, for instance, the work were done by county committees only, Dr. Smith Whitaker said:—

(Q. 928.) It is a great advantage in a fair-sized borough that you should have an official of the local committee to whom the insured persons and doctors and everybody can have free access. If you were to centralise the work too much—the actual administration of medical benefit, apart from book-keeping, and that kind of thing—you would not have that ready access which does a good deal to make the thing work smoothly. We should have more complaints if it were not possible for the insured person to go and talk things over with the clerk, and the clerk to talk things over with the doctor.

The "Representation" of Insured Persons.

Every Insurance Committee has a substantial medical element, but there is always a majority of representatives of insured persons.

(Q. 959.) When you speak of these people representing insured persons, they are really selected not by the members of the society, but by the Committee of Management, are they not?—A. I do not think the member of the society has any voice whatever in the election in most cases.

Panel and Local Medical Committees.

(App. C. 10.) The Act of 1913 made provision for the constitution of a statutory body in each area known as the Panel Committee, which is elected by the insurance practitioners in the area under approved schemes. It is representative of the collective opinion of the insurance practitioners in the area, and the Insurance Committee is required to ascertain through the Panel Committee the opinion and wishes of insurance practitioners on matters affecting the local administration of medical benefit. It is optional whether there shall also be a Local Medical Committee, and their functions are limited.

(Q. 961.) Could you tell us briefly what is the exact difference between the Local Medical Committee and the Panel Committee?—A. For practical purposes in the great majority of areas there is no difference at all.

Why the Benefit was Limited to General Practitioner Treatment.

(Q. 995.) In practice medical benefit has been limited to treatment of the kind which an ordinary general practitioner can properly render, and in the Regulations which have been issued under the Insurance

Acts and which govern the administration of medical benefit that interpretation has been followed.

(Q. 995.) Can you tell the Commission on what provisions of the Insurance Acts that view of the scope of medical benefit is based?—A. That view was based on the advice given to the Insurance Commissioners by their legal advisers. . . . If every doctor had a right to come on the medical list and every insured person had one, and not more than one, doctor, it seemed impossible to avoid the inference that the scope of medical benefit must be construed as being limited to services which were within the competence of the average general practitioner. Of course, that construction of the Act is admittedly inferential, but had the view taken by the Commissioners been open to question it could very easily have been challenged in the Courts. No attempt ever has been made to challenge it in the Courts. . . . [Further] it was felt that if all doctors were to receive the same rate of remuneration, that implied a uniform obligation, a uniform content of service, and that it would not be equitable to require one man, because of the accident that he possessed some special skill, to render a wider range of service than the rest of his brethren on the medical list.

(Q. 1001.) During the passage of the Bill of 1911 the discussions were influenced by the scope of the treatment provided by the old friendly societies. Usually that was treatment more limited than the general practitioner service provided by the Act—e.g., it was a local service and did not provide for the member when he left the area in which his club or society operated. (Q. 1004.) As to the possibility of including some kinds of specialist treatment and excluding others, the witnesses said that no warrant could be found in the Act for this course. It being a question of all or none, and having regard to the fact that the fund was limited and that insured persons could claim whatever the benefit was as a matter of right, the authorities concerned were justified on practical grounds in the course that they took.

Services Outside the Scope of the Contract.

These may be such services as dental treatment not ordinarily given by a doctor. (Q. 1006-9.) As to this, it was stated that a doctor finding a condition of ill-health due to defective teeth could only advise the patient to go to a dentist; if his suggestion were not carried out he must continue to do the best he can for the patient. (Q. 1010.) As to specialist services which an ordinary practitioner would not, as a rule, render, the position is as follows:—

If the patient desires that the doctor should render it, the latter must first of all explain that, in his view, it is outside the scope of the service he is bound to provide under his contract, but if the patient [still] desires that he should perform the service—for example, examination of defective eyesight, prescription for spectacles or something of that kind—he may undertake it and charge a fee. But in any such case he must, within two days after giving the treatment, furnish the Insurance Committee, on a form supplied by them, with particulars as to the service.

The onus is then thrown upon the doctor to show, if called upon, that it is a service not covered by the contract. The Local Medical Committee would first bring their medical opinion to bear on the question and at a later stage the matter may be referred by the Minister to referees. (Q. 1012.) Services are deemed not to involve the application of special skill and experience unless the doctor concerned proves either—

(App. C. 39.) (a) That he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; or

(b) that he has had special academic or post-graduate study of a subject which comprises the service rendered, and has had actual recent practice as aforesaid; or

(c) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

(Q. 1080-1096.) The fact that a particular service which an individual practitioner having special skill might be competent to render could be withheld unless the patient was prepared to pay for it, has given rise to criticism of the service. It was recognised in the early days of the Acts that the services which

insured persons could receive for uniform contributions would be a uniform benefit and that different obligations could not be imposed on different doctors having different degrees of skill. Further, it would not be doing a good service to the insured to try to hold that an operation or other special service which it was dangerous for a considerable proportion of general practitioners to undertake was within the obligation. As regards the widening of the obligation to include some specialist services and not others, the witness said :—

(Q. 1089.) I suggest that when you come to the consideration of the whole of this subject, you will find, as has always appeared to us, that there is no half-way house between the completion of the service, to include everything that can be done outside residential institutions, and the necessity of making the kind of distinction that we have felt bound to draw.

The question of charging fees for special services was sharply distinguished from charging for treatment within the panel obligation.

(Q. 1100.) There would be no scamping the panel patient because he did not pay extra fees?—A. No. I will not say that no individual doctor would do so, but he would be repudiated by his colleagues. No doctor would justify such a proceeding I am sure.

Number of Doctors Engaged in the Service.

(Q. 1042-1048.) It appears from the evidence that approximately two-thirds of the practising general practitioners are on the panel, the estimated number being stated as 12,000 out of 18,000. In the mainly industrial boroughs the number of doctors on the panel is nearly 100 per cent. This is so, for example, in Walsall, West Bromwich, Dudley, Burnley, Rochdale, and Wigan. When one comes to bigger cities, such as Birmingham and Sheffield, which both have medical schools, there is a larger proportion of consultants and of border-line men who are partly general practitioners and partly consultants. These do not tend to come on the panel. For Birmingham the proportion is 65 per cent., and for Sheffield it is 66 per cent. Taking the county areas the proportion is rather smaller. In Devonshire there are only 54 per cent., in Cambridge it drops to 41 per cent., and in Kent 61 per cent. In the purely industrial areas it is difficult for a man to make any kind of living as a general practitioner unless he does go on the panel. The percentage is much lower in places like Bournemouth and Torquay.

Quality of the Service.

(Q. 1051.) The witnesses were questioned as to the statements frequently made that the services rendered by a panel doctor to his patients are different in character and inferior in quality from the services that he would render ordinarily to paying patients in the same economic circumstances. The reply was that—

In the great majority of areas there was no attempt whatever to discriminate between the insured and the non-insured; indeed, if there is any discrimination it is probably in favour of the insured, because a doctor would know that if he has to make a choice between two patients and he fails to respond to the call of the insured man he may find himself involved in a complaint.

Areas in which this could not be said confidently of panel practice were probably West-End and other well-to-do districts, where some doctors went on the panel, for example, to treat domestic servants in order that some other practitioner might not get a footing in the house. These doctors do not find it worth while to familiarise themselves with the Regulations, and they may render their services reluctantly.

An Increased Sense of Responsibility.

(Q. 1054.) Asked how the present service compares with the friendly society services before the Insurance Act, Dr. Smith Whitaker said, looking at the broad features of the two systems :—

The first thing that strikes me about the present insurance service is that it is under public control, and that the free wind of publicity blows through all the arrangements.

The doctor's contract is clearly defined, whereas in the case of club practice it was very often not clearly defined; in fact, it was almost the exception for a club to have a clearly drawn-up agreement with the doctors themselves, they having had every opportunity of expressing an opinion.

The witness then referred to the increased sense of responsibility for the service not only by the individual doctor but by the profession collectively, attributable largely to the provisions made in the Insurance Acts for direct participation by the medical profession in the administration of the Acts. By reason of public control, free choice of doctor, and the collective responsibility which the doctors have accepted for the efficiency of the system, there was a great improvement over anything that existed before the Insurance Acts.

Marked Decline in Sickness Benefit.

(Q. 1137.) At a later stage Dr. Smith Whitaker substantially repeated what he said above as to the improved service and its causes. He also quoted "one of the most experienced and most highly respected practitioners on the Tyneside" as saying that in recent epidemics he had become convinced that the insured suffered less severely than the uninsured, because they were not deterred by the same considerations from consulting the doctor as soon as they began to feel ill. They were taken in hand from the beginning.

This was in reply to a question from Sir Alfred Watson, the Government Actuary, containing the interesting statement that he had noticed a very marked decline in the sickness benefit claims of approved societies compared with the standard employed, which is based upon friendly society experience, and asked for an opinion whether the improvement in the medical service was a factor in the drop in the claims to which he referred.

(To be continued).

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Government and the Birth-Rate.

THE National Alliance for the Increase of the Birth-rate in France has supplied to the Government, at the latter's request, some figures with regard to the birth-rate question, in order to assist the Government in framing laws and regulations to protect large families and to provide for the care of children. Some of the figures furnished are of particular interest, and reveal rather an alarming future for the population of France. In order to maintain constant the active population (that is, the number of individuals between the ages of 20 and 60) 900,000 babies must be born in France each year. At present the number of births per year does not exceed 750,000. As the number of marriages annually may remain for some considerable time at about 300,000, then each young couple must produce at least three children, as was the rule up to 1896. Various schemes are therefore suggested to encourage the production of large families, such as lowering rates and taxes for large families and extracting contributions from families of less than three children towards a national birth fund; giving special facilities to large families in housing matters, instituting a "family vote," and providing insurance for widows and orphans.

A Valuable Sign of Death.

Dr. Icard, of Marseilles, who has published several articles on the signs of somatic death, has just devised a new method of establishing satisfactorily the passing of life from a body. The method consists simply in aspirating the serum from the subcutaneous tissue by means of a cotton thread used as a seton, and then examining the serum to see whether it is acid or alkaline. The tissue fluid is alkaline during life and becomes acid after death, turning alkaline later when the cadaver reaches the stage of ammonical putrefaction. The turning point from alkalinity is

constant and occurs early, taking place about six or seven hours after death, varying slightly in time according as the conditions in the body hasten or retard putrefaction. The author holds that the acidity of the cadaver is one of the stages of putrefaction. Whatever be the cause, the change itself he holds to be an absolutely certain sign of death, as certain as definite putrefaction, of which it is, in some way, the precursory indication. This method is very easy and the technique is of the simplest, as the only requirements are a needle and thread and two pieces of litmus paper, red and blue.

A New Academician.

To fill the vacancy in the Section of Surgery caused by the death of Dr. Eugène Rochard, the Academy of Medicine has recently elected Dr. Mauclore to its membership. Dr. Mauclore was born in 1863, and after a distinguished student career became surgeon to the hospitals in 1897 and *agrégé* professor to the Faculty of Medicine of Paris in 1898. He has been President of the Society of Pædiatrics and of the Society of Surgery. He has published many works on almost all branches of surgery, specialising more particularly in bone surgery. He has also devoted much special study to surgical tuberculosis, malformations of the vertebral columns and osteomyelitis. In 1917 he published a book entitled "Surgery of the War," and in 1922 an authoritative work on surgical grafts.

The Control of Private Laboratories.

Mistakes made in analyses conducted by private laboratories may result in serious consequences, and to reduce such possibilities of error to a minimum the Academy of Medicine proposes some measure of general control and registration of all private laboratories which undertake biological or pathological analyses for the public. The Academy therefore requested the Minister of Public Instruction to appoint a commission consisting of representatives of the Faculties of Medicine and of Pharmacy respectively, in order to draw up a curriculum of instruction to be given by the two faculties. At the conclusion of the curriculum three certificates would be granted, one in histopathology, one in chemical pathology, and one in bacteriology. In future one or more of these certificates will be required from any person who intends to conduct a medical analytical laboratory.

The National Bureau of Social Hygiene.

There has been established in Paris by recent legislation a branch of the public health service which has been named the National Bureau of Social Hygiene (Office National d'Hygiène Social). It is under the control of the Minister of Public Hygiene. The objects of this bureau are (1) to collect and publish statistics referring to the sanitary condition of France; (2) to centralise and render available for the national and local public services, the medical profession, the public health officers, and the public, all French and foreign publications and information relative to hygiene, and to the prophylaxis of social diseases; (3) to instruct and stimulate the public in France and in the colonies on all aspects of hygiene and race preservation, by means of continuous and carefully planned propaganda; and (4) to ensure coöperation between public authorities and private enterprise with a view to correlating all efforts made towards the betterment of the public health.

The Hydro-Therapeutics Conference.

The fifth congress of inland and marine watering-places and climatic stations will be held in Paris from April 2nd to 4th. The questions for discussion will be: (1) special legislation for hydro-therapeutic centres; (2) organisation of study-tours to such centres; (3) organisation of a *Crédit Thermal*; (4) organisation of climatic stations; and (5) the protection of wells and springs. The general secretary of the congress is Dr. Victor Gardette, 3, rue Alexandre-de-Humboldt, Paris 14^e.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Price of German Medical Books.

OUTSIDE Germany the complaint has been raised that the price of German scientific books is beyond the pockets of those for whom they are issued, and further that foreigners are charged even higher prices than German students. The suggestion of profiteering in these complaints was answered recently in the press by the president of the German Publishers' Association. He points out that similar complaints have been made with reference to the scientific literature of other countries also, and that the question is connected with the general depreciation of the currency throughout the continent. In Germany many scientific books are now actually cheaper than at the time of their publication before the war, and the publishers' profit on new books is smaller than formerly. As regards journals, the price of any one issue of a German paper is the same as that for a similar English journal. The higher prices formerly charged to foreign readers were a consequence of the daily depreciation of the German currency which induced the publishers to ask for payment in foreign money. Now that the German currency has been stabilised this is no longer the case and the prices are the same abroad as in Germany. It is noteworthy that translations of German books published abroad are often more expensive than the German original edition.

Treatment of Empyema by Rivanol.

Prof. Rosenstein recently read a paper to the Medical Society of Berlin on the treatment of empyema by rivanol without the usual resection of a rib. The method consists in the evacuation of the pus by a trocar and the injection of 50 to 200 g. of a 2 per cent. rivanol solution. This procedure is repeated three to four times at intervals of three days. The empyema is then encapsulated by adhesions of the layers of the pleura, the pus becomes sterile, and eventually the fever disappears. When this has taken place, a small incision between the ribs may be made to hasten the absorption of the pus, which, however, occurs without an incision, although somewhat later. Eighteen cases have been successfully treated in this way without a resection of a rib and in the majority of cases without an incision. The method is not indicated in empyema associated with gangrene of a lung, pyopneumothorax caused by a gunshot wound of the lungs, and with pulmonary tuberculosis. All other cases of empyema, especially those complicating influenza and pneumonia, are suitable for this treatment. Rivanol has also been successfully used in 300 cases of mastitis, where large incisions could be dispensed with by injections of the compound.

Death from Suffocation due to X Rays.

In a recent issue of *Strahlentherapie* Dr. Frick described a case where death had occurred after the administration of X rays for lupus of the neck with swelling of the cervical glands. The first application produced no reaction, but after the second application cedema of the glottis ensued, which led to suffocation, and finally to death. The post-mortem examination showed, apart from the cedema, a small cancer or tumour of the larynx in its first stage, which had not produced any symptoms during life. Early reactions from the application of X rays are not rare, and when the rays are directed to the cervical region swelling of the mucosa of the pharynx and of the larynx may be produced. Hoarseness occurring after the administration of the rays must be carefully observed, because it may be a symptom of commencing cedema of the glottis. In the above case the hidden cancer of the larynx may have contributed to the fatal cedema.

Medical Members of the German Parliament.

In the recently elected German Parliament the medical profession is represented by four medical men and one medical woman. One of them, Dr. Bainsdorf, belonging to the Bavarian People's Party, distinguished himself as the administrative head of the Palatinate during the Separatist riots when all the leading Government officials had been removed from their offices and partly exiled by the French. Two medical members belong to the National Party, including Dr. Hedenkamp, who is the editor of the *Aerztliche Mitteilungen*, the official organ of the Leipziger Verband, and two are members of the Socialist Party. In the Prussian Diet there are six medical members, two belonging to the Centre, two to the People's Party, one to the Socialist Party, and one to the National Party.

Public Health Services.

HOSPITAL NOTES.

THE SCOTTISH HOSPITAL INQUIRY.

THE Hospital Services Committee, which is investigating the extent and nature of the inadequacy of the hospital and ancillary services in Scotland, has now taken evidence from the northern part of the country which shows that, generally speaking, the conditions in the Highlands are unsatisfactory. Geographically and financially, Scotland is divided to a greater extent than is England or Wales, and it was one of the proposals of Sir George Beatson, when giving his evidence as a witness, that Scotland, for the purpose of more efficient hospital administration, should be divided into four districts. Under this scheme each district would have its central hospitals with their auxiliary or recovery hospitals, and a clearing house in each district would be appointed under a commissioner for the distribution of patients.

Dr. G. Dick, medical officer of health for Caithness, said that provision was adequate for infectious diseases, but not for cases of general illness; only about 8 per cent. of admissions to hospital were medical cases. A central hospital would, however, be impossible without State grants and assistance from local authorities. It might be well to have a hospital ship for the Outer Islands and Orkney, particularly to serve the fishing population. Dr. Alexander Asher, of Thurso, declared that the accommodation in the wide area covered by his practice was most inadequate, and was accentuated by the limited space in working-class houses. There was clamant need for provision for surgical cases, and it was also desirable to find accommodation for maternity cases. New hospitals or auxiliary hospitals for Caithness would be unnecessary if the hospitals in Wick and Thurso were brought up to the modern standard of equipment and nursing.

Dr. K. Campbell gave similar testimony of inadequacy in the Oban area, which includes the Hebrides, and advocated lectures upon health, about which there was so much ignorance that he had even known people who were unaware of the locality of their stomach. Dr. J. Laurie, of Greenock, said that there was only one medical officer for the whole of the Greenock Infirmary, and "one man could not do all that work." There were six maternity beds, but there should be 20 or 30. The general hospital accommodation was insufficient, and the pressure could only be met by overcrowding the wards. The ideal hospital would provide for both paying and non-paying patients.

Dr. T. F. Dewar, of the Scottish Board of Health, said that for the most part the accommodation provided for the sick in the poorhouses of Scotland was substantially the same as when they were

erected in the middle of last century, and there would be great, if not insuperable, difficulties in the way of utilising them for the general sick without relation to destitution or social standing. By nothing short of radical conversion or practical rebuilding could they be made into efficient hospitals. The Poor-law hospitals proper were admirable and ready for conversion to general hospital purposes.

Evidence from Glasgow, Falkirk, Stirling, Dumfries, and Galloway showed that in each of those places hospitals were being enlarged or that extensions were contemplated. Mr. Robert Barclay, one of the directors of the Royal Hospital for Sick Children at Yorkhill, Glasgow, which he described as "the largest hospital devoted to children in the United Kingdom," said that the present enlargements would raise the accommodation from 275 to 350 cots. In addition to an enlarged admission and out-patient department, there would be orthopaedic, electrical, and milk departments, and a department for the manufacture of medical and surgical appliances, together with lecture-rooms; the accommodation at the country branch was, moreover, to be doubled. Mr. Barclay estimated the cost of these schemes at £100,000; £75,000 was appealed for four months ago and most of it had already been subscribed. He advocated the continuance of the voluntary system. If the paying principle were introduced a paying wing should be kept separate, and they should finance themselves. At present there are in Scotland three hospitals entirely devoted to children—in Edinburgh, Glasgow, and Aberdeen. Mr. James Thomson, representing the Glasgow Royal Maternity and Women's Hospital, said that although that institution had only 114 beds, there had been as many as 170 cases in the hospital at one time, and the average number of patients last year was 135.

Prof. John Glaister, of Glasgow, said that accommodation for surgical cases in that city was insufficient. The waiting lists on the surgical side were seriously swollen by adenoid and tonsil cases. The time had come to utilise the accommodation in the Poor-law hospitals, and auxiliary hospitals, erected and run on a paying basis at moderate cost to patients, would be a great boon to the middle classes. He was not in favour of the establishment of general hospitals by local authorities on the ground that their hands were sufficiently full with isolation hospitals, and that most of them had not yet made sufficient provision for the treatment of tuberculous surgical cases.

The Rev. Dr. J. Montgomery Campbell, representing the Dumfries and Galloway Royal Infirmary, was emphatically of opinion that the voluntary principle had proved its efficiency. It had an ethical as well as a practical value. It supplied, as rate-supported institutions never could, the human touch and the neighbourly office in the care and alleviation of sickness. The Dumfries Infirmary was at present meeting the demand, but the supply of beds had almost reached its limit; there are nominally 113 beds, and last year the average number of patients per day was 106.

Giving evidence as to hospital accommodation in the Falkirk district, Mr. W. J. Gibson, chairman of the managers of Falkirk Infirmary, said that they had been obliged to abandon taking paying patients because of the number of ordinary patients who had to be provided for. Outside the hospital there was no accommodation save in the people's homes, but there were many who would be glad of private accommodation. A site had been obtained for a new infirmary, and he thought there would be no difficulty in maintaining it, but the overlapping of appeals for subscriptions ought to be curtailed. The £5000 a year contributed to the Falkirk Infirmary was disproportionate to the £3000 raised in the same district for the Infirmarys of Edinburgh and Glasgow.—Ex-Provost Tomson, chairman of the managers, described the accommodation in Stirling Infirmary as "quite inadequate." It was intended to build an entirely new hospital at a cost of £70,000, and the interest of the people of the district was such that £26,000 was

subscribed towards that sum in six weeks. There is no present provision for maternity cases in Stirling, but the infirmary had undertaken to provide it.

BRITISH HOSPITAL FOR MOTHERS AND BABIES.—The Council for the Promotion of the Higher Training of Midwives is considering means of raising £40,000 to complete the British Hospitals for Mothers and Babies at Woolwich. Additions were made as recently as 1922, but the institution, which is amalgamated with the British Lying-in Hospital, founded in 1749, and the Home for Mothers and Babies, is still inadequate. Its special object is to provide a national training school for district midwives which will provide a training double as long as that usually given.

IMPROVING FORFAR INFIRMARY.—It is proposed to spend about £11,000 on alterations and improvements at Forfar Infirmary in addition to the extension work which is already in hand. Of this sum nearly £7000 will be devoted to a new nurses' block and kitchen. The hospital is seriously handicapped by lack of X ray facilities.

WESTMINSTER'S PRIVATE WARDS.—The private wards at Westminster Hospital are to bear the name of the Prince of Wales, and the new eye wards are to be called "The Wolfe Barry Wards" in memory of Sir John Wolfe Barry, who was chairman of the house committee for nearly 20 years.

£50,000 FOR NOTTINGHAM HOSPITAL.—Mr. W. G. Player has given £50,000 for the extension of Nottingham General Hospital. On previous occasions Mr. Player has given the hospital £10,000 as a war memorial fund and £5000 for the endowment of beds, while his brother, Mr. J. D. Player, is defraying the cost, amounting to between £30,000 and £40,000, of the enlargement of the Nottingham Children's Hospital.

HOSPITAL SATURDAY FUND GRANTS.—Grants amounting to £70,488 have been distributed among 230 hospitals and allied institutions. The largest total—£25,423—was given to special hospitals; the general hospitals were awarded £21,950.

NEW WARDS AT PRINCE OF WALES'S HOSPITAL, TOTTENHAM.—Two new emergency and observation wards are practically ready to be opened. The hospital serves a large industrial area full of factories and workshops and congested streets; accidents are consequently very numerous. King Edward's Hospital Fund has promised £1000 towards completion and equipment on condition that a similar sum is raised by the institution, but at present only about half of that amount has been given. The Rubber Growers' Association has set an interesting precedent by laying the floors of the men's and women's wards with rubber as a gift.

PAYING PATIENTS IN POOR-LAW INFIRMARIES.—The Shoreditch Board of Guardians has appointed a committee to consider the practicability of receiving paying patients in its infirmary. It was stated that although the infirmary is so full owing to the large amount of illness in the borough that the placing of beds in the aisles of the wards is being considered, the workhouse is half empty, and it was suggested that it should also be used as a hospital.

MANCHESTER'S EFFORTS FOR CHARITIES.—Councillor Mathewson Watson, honorary secretary and chief organiser of the efforts on behalf of Manchester Charities, in a recent address gave an account of his experience and the success of the efforts made since 1914. Up to the present more than £350,000 had been raised in Manchester and district on behalf of St. Dunstan's and the National Institute for the Blind. Of that sum about £250,000 had been divided between St. Dunstan's and other institutions for the blind in Lancashire. Henshaw's Blind Asylum in Manchester

had received over £20,000. For the King's Fund for Disabled Soldiers and Sailors Manchester raised £70,000, about £25,000 more than any other provincial town. For the Princess Mary Fund for the Nursing Association of Manchester £12,000 were collected. For the Prince of Wales's Boy Scout Fund £3000 and for the "White Heather Fund" nearly £30,000 were collected, and £40,000 for the Red Cross Fund. The Lord Mayor's Two Million Shillings Fund realised 1,466,000 shillings, sufficient to clear off the debts of the local hospitals—altogether about three-quarters of a million pounds since 1914.

AN AMERICAN SCHOOL OF HOSPITAL NURSING.—The Henry Ford School of Nursing and Hygiene and the Clara Ford Nurses' Home have just been added to the Henry Ford Hospital at Detroit, which is now one of the largest general hospitals in the world. The Nurses' Home contains 325 bed-sitting rooms, each with its own bath, and the building has been furnished in the English style, with more than 800 reproductions of famous paintings on the walls. There are dining-rooms, a tea-room, a library, and a lounge, and each nurse has her own letter-box. The School of Nursing has "handball courts" and a swimming bath, biological, chemical, and bacteriological laboratories, and a reference library. There is an auditorium which will seat 700 persons, with a stage and dressing-rooms and equipment for showing motion pictures. The course of instruction will last for two years and four months and, in addition to its technical side, will include music, art, literature, domestic science, athletics, and public speaking. There is said to be a long waiting list of young women of the highest type who, in addition to free board and lodging, will receive 10s. a week for pocket money during the first year and 12s. 6d. a week afterwards. The Henry Ford Hospital, which is a teaching institution, has a staff of nearly 100 whole-time medical officers.

HOSPITAL EXTENSIONS.—It is proposed to extend the Hartlepool Hospital at a cost estimated at between £10,000 and £20,000.—Work is about to start upon extensions of the Batley and District Hospital which will cost £24,000.

WAR MEMORIAL HOSPITAL AT NEWTON-IN-MAKERFIELD.—On a site given by Lord Newton a cottage hospital in memory of the fallen of Newton-in-Makerfield, and costing £9000, was formally opened on Jan. 10th. For building and general purposes £5000 were contributed by the governors of the hospital; a bequest from the late Mr. Robert Stone included £1000 for the hospital and a similar amount for the endowment fund; Mr. C. E. Turner gave £1000; the Vulcan Foundry, Ltd., £5000; the Bazaar of the Foundry yielded £1300; Sir William Collinwood gave £500; Messrs. Greenall, Whitley and Co., £500; and the wife and son of the late Mr. Thomas Vicars gave £1000 for the endowment of two beds.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 24TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely: small-pox, 147; scarlet fever, 1886; diphtheria, 1123; enteric fever, 31; pneumonia, 1356; puerperal fever, 53; cerebro-spinal fever, 6; acute poliomyelitis, 9; acute polio-encephalitis, 3; encephalitis lethargica, 65; dysentery, 7; ophthalmia neonatorum, 133. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases again exceeded 100, the increase being chiefly accounted for by 65 additional cases notified from Middlesbrough (C.B.), 16 from Derby (C.B.), 20 from Chesterfield (B. and R.D.), and 16 from a group of boroughs and urban districts in Notts.

Deaths.—In the aggregate of great towns including London, there were 2 deaths from enteric fever, none from small-pox, 9 from scarlet fever, 42 from diphtheria, 62 from measles, 195 from influenza, as compared with 142, 124, 100, and 83 in the four preceding weeks. In London itself the deaths from diphtheria numbered 12 and from whooping-cough 44.

Correspondence.

"Audi alteram partem."

THE DIAGNOSIS OF ACUTE DRUNKENNESS.

To the Editor of THE LANCET.

SIR,—I welcome the criticisms of Sir Charles Ballance and Dr. Maurice Cassidy, the chief surgeon and chief physician respectively to the metropolitan police, on the subject of my modest address on drunkenness.

I am gratified that it afforded them "interest and amusement." But it is evident that their interest must have flagged before they reached the end of my address, otherwise they would have noted that, so far from decrying the skill or independence of the medical officers of police, I specifically stated my firm belief that in cases where there seemed any uncertainty as to a prisoner's sobriety, the medical officer ought to, and as a matter of fact generally does, give the prisoner the benefit of the doubt.

Sir Charles Ballance and his colleague are disappointed that the address had so little to offer in the way of new signs or symptoms of drunkenness, apart from a suggestion as to examination of the cerebro-spinal fluid. I must, indeed, have failed in my exposition when I tried to point out that the so-called signs of alcoholic disability of the central nervous system, whether cerebral, cerebellar, pontobulbar, or otherwise, can each of them, individually, be produced by many causes other than alcoholic intoxication. This craving for a new sign implies a total misapprehension of the lesson I wished to convey. St. Paul remarked to the Corinthians that "the Jews require a sign, but the Greeks seek after wisdom." I should have expected Sir Charles Ballance and Dr. Cassidy, on this occasion at any rate, to be amongst the Greeks.

It is still more surprising to find that my distinguished critics range themselves alongside the medical officer who, at the discussion which followed my address, vigorously expressed his view that it was "a grave responsibility to differ from the opinion of a police surgeon." I agree. But it may at times be our duty to take that responsibility, rather than assent to a sober man being unjustly convicted of drunkenness.

If all police surgeons actually conformed to the standard of clinical examination carried out by Sir Charles Ballance and Dr. Cassidy, the percentage of errors, small as it is, would be still lower. Some police surgeons tell me that in a doubtful case they habitually spend half an hour or longer in their clinical examination of the prisoner. These are medical officers from whom one would be very chary in differing. But there are others. I personally know of cases where a perfunctory examination of a few seconds is all that the prisoner gets. The police surgeon smells the man's breath, tells him to walk along a straight line and back, looks at his pupils (!), and then says, "You are drunk"! No doubt in nine cases out of ten, in spite of this crude examination, he happens to be right. But I cannot but be sorry for any sober citizen who may happen to fall into the hands of such a medical officer, if he meets him "professionally" at a police station after dinner.

My statement that medical officers differ widely in their susceptibility to suggestion on the part of police constables is so conspicuously accurate as to be almost a truism. So long as medical officers are human beings, so long will they share this human characteristic. In youth, my Presbyterian up-bringing prevented me from accepting the dogma of Papal infallibility and now, at my time of life, I am not likely to subscribe to this new dogma of the infallibility of police medical officers, good as they are. And so I stick to my guns, inwardly comforted by

the solace of feeling that Sir Charles Ballance and Dr. Cassidy are really in agreement with me after all.

I am, Sir, yours faithfully,

J. PURVES-STEWART.

Buckingham-street, Victoria, S.W., Feb. 2nd, 1925.

PS.—I have also much enjoyed their jocund reminiscences of the bump supper.

CORRECT POSTURE.

To the Editor of THE LANCET.

SIR,—With reference to your remarks on this subject and the article on the Treatment of Postural Defects in Children by Mr. Muirhead Little in THE LANCET for Jan. 24th, I think that it would be an advantage to the public if more attention were given in schools to the question of posture before any defects arise. Physical exercises of some kind are taught in all schools both elementary, secondary, and private, but there does not seem to be any uniformity of opinion as to what is the best method for securing good balance and poise. I venture to suggest that the combination of strength with grace, which is presumably the athletic ideal, will never be acquired by means of physical drill or games alone, and that the question of dancing and rhythm must be introduced, as it is in the Dalcroze method in Geneva, or in the Margaret Morris dancing method in this country. The fact that dancing has a marked psychological effect is surely in its favour as a remedial or preventive measure.

I am, Sir, yours faithfully,

STELLA CHURCHILL, M.R.C.S.,

Chiswick, W., Jan. 31st, 1925. L.R.C.P., D.P.H.

AIR-EMBOLISM FOLLOWING URETHROSCOPY.

To the Editor of THE LANCET.

SIR,—I have read with interest the notes on cases of air-embolism following urethroscopy which appeared recently both in *The Lancet* and *British Medical Journal*. I quite agree with Prof. A. Fullerton in your issue of Jan. 31st that the "advantages of aero-urethroscopy are so obvious that there can be no question of abandoning it," especially as it is possible to reduce the risk to a minimum.

Some time ago I drew up the following rules for my own guidance in the matter: 1. Never do an air-distension urethroscopy on a patient who has had any instrument passed within the previous 48 hours. 2. If even the slightest bleeding followed the passage of this instrument, the interval should be increased to at least a week. 3. Never use air-distension in the presence of urethral hæmorrhage. 4. If the urethroscope causes the slightest bleeding, withdraw it at once.

The majority of cases of air-embolism are due either to using the urethroscope to see why an ordinary bougie cannot be passed, or to persisting in the examination after bleeding has commenced. It is an interesting fact that, although the urethroscope is probably most frequently used in the treatment of chronic urethritis, air-embolism is practically confined to cases of stricture. In the former condition the urethral wall gives before the cannula of the urethroscope and is not injured; in the latter, it is inextensible and liable to abrasion. The greatest care should, therefore, be taken in examining these cases. The cannula should fit the meatus easily, and should slip down the urethra by its own weight. When its progress is arrested, no attempt should be made to pass it further, as this usually causes an abrasion of the urethral wall. The obturator should then be removed, the tube swabbed out, the urethroscope applied, and the light switched on. Air is then cautiously admitted and the examination made. Bleeding usually occurs from a wide-calibre stricture, situated in front of the main one, which is injured during the passage of the cannula.

I think that many of the old cases of so-called urethral shock were really cases of air-embolism. At the post-mortem examination the presence of air in the heart may easily be missed, unless the great

vessels are tied off, and the heart removed and opened *under water*, just as one looks for punctures in the tube of a pneumatic tyre. This, I believe, was rarely done in cases where death followed urethroscopy. Prof. Fullerton wonders if urethral shock ever occurs; I think it does, but it is very rare. I do not accept as urethral shock cases where either cocaine or air-distension has been used, as in the non-fatal cases it is practically impossible to exclude an idiosyncrasy to the drug, or a mild degree of air-embolism. A case occurred while I was house surgeon at St. Peter's Hospital, which I believe was one of true urethral shock. A man of about 50 presented himself at the out-patient department complaining of symptoms suggestive of stricture. The surgeon in charge passed a straight metal bougie about an inch down the urethra in order to measure the size of his meatus preparatory to urethroscopy. The patient suddenly sat up on the couch with dilated pupils and gasping respiration, and in less than half a minute fell back dead. In this case no local anaesthetic and no air-distension were employed.

I have had two non-fatal cases of air-embolism in my own practice, in one of which I noticed definite surgical emphysema of the perineum. They were both suffering from stricture, for which many instruments have since been passed.

I am, Sir, yours faithfully,

Harley-street, W., Jan. 31st, 1925. J. SWIFT JOLY.

THE SALE OF PATENT MEDICINES.

To the Editor of THE LANCET.

SIR,—I am exceedingly glad that THE LANCET has once more offered its powerful aid to promote legislation in the interest of the health of the people. The republication of the report of the Select Committee of the House of Commons on the Sale of Patent Medicines of 1914 and of the text of the Proprietary Medicines Bill of 1920 has again brought into prominence the urgent need for the legislature to protect the public from exploitation by the unscrupulous nostrum-monger. The facts are so well established that it is unnecessary to adduce additional proof that many of these secret so-called remedies may do positive harm by their noxious ingredients or negative harm by leading to delay in the recognition of serious disease.

The Bill in clause v., para. 2, suggests certain valuable safeguards with regard to the registration of proprietary remedies, but curiously omits any regulation to secure constancy of composition or to guarantee dispensing by a person possessing some knowledge of the art. Furthermore, some protection of the doctors themselves seems necessary against the samples chiefly from abroad, accompanied by much plausible pseudo-scientific literature, with which they are pestered, and may at times be deluded.

Recently I had brought to me an alleged colloidal solution of ozone with much literature stating that it was a specific for consumption. On analysis it was found to contain 46 per cent. absolute alcohol, a little free hydrochloric acid, a trace of an essential oil, probably oil of lemon, and a doubtful trace of hydrogen peroxide. Evidence of the presence of ozone in any appreciable quantity was not forthcoming, and even if it were present, there do not seem to be any grounds for the assertion that it is specifically inimical to the tubercle bacillus. Seeing that free hydrochloric acid was present, the statement that when mixed with potassium iodide it would turn starch-paste blue did not seem to prove conclusively the presence of ozone. This is but one example where the claims were so plausible that I went to the length of having a sample analysed. The law on the sale of patent medicines in other countries seems to have prevented the unscrupulous from approaching the public directly, and in consequence, with a cunning worthy of a better cause, they have set insidious traps for the doctors.

Finally, it would seem consistent with its dignity for the medical profession to point out to those whom

it may concern that recommendation for public honours should not be made for those who have achieved wealth and notoriety by selling worthless nostrums to a credulous public, even though they may have salved their consciences by munificent benefactions.

I am, Sir, yours faithfully,
Cavendish-place, W., Jan. 31st, 1925. CECIL WALL.

PERNICIOUS ANÆMIA, SPRUE, AND THE ENTERIC GROUP.

To the Editor of THE LANCET.

SIR,—If pernicious anæmia and sprue present indistinguishable blood-pictures, then a case of mine which may connect this anæmia with the enteric group deserves to be considered. A girl, aged 23, who died of pernicious anæmia, exhibited the Widal reaction in such dilutions as to make it extremely probable that she had typhoid fever. The course of the case showed that this was not so, but that there was a very rapidly fatal anæmia. This case occurred about 14 years ago. I have since suggested: (1) That it should be ascertained if enteric fevers or T.A.B. vaccine protected even temporarily from pernicious anæmia; (2) that T.A.B. vaccine might be given to persons suffering from pernicious anæmia during their first temporary recovery.

Are there records of any person with a recent history of enteric fever, or recent injection of vaccine developing pernicious anæmia? Anyway, if Dr. C. Elders's conclusions in your issue of Jan. 10th are correct, I have had a case of rapidly fatal pernicious anæmia, which had the blood-picture of sprue and the blood reaction of typhoid fever.

I am, Sir, yours faithfully,

PERCY GULLY, M.R.C.S., L.R.C.P.
Bordon, Hants, Jan. 30th, 1925.

EXTENSOR PLANTAR RESPONSE DUE TO MORPHIA.

To the Editor of THE LANCET.

SIR,—Prof. T. R. Elliott and Dr. F. M. R. Walshe, in a recent paper (THE LANCET, Jan. 10th, p. 65) on the plantar response in certain toxic states, say that "Opium poisoning has apparently not yet been observed to lead to an extensor response." It will therefore be of interest to record this observation, made about six months ago, of the temporary appearance of a double extensor plantar response in a patient who was deeply under the influence of morphia.

A woman of 70 was suffering agonising pain which was discovered later to be due to a malignant metastatic growth in the femur. She was given 1 c.cm. of omopon hypodermically with no effect. About half an hour later morphine hydrochloride, gr. $\frac{1}{2}$, was injected and 25 minutes after, as the pain was still extreme, a further dose of morphine hydrochloride, gr. $\frac{1}{2}$, was given in the same way. She was examined some two hours after the last injection. She was then in a deep stupor; her respiration-rate was about 8 per minute; she gave a very definite extensor plantar response on both sides; there were no other signs of pyramidal disease. This state of stupor continued for about 18 hours. About 22 hours after the administration of the drug she was awake and able to answer questions. The plantar reflexes were tested and found to give a flexor response on both sides.

It will be noted that this patient had had probably as much morphia as could have been given her with safety, but her condition under the drug was not such as to give rise to anxiety. In the paper already quoted the occurrence of an extensor plantar response during very deep sleep is referred to. This should make one prepared to find the like in subjects sleeping or stuporose under the influence of any hypnotic drug. It is likely that the phenomenon will be observed more frequently now that attention has been directed to it.

I am, Sir, yours faithfully,

G. M. KENDALL, M.B., M.R.C.P.
Epsom, Jan. 22nd, 1925.

THE DIAGNOSIS OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—I have read Mr. Rendle Short's clinical lectures on appendicitis (Part I.), in *THE LANCET* of Jan. 31st, and especially that part relating to diagnosis, with much interest, but it appears to me to show that even when conclusions are drawn from the vast amount of clinical material he had to work with exceptions are bound to be met with, and it is usually the exceptions which give rise to our real difficulties.

I have had several well-marked cases of appendicitis in which pain was quite definitely not the first sign. One of these occurred in my wife, who is also a member of the medical profession. She went to bed one night apparently perfectly well and developed severe vomiting and diarrhoea during the night, but was quite free from abdominal pain until about 9 o'clock next morning. As the day progressed she developed typical signs of appendicitis and was operated on the same evening. Another case of mine in which vomiting was the first symptom, and preceded the onset of pain by some hours, occurred in a child of 11 years old.

I have been impressed with the number of cases I have seen recently where operation has revealed a severe appendicular lesion, in spite of the fact that the patient had a normal temperature and pulse-rate. One such case was in a woman five months pregnant, where operation revealed an appendix on the point of perforation.

Another recent case of mine has several interesting features. My wife and I attended a multipara in her sixth confinement, knowing that she had had severe post-partum hæmorrhage in her last confinements. The labour was conducted without any vaginal examination being made, and the patient did well for about 36 hours, when she collapsed. She had evidently had a severe intra-uterine hæmorrhage with very little external loss, and we gave her a hot intra-uterine douche under general anaesthesia. Following this her course was uneventful until the fifth day, when she complained of pain in the region of the right iliac fossa and diarrhoea. Examination revealed marked tenderness over the appendix region and much tympanitic abdominal distension. Her uterus was palpable on the left side firmly contracted down, and her lochia were quite normal. A tender swelling could be felt in the right lateral fornix. We diagnosed acute appendicitis after a certain hesitancy on account of her puerperal condition, and advised her removal to hospital. Unfortunately she absolutely refused this until 72 hours later, by which time she was desperately ill with an obvious infection of her general peritoneal cavity. At the operation general peritonitis was found with much free fluid and a perforated appendix. Her ovaries and tubes showed no abnormality, but she had a fibroid uterus which would explain her tendency to hæmorrhages. It was interesting to note that the fluid in her peritoneal cavity was of a clear yellowish-green colour, and quite free from the usual faecal odour of such cases, but unfortunately no bacteriological examination was made. The woman's condition was most critical for a few days. She is now slowly recovering, but her wound has not yet healed.

I am, Sir, yours faithfully,

W. A. WHITEHOUSE PARKES, M.B., M.R.C.S.

Stourport, Feb. 2nd, 1925.

INFANT FEEDING.

To the Editor of THE LANCET.

SIR,—I was interested to read in your issue of to-day's date the report of their study by Dr. Donald Paterson and Dr. Ruth Darby, in which they state that a thriving infant should receive $2\frac{1}{4}$ to $2\frac{3}{4}$ oz. of breast milk (or its equivalent) per lb. weight per day. This sounds all right for a child up to 10 or 12 lb., but they do not say whether this is to be

carried on with a child weighing 20 lb. If not, how much is he to have? Obviously you cannot give him 50 oz. of milk in a day!

I am, Sir, yours faithfully,

MARIE C. STOPES.

Givons Grove, Leatherhead, Surrey, Jan. 31st, 1925.

THE RESIGNATION OF HOSPITAL APPOINTMENTS.

To the Editor of THE LANCET.

SIR,—In an annotation on the resignation of a distinguished professor of surgery you comment approvingly on his resolve to withdraw from private practice simultaneously with his resignation of his university and hospital appointments. You go on to say, "His professional colleagues will recognise that this is the action of a single-minded man, who has resolved that he will not create leisure in which to discharge private work by the easy process of giving up honorary or official duties." In this I think you display less than your usual temperate attitude. Members of hospital staffs submit to many restrictions and self-denying ordinances which are doubtless necessary and salutary, but here you touch on a matter which must be left to the individual. You must remember that many men are reaching the retiring age whose normal time of harvest has been seriously affected by the war and the subsequent heavy taxation; some of them come under an earlier superannuation rule than their predecessors, which means both delayed promotion and accelerated retirement. But apart from the financial aspect, resignation of private practice, although a relief to some, would deprive others of their chief interest in life. Again, a man may feel that the time has come to entrust official duties to his juniors, but is less likely to do so if this involves complete retirement. I should strongly deprecate any pressure being put upon him to enforce this.

I am, Sir, yours faithfully,

Feb. 2nd, 1925.

HOSPITAL PHYSICIAN.

*** "Hospital Physician" is criticising an attitude which it was not intended to assume, but the construction put upon the words is perfectly fair. It was not intended, however, that they should be used with so general an application. Every man must judge for himself what his course of conduct is to be, and circumstances will operate in different directions in different cases. We had in mind the position where institutions have felt, to our knowledge, the withdrawal of valued names when they considered that support might have been continued in spite of the exigencies of personal work.—ED. L.

AMBULANCE COÖRDINATION.

To the Editor of THE LANCET.

SIR,—With regard to the question of ambulances and accidents discussed in an article in *THE LANCET* of Jan 17th, and in which laymen are at least equally interested with the medical profession, I venture to suggest that *THE LANCET* might bring influence to bear with a view to securing coördination of the four public ambulance authorities to which reference is made. At any rate, there should be agreement between those authorities which would leave to the London County Council responsibility for the collection and removal to hospitals of cases of accident or sudden illness in streets and other public places when summoned by the police. A convenient and natural (if not too strictly enforced) division of duties would leave cases of accident or illness in houses to the care of the Metropolitan Asylums Board, possibly with the coöperation of ambulances supplied by the St. John Ambulance Association and the Red Cross Society. I have been informed that the Metropolitan Asylums Board would not be unwilling to partake if well-defined and limited duties were assigned to them.

A difficulty might arise occasionally, as in cases of sudden need through accident in a house, where delay might arise through the strict application of such a system as I have suggested above. This points to the assigning of a certain amount of discretion to the police, or to a central authority presiding over the whole system. Whether this would involve difficulties between such bodies as the Home Office, the Ministry of Health, and the County Council would best be brought out at the joint conference, which is evidently needed if anything is to be done, and at which, no doubt, the hospitals and infirmaries would expect to be represented.

With regard to the present scanty supply of ambulances for accidents, it seems to me that it should be possible to place the control and upkeep of these, or the major part of both, upon the County Council, leaving the provision of them, or the major part of it, to the borough councils who should be the best judges of the needs of their districts, and should also be responsible for the original provision of house room for them, whether by voluntary subscription from the public, for whose benefit they would be provided, or from the rates. At any rate, neither 10 nor 13 ambulances can be enough for the County of London, if all, or most, of the unfortunate persons who meet with accidents are to be given a fair chance of prompt treatment.—I am, Sir, yours faithfully,

London, Jan. 26th, 1925.

E. A. ARMSTRONG.

"ELECTRONIC REACTIONS."

To the Editor of THE LANCET.

SIR,—As President of one of the two sections of the Royal Society of Medicine, under whose ægis the preliminary communication of Sir Thomas Horder was made, it might not be out of place for me to write. In so doing I have no desire to be drawn into any controversy.

The attitude of the Section of Electro-Therapeutics was strictly impartial and non-committal. We live, fortunately, in the twentieth century, a century in which any suggestion, however fantastic or impossible it may appear at first sight, is sure of a fair and reasonable hearing. In this respect we are far better than were our forbears. In reading, as I did with great care, the full report of the committee of the *Scientific American*, it failed to bring any sense of conviction to my mind. It appeared to me to be peevish, unscientific, and inchoate. No special investigation appeared to have been attempted, and the report bore the mark of a confession of failure—failure to find any one of the persons using the original Abrams box (or, indeed, any of the 50 or more improvements) able or willing to submit to tests, the latter not always suggested from any true scientific standpoint.

The communication of Sir Thomas Horder made many points very clear, and it may be well to emphasise them. It was definitely stated:—

1. That the communication was no more than a preliminary report of research.
2. That there was no implied or possible sanction for the use of any apparatus bearing the name of Abrams (including the emanometer of Boyd) for the diagnosis or treatment of disease.
3. That, assuming the probability of there being some purely physical basis for electronic reactions, no practitioner (and this naturally included Dr. Boyd himself) had any justification for using any form of apparatus in any way other than in laboratory research.

If anything in Sir Thomas Horder's communication by any possible stretch of imagination could be held to have given any sanction to the gross pretensions of the "E.R.A." practitioner or could have encouraged the public, I can only say that there must be something very amiss with my mentality.

I am, Sir, yours faithfully,

Feb. 2nd, 1925.

STANLEY MELVILLE.

Obituary.

GEORGE COOKE ATTFIELD, M.R.C.S. ENG.

Dr. George Cooke Attfield, whose remains were cremated at Norwood on Jan. 20th, was believed to be the oldest medical man in the country.

Born at Bath on Jan. 27th, 1826, a son of the Rev. W. Attfield, he intended to take up either a military or naval career, but as his father raised objection he turned his attention to medicine and entered as a student at St. Bartholomew's Hospital. He qualified M.R.C.S. in 1850, so long ago that he had been affectionately described as the "Father of Bart.'s," and for four years he was associated closely with Sir James Paget and Sir William Lawrence. A keen sportsman, with cricket as his foremost love, he played for Somersetshire and Surrey, being wicket-keeper for the latter county. He was invited to join an All-England XI. to Australia, but his medical duties prevented him from accepting. It was not long after, however, that he did proceed to Australia. He accepted an appointment under the Government as Chief Medical Officer of Prison Settlements in Western Australia, which work he continued until their abolition in 1879. He married the youngest daughter of the late Sir John Roe, then Surveyor-General of Western Australia. He retired soon after his return to this country, and settled in Buckingham-road, Brighton, afterwards moving to Salisbury-road, Hove, where he died on Jan. 16th in his ninety-ninth year.

Attfield possessed a winning and gracious personality. He made many friends both in Brighton and the sister town of Hove, where in spite of his years he continued to live a very active life. In games of all sorts he took a great interest, but his chief recreation was billiards, and at his club at Hove he marked his eighty-seventh birthday by making a break of 87. Only during the last few years—since the war—did his great age begin to tell upon him, but his senses were wonderfully acute right to the last. Dr. F. J. Paley, the well-known Hove practitioner, who died in November last, was a son-in-law of Dr. Attfield.

CHARLES JAMES LOWNDS, L.R.C.P. & S. EDIN., D.P.H. EDIN.

Dr. C. J. Lownds, of East London, Cape Province, South Africa, died in East London on Jan. 18th after an illness of 18 months, and at the age of 61. He was the second son of Thomas Lownds, of the Indian Medical Service, and was born at Rajputana in 1863. He graduated B.A. at Cambridge, and studied at Westminster Hospital, where he was Houldsworth Scholar, and at Edinburgh. He qualified in medicine in 1887, and after serving as ship's medical officer on voyages to China in 1889–90 commenced general practice in England. Eleven years later he went out to South Africa and became resident medical officer to the Frere Hospital, East London. He was a keen sportsman, a cricketer, an oarsman, and a golfer. He was returned on two occasions to represent the constituency in the Cape Provincial Council, and was highly esteemed both as doctor and citizen.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Thursday, Feb. 19th, at the Guildhall, Swansea, when discussions will take place on Maternity and Child Welfare, Smoke Abatement, and the Cardiac Cripple. The chair will be taken at 2.30 P.M. by Dr. Louis C. Parkes, Deputy Chairman of Council.—A sessional meeting will be held on Friday and Saturday, Feb. 20th and 21st, in the large theatre of the University, Edmund-street, Birmingham, when Prof. John Robertson, M.D., will open a discussion on Fresh Air in the Treatment and Prevention of Disease, and Dr. Cecil G. Teall will speak on Artificial Light in the Cure of Disease. The chair will be taken at 7.30 P.M. on Friday by Dr. Parkes.

The Services.

ROYAL ARMY MEDICAL CORPS.

THE following were successful at the recent competition for commissions in the R.A.M.C.: T. A. J. M. Dodd, M.B., B.Ch., Oxf. and St. Bart.'s; R. A. Bennett, M.B., Ch.B., Edin.; W. D. Speedy, M.B., B.Ch., Trinity Coll., Dublin; J. N. Atkinson, M.B., B.Ch., Trinity Coll., Dublin; W. A. D. Drummond, M.R.C.S. Eng., L.R.C.P. Lond., Univ. Coll., Dundee; J. D. Corner, M.B., Ch.B., Edin.; W. H. Carter, M.B., Ch.B., D.P.H., Edin.; J. G. E. Vachell, M.B., B.Ch., Camb. and St. George's; and J. T. Smyth, M.B., B.Ch., Queen's Univ., Belfast.

The undermentioned (retd. pay) Maj. are granted the rank of Lt.-Col.: T. H. Gibbon and R. E. Humfrey.

Maj. J. E. Hoar is placed on retd. pay.

Capt. C. V. Thornton and E. J. Mannix retire, receiving a gratuity.

MILITIA.

Capt. T. Hampson to be Maj.

TERRITORIAL DECORATIONS.

The King has conferred the Territorial Decoration upon Lt.-Col. (Bt. Col.) T. B. Wolstenholme and Maj. H. W. Read and E. Alderson.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby, Surg. Sub-Lt. B. W. C. Archer to be Surg. Sub-Lt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers: H. C. Patterson and F. L. White. Flying Officer G. R. Nodwell is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. H. Emslie-Smith.

Capt. (Actg. Maj.) W. E. Brierley relinquishes the acting rank of Maj.

Capt. Gokal Chand Sood relinquishes his temporary commission.

Medical News.

UNIVERSITY OF OXFORD.—In a Congregation held on Jan. 22nd, presided over by the Warden of All Souls College (Pro-Vice-Chancellor), the following Degrees in Medicine were conferred:—

Bachelor of Medicine.—Harold E. Harding, Oriel College; Allan W. Linford Row, Brasenose College; and Michael J. W. Minshall, Keble College.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on Jan. 28th the Vice-Chancellor, Prof. E. A. Gardner, being in the chair, the following appointments were made: Mr. H. L. Eason, Member of the General Medical Council; Prof. H. R. Kenwood, Representative (in respect of University College) at the Congress of the Royal Sanitary Institute to be held at Edinburgh in July, 1925.

Lectures in Surgery.—A course of four advanced lectures in surgery on Some Practical Considerations and Experiences in the Conservative Treatment of Fractures of the Pelvis and the Lower Extremity will be given in the Medical and Surgical Theatre at St. Bartholomew's Hospital Medical College (West Smithfield, E.C.), by Sir William I. de Courcy Wheeler, at 5 P.M., on Feb. 16th, 17th, 18th, and 19th. At the first lecture the chair will be taken by Mr. Walter G. Spencer. The lectures, which will be illustrated with lantern slides, are addressed to students of the University and to others interested in the subject.

A lecture entitled the Relation of Paralysis Agitans to the Parkinsonian Syndrome of Epidemic Encephalitis will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W., by Dr. R. Cruchet, professor of pathology and general therapeutics in the University of Bordeaux, at 5 P.M., on Wednesday, Feb. 25th. The chair will be taken by Sir Humphry Rolleston. The lecture will be delivered in English and illustrated with lantern slides. Admission to all these lectures is free.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on Jan. 29th, the chair being occupied by the President, Sir Humphry Rolleston. The following candidates having passed the required examination were admitted Members: Drs. Wallace W. Adamson, Wilfrid H. W. Attlee, Francis J. Benjamin, Frank Brockington, Charles R. Burns, Ernest N. Chamberlain, Sibyl R. J. Eastwood, Francis W. B. Fitchett, Calvert M. Gwillim, David M. Lloyd-Jones, Montague Maizels, Herbert V. Morlock, Bertram S. Nissé, Hilary J. Roche, George K. Stone, James A. Struthers, and Alfred Williams-Walker.

Licences to practise physic were granted to the following candidates who have passed the Final Examination of the Conjoint Board and have complied with the by-laws of the College:—

M. Abse, Cardiff and Univ. Coll.; J. D. Allen, St. Bart.'s; G. T. Allerton, London; C. A. Amesur, St. Thomas's; Kathleen J. Atkinson, King's Coll.; Margaret A. Bannerman, Royal Free; W. D. Beck, Birmingham; C. E. G. Beveridge, Oxford and St. Bart.'s; O. P. Bewers, St. George's; Anna M. V. Bonhote, King's Coll.; V. H. Boobbyer, St. Mary's; W. A. Bourne, Cambridge and St. Bart.'s; R. N. Brandwood, Guy's; S. Brest, H. F. Brewer, D. A. Briggs, and D. J. Brims, St. Bart.'s; R. J. Brocklehurst, Oxford and St. Bart.'s; T. H. P. Brooks, London; Margaret H. Brown, Charing Cross; W. A. Browne, Madras and St. Mary's; Olive B. Buckley, King's Coll.; W. H. Cameron, Toronto and Middlesex; A. F. Chalkley, Leeds; Gwendoline Chave, Royal Free and St. Mary's; H. F. Chillingworth, St. Bart.'s; G. F. Chissell, Middlesex; L. Chodorsky, Warsaw and St. George's; J. Chronnell, Manchester; H. A. Clegg, Cambridge and St. Bart.'s; A. V. Clemmey, Oxford and Guy's; Doris M. Collins, Royal Free; L. C. Cook, Cambridge and St. Thomas's; L. N. R. Comty, London; Margaret I. B. Cowling, Royal Free; C. P. Craggs, Durham and St. Bart.'s; Dorothy E. Crellin, Bristol; J. Currie, St. Bart.'s; M. Cutner, St. Mary's; Gweneth M. Daniel and Annie E. C. Davies, Westminster; A. L. Davies, Oxford and St. Thomas's; J. R. Davies, St. Thomas's; W. H. Davies, Westminster; A. R. Davison, Cape and St. Thomas's; Charlotta D. N. de Wilde, Royal Free and London; G. E. Ellis, St. Bart.'s; O. M. Ellis, Cardiff; Mary H. Elmitt, Royal Free; C. W. Evans, Univ. Coll.; J. Evans, Cardiff and Charing Cross; N. B. Farman, Charing Cross; J. T. Fathi, London; L. Fatti and C. F. Fernando, Univ. Coll.; M. G. Fitzgerald, Cambridge and St. Bart.'s; Dorothea C. Forbes, Royal Free and St. Mary's; G. R. Ford, Guy's; W. S. Fricker, Cardiff and King's Coll.; T. M. Frupp, Guy's; O. P. Giles, Birmingham; G. D. Gordon, Cambridge and St. Thomas's; H. W. Gordon, Cambridge and St. George's; R. A. Grant, Guy's; F. N. Green, Cambridge and Liverpool; A. L. Greenway, Calcutta and King's Coll.; D. L. Greig, Middlesex; J. M. Hall, King's Coll.; Constance I. Ham, Bristol; G. Hamada, Birmingham; J. E. S. Hamilton, Bristol; C. H. Hampshire, Univ. Coll.; A. W. Hanlon, Liverpool; Hans-Raj, King's Coll.; Irene D. F. C. Hastlow, Birmingham; N. H. R. Hatfield, Cambridge and St. Mary's; S. Helberg, Zurich and London; A. Helmy, Cairo and St. Thomas's; Freda K. Herbert, King's Coll.; E. Herzberg, Heidelberg and Univ. Coll.; A. E. Hill, Guy's; C. H. Hilliard, Cambridge and St. George's; Minnie E. Hope, Royal Free; E. C. Hudson and D. B. Hughes, London; Katherine E. W. Hulse, Charing Cross; O. R. Humphreys, Cardiff and London; F. S. Hunter, Birmingham and Bristol; O. L. Hutchinson, St. Andrews and London; Joy Hwa, Birmingham; S. Hyman, Leeds; Elizabeth Jacobs, St. Mary's; Kate D. James, Royal Free and St. Mary's; E. J. Jenkins, Birmingham; C. W. W. Jeremiah, Cardiff and Middlesex; D. F. Johnstone, Guy's; Dilys Jones, Westminster; L. A. Key, Cambridge and St. Thomas's; Caroline B. Kibble, Royal Free; C. T. Kitching and W. R. Kusel, Cape and St. Thomas's; Marjorie A. M. Lambert, Royal Free; G. S. Landon, Guy's; M. C. Lavin, London; H. Levy, Durham and St. Bart.'s; H. Lewis, Guy's; A. C. Liesching, St. Bart.'s; L. A. N. Line, Birmingham; W. H. G. M. Ling, Edinburgh and St. Mary's; Madeline R. Lockwood, Univ. Coll.; A. C. Lysaght, Bristol and Guy's; Catherine B. McArthur, Royal Free; S. McClements, King's Coll.; F. G. Macdonald, St. Thomas's; Dorothy F. McIntosh, Charing Cross; J. H. Macpherson, King's Coll.; Helena M. J. McQuaid, St. Mary's; R. G. Maliphant, Univ. Coll.; J. P. Marsden, Cambridge and St. Thomas's; G. R. Marshall, St. Mary's; E. L. Martin, Charing Cross; A. W. C. Mellor, Cambridge and St. Bart.'s; C. P. Miller, St. George's; F. C. Miller, Guy's; G. J. Morris, Cardiff and Middlesex; C. F. Morrison, Guy's; A. M. Murray, Middlesex; W. R. Nash, Cardiff and St. Bart.'s; Margaret I. Neal, London; E. L. Newell, Oxford and St. Thomas's; R. A. Newsom, King's Coll.; H. W. Nicholson, Cambridge and St. Thomas's; J. A. Noot, Cardiff; R. A. Norman, Guy's; J. N. D. O'Rafferty, Guy's; Evelyn D. Owen, Cardiff and Charing Cross; G. W. C. Parker, Cardiff and St. Bart.'s; A. E. Parkes, St. Bart.'s; W. Parry-Jones, London; R. Paton, Cardiff and Middlesex; V. Patrick, Manchester; F. L. Patterson, London; Gladys L. Pearson, Royal Free; A. D. Pegg, St. Thomas's; Gwyneth Matti Pennant, Cardiff and King's Coll.; H. C. Pierce, Cambridge and Liverpool; C. P. Pinckney, Cambridge and St. George's; C. J. Polson, Birmingham; L. W. Proger, Middlesex; D. C. Prowse, Bristol; R. S. Pyrah, Leeds; V. I. Raman, Madras and London; C. Rankin, Liverpool; M. D. Rawkins, St. Bart.'s; J. T. Rees, Cardiff; Olwen M. Richards, Cardiff and Charing Cross; J. T. C. Roberts, Liverpool; J. J. R. Robinson, St. Thomas's; Wemyss C. Robinson, King's

Coll.: G. F. Rowbotham, Manchester; Alysoun H. Rowntree, Royal Free; A. B. Ruffail, Cairo and King's Coll.; K. G. W. Saunders, St. Thomas's; S. D. Schultz, Manitoba and Middlesex; Claude E. Sharp, McGill and Univ. Coll.; T. A. Shaw, Guy's; Frances E. Smith, Charing Cross; Sylvia M. T. Smith, Bristol; A. D. Soares, Bombay; K. H. Southall, Univ. Coll.; I. P. Spurrell, Guy's; Ethel L. A. Stamborg, Royal Free; B. G. Staniland, London; Ruby O. Stern, Charing Cross; D. D. S. Stewart, King's Coll.; P. Subbaramayya, Madras and London; A. F. Taylor, St. Bart.'s; E. J. Thomas, Cardiff and St. Thomas's; J. D. S. Thomas, Guy's; W. S. Thomas, Univ. Coll.; E. Thompson, St. Thomas's; W. R. Thrower, St. Bart.'s; T. G. Tresidder, Guy's; E. A. Trim, Cambridge and St. Thomas's; V. C. Tughan, Univ. Coll.; Beatrice M. Upshon, Madras and Royal Free; L. C. D. van der Borcht, Ghent and Univ. Coll.; H. van der Post, Guy's; G. B. W. Walker, Cambridge and St. Mary's; R. A. Walsh and L. B. Ward, St. Bart.'s; Catherine Watterson, Univ. Coll.; H. V. Wells, Charing Cross; J. Whillis, Durham; F. L. White, London; C. R. Williams, Leeds and London; D. G. Williams, Cardiff and King's Coll.; E. R. Williams, Cardiff; H. H. Williams, Liverpool; D. A. Wilson, Middlesex; Emily A. C. Wilson, Charing Cross; H. M. Worth and C. L. Worthington, Guy's; Annie Yoffa, Cornell and Royal Free; G. C. Young, St. George's; and J. C. Young, Guy's.

Diplomas in the undermentioned subjects were granted, jointly with the Royal College of Surgeons of England, to the following candidates:—

DIPLOMA IN PUBLIC HEALTH.

Dora M. Berry, John Bevan-Jones, Hilda A. Bond, and Norman Briggs, Univ. Coll.; William H. Brodie, Aberdeen Univ. Coll.; Eric B. Brooke, St. Bart.'s; Ellinor M. Burnett, Univ. Coll.; Eustace H. Cluver, Oxford and Johannesburg; Eric A. Coldrey, St. Bart.'s; Anant Y. Dabholkar, Grant Medical Coll. and Roy. Inst. Public Health; Arthur A. Denham, Edinburgh, Cambridge, and Roy. Inst. Public Health; Evelyn B. G. Ewen, Edinburgh and Univ. Coll.; Charles Glen, Glasgow; Gertrude E. Harre and Eva M. Johnson, Univ. Coll.; Jiwanlal Kapoor, Punjab and Univ. Coll.; Margherita M. Lilley, St. Andrews and Univ. Coll.; Alfred Mitchell, King's Coll.; William E. M. Mitchell, St. Bart.'s; Robert A. Olphert, St. George's and Univ. Coll.; Ian M. Rattray, Cambridge, St. George's, and King's Coll.; George C. E. Refell, Durham and Royal Inst. Public Health; Lewis R. Shore, St. Bart.'s; Harvie K. Snell, King's Coll.; Eleanor C. E. Stone, St. Mary's and Univ. Coll.; Eileen M. Turner, Univ. Coll.; and Robert G. R. West, St. Bart.'s.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

Tridib Nath Banerjee, Calcutta; Khorshed Sorabji Captain, Bombay; Robert P. Cormack, Edinburgh and R.A.M. Coll.; David M. de Silva, King's Coll.; William H. Dye, Middlesex; David H. C. Given, Cork; Henry P. Hacker, King's Coll.; Robert J. Harley-Mason, Middlesex; David Hynd, Glasgow; Honoria S. Keer, Glasgow; Ram Nath Khosla, Punjab; Graham Louw, Edinburgh; Una F. M. Morton, Univ. Coll.; Samuel L. Navaratnam, Des Raj Nayar, Punjab; Joseph A. O'Flynn, Cork; Henry C. E. Quin, Edinburgh and Univ. Coll.; Charles F. Shelton, St. Thos. Hosp.; Prem Nath Suri, Punjab; Ernest W. Wade, Bristol and R.A.M. Coll.; and Henry O. Watkins-Pitchford, St. Thos. Hosp. (With one exception, all the above were students at the London School of Tropical Medicine.)

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Albert H. G. Burton, Guy's, Maudsley, and Goodmayes; Charles H. Comerford, Dublin and Cane Hill; Ernest H. Connell, Edinburgh and Morningside; Gerald W. T. H. Fleming, Durham, Char. Cross, and Sunderland; Francis McLagan, St. Andrews, Maida Vale, and Hanwell; William G. Masfield, Middlesex and Severalls; George Somerville, Edinburgh and Goodmayes; and Maurice L. Sutcliffe, Univ. Coll. and Horton.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.

Abbey Wiesener F. and Roland G. Banks-Smith, Sydney and Roy. Lond. Ophth. Hosp.; Bertram R. Bickford, Charing Cross and Roy. Lond. Ophth. Hosp.; William S. Burr, Edinburgh and Roy. Lond. Ophth. Hosp.; Thomas D. Gordon, Dublin and Roy. Lond. Ophth. Hosp.; Evan N. Hughes, Liverpool and Birmingham and Midland Counties Eye Hosp.; Kharsedji Hormusji Kamakaka, Bombay and Roy. Lond. Ophth. Hosp.; Allan P. McLeod, Sydney and Roy. Westminster Ophth. Hosp.; and Ardeshir Dadabhoi Shroff, Bombay and Roy. Lond. Ophth. Hosp.

DIPLOMA IN LARYNGOLOGY AND OTOTOLOGY.

Norman S. Carruthers, Guy's and Golden Square; Bernard Friedman, Edinburgh and Central London; Frank B. Gilhespy, Univ. and Birmingham and Midland Ear and Throat Hosp.; William G. R. Hore, Guy's and Central London; Geoffrey W. Robinson, King's Coll. Hosp.; and David A. Thomson, Glasgow.

The resignation of Dr. Drysdale as a member of the Council was received and accepted.—Councillors to take the place of Drs. Goodall, Hutchison, Whitfield, and Sir Charles Sherrington, retiring by rotation, and of Dr. Drysdale, resigned, were elected, on the nomination of the Council, as follows: Dr. Phear, Sir StClair Thomson, Dr. Bedford Pierce, and Sir Leonard Rogers; and, to take the place of Dr. Drysdale (for two years), Sir Walter Morley Fletcher.—Sir Francis Champneys was appointed, on the nomination of the Council, a representative of the College on the Central Midwives' Board.—Sir George Newman was elected a

representative of the College on the Executive Committee of the Imperial Cancer Research Fund, vice Dr. Sidney Martin, deceased.

The President announced that he had appointed Prof. Edwin Bramwell to deliver the Bradshaw Lecture this year, and that the Council had appointed Prof. Topley, M.D., F.R.C.P., to deliver the Milroy Lectures next year.

Admission of Women to the Fellowship.—It was resolved that the existing by-law No. 194 be repealed, and the following by-law be substituted for it:—

A woman shall be eligible for admission as a Licentiate or Member of the College and for the grant of Diplomas in special subjects on the same terms and conditions as a man, and a woman shall also be eligible for election as a Fellow of the College and shall be entitled to take part in the government, management, and proceedings of the College and to hold any office in like manner as a man is eligible and entitled.

So far as may be necessary to give effect to this By-law (a) words in the By-laws and Regulations importing the masculine gender shall be deemed to import the feminine gender also, and (b) such alterations as are requisite shall be made in the Letters Testimonial, the Form of Licence and attached Certificate, and the Form of Diploma granted by the College.

Sir Wilmot Herringham and Dr. John Fawcett were appointed as the representatives of the College to give evidence before the Departmental Committee on the University of London.

A report from Sir John Broadbent on the celebrations recently held at the University of Leeds was received, and the thanks of the College were accorded to him.—A report was received from the representative of the College on the General Medical Council on the proceedings of the Council in the session held in November last.—The College voted a contribution of 20 guineas to the St. Paul's Cathedral Fund.—Reports from the Committee of Management were received and adopted, recommending a revision of the syllabus of the examination for the Diploma in Laryngology and Otology, and in Part II. of the examination for the Diploma in Public Health.

Books and other donations to the library, presented during the last quarter, were received; also, from Mr. C. H. Golding-Bird, a miniature bust of Dr. Golding-Bird, F.R.C.P., and a portrait of Dr. Brinton from his son; and thanks were returned to the donors.

After some further College business the President dissolved the Comitia.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH,

ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examination:—

FINAL EXAMINATION.

Joseph E. Israel, William A. D. Oliver, Vethavanam Vaithalingham, Petrus J. Badenhorst, Ebenezer A. M. McKinney, Florence M. Smith, Hee S. Foo, George E. M. Scott, Kathleen M. R. Dunn, Nathan Finn, Kulaverasingham Somaskander, Kizhakkekallattil K. Nayar, Nashid T. Yusif, Harry Krafchik, Ernest G. Douglas, James M. Rutherford, Abraham M. Filer, Rajaratnam W. Crossette-Thambiah, Norman Wren, Percy A. M. Jayewardene, John C. Shiach, Isaac Michaelson, Henry A. Newton, Arcot Vasudev, Mollie F. Churcher, Vakulabharanam V. Narasinh, Eleanor P. Topping, John T. Smith, and William M. B. Rossie.

Medicine.—Fraser D. Muller, Soo Woon Tay, William A. Kemp, Robert T. Johnson, Arumugam Chellappa, Sundaramier Ramakrishnan, Netiamvettill Karunakara Menon, James Houston, Arthur A. F. Shepherd, John Paterson, John S. Whiteside, Alexander B. Jayasuriya, John A. Hyde, Matthew L. Hendrie, Mohammed Mustafa El-Makkawi, Mohammad Junaid Quraishi, and George F. Maher.

Surgery.—Harold B. Wainer, Andrew Wilson, Fraser D. Muller, Albert E. Williamson, Moses Kopelowitz, Robert T. Johnson, Sayed Chaleb, Sundaramier Ramakrishnan, John Harkness, Arthur A. F. Shepherd, Bailey G. V. Dias, John S. Whiteside, Lim Kye Htoo, Myles E. T. Burke, Mohammed Mustafa El-Makkawi, Henry Goldsmith, James C. Stenhouse, and Mohammad Junaid Quraishi.

Midwifery.—John R. Hetherington, Harold B. Wainer, David D. H. Craig, Soo Woon Tay, Jeremiah Sabaratnam, Amarasingham, Charles K. Dowson, Netiamvettill Karunakara Menon, Donald L. Crawford, James Houston, John Harkness, Alexander B. Jayasuriya, John A. Hyde, Lim Kye Htoo, Cassaly Ismail, Matthew L. Hendrie, Henry Goldsmith, and Archibald C. Young.

Medical Jurisprudence.—Hapuarachige Don J. Lazarus, Richard A. B. Leakey, Barend J. F. Laubscher, David Lumsden, Cecil A. S. Hamilton, Moss M. Bronstein, William E. Williams, Elizabeth C. Mudie, Robert T. Johnson, Bartlet S. Ellis, Nicandro Valerio, Alexander S. Pool, Alexander Rankin, John A. Mains, Souren Kumar Mitra, Cheng Leng Tan, William Jackson, and Walter C. Heslop.

ROYAL INSTITUTION.—On Tuesday, Feb. 10th, at 5.15 p.m., Prof. J. Barcroft, F.R.S., begins a course of four lectures at the Royal Institution, 21, Albemarle-street, London, W., on the Colour of the Animal Creation. The Friday evening discourse on Feb. 20th will be given by Prof. T. H. Pear on Acquiring Muscular Skill.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—The second annual concert in aid of the Guild will be held at the Wigmore Hall, Wigmore-street, London, W., on Feb. 24th, at 8.15 P.M., by the Stock Exchange Male Voice Choir, assisted by Miss Phyllis Lett and Mr. Edward Halland. Miss Harriet Cohen will play. The entire proceeds will be handed over to the Guild. Tickets from 10s. 6d. to 2s. 6d. (unreserved) may be obtained from the box office, Wigmore Hall.

LEAGUE OF NATIONS.—Among the various activities of the Health Organisation of the League during this month may be noted the Singapore Conference, which opened on Feb. 4th, and to which were invited representatives of all the Far Eastern health administrations, in order that the working details of the Bureau for Far Eastern Epidemiological Information, to be established in Singapore, might be settled. Further, an interchange of health personnel will be held in England, in which the health officials of a dozen countries, including Germany, the United States, and Russia, will take part.

NOTIFICATION OF DISEASES UNDER THE FACTORY ACT.—An Order dated Dec. 31st, 1924, has been issued by the Secretary of State extending the provisions of Section 73 of the Factories and Workshops Act of 1901, which deals with the notification of certain diseases. Under this Order, which came into effect on Feb. 1st, 1925, the following diseases, occurring in a factory or workshop, must be notified: (1) Poisoning by carbon bisulphide; (2) aniline poisoning; and (3) chronic benzene poisoning. The Order is cited as the Factory and Workshop (Notification of Diseases) Order, 1924, and may be obtained at H.M. Stationery Office, price 1d.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—The next quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland will take place on Thursday, Feb. 19th, at 2.30 P.M., at the Royal College of Physicians, Queen-street, Edinburgh, under the presidency of Dr. M. J. Nolan. Dr. David Sligh will give a demonstration of the Psycho-Galvanic Reaction; Dr. George Gibson, Deputy Commissioner, General Board of Control for Scotland, will read a short paper on the Boarding-Out System; and Dr. William M. McAlister will read a short paper on Results of Treatment of General Paralysis by Malaria.

BOYLSTON MEDICAL PRIZES OF HARVARD MEDICAL SCHOOL, U.S.A.—The Boylston medical prizes, which are open to public competition, are offered for the best dissertation on questions in medical science proposed by the Boylston Medical Committee. The committee is appointed by the President and Fellows of Harvard College. A prize of \$500 and the Boylston prize medal is offered every three years for the best dissertation on the results of original research in medicine, science, or the chemical field, the subject to be chosen by the writer, and the next award will be in 1926. Dissertations must be submitted on or before Dec. 31st, 1925. The address of the secretary of the Boylston Medical Committee is Dr. Henry A. Christian, Peter Bent Brigham Hospital, Boston, Mass., from whom further particulars may be obtained.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The fifteenth meeting of the Commission was held at the Home Office, Whitehall, on Jan. 29th, Sir Andrew Duncan in the chair during the earlier part of the sitting and Lord Lawrence of Kingsgate later. Evidence was first received from Mr. J. P. Lewis, C.A., Secretary of the Hearts of Oak Benefit Society, on certain points of policy relating to investment of society funds. The main part of the sitting was devoted to the examination of Mr. Alban Gordon, who submitted far-reaching proposals for the reconstruction of the approved society system on a territorial basis and the transfer of medical and allied benefits to a unified local health service embracing all aspects of medical work. Proof copies of oral evidence and the relative statements submitted at the meeting of Jan. 15th are now on sale at H.M. Stationery Office (2s. 3d.).

ELLA SACHS PLOTZ FOUNDATION.—The Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation was established in 1923 at Boston, Mass., U.S.A., and during the first year of its existence the trustees have received 32 applications for assistance from investigators in the United States, Europe, and Australia. In eight instances grants were made of sums varying from \$500 to \$1250. Six grants were made to American workers, and of the remaining two one was to Dr. A. Besredka, of Paris, and the other to Dr. J. Abelin, of Berne. In their first statement regarding the purposes for which the fund would be used the trustees expressed themselves as follows. The object of the Foundation is to promote researches

that are directed towards the solution of problems in medicine and surgery or in branches of science bearing on medicine and surgery. As a rule preference is given to researches on a single problem or on closely allied problems. Grants may be used for the purchase of apparatus and supplies that are needed for special investigations. Stipends for the support of investigators will be granted only under exceptional circumstances. Applications should be sent to the secretary of the Executive Committee, Dr. Francis W. Peabody, Boston City Hospital, Boston, Mass., U.S.A.; applications for grants to be held during the year 1925-26 before May 15th, but if all the funds are not assigned in the spring, further consideration will be given to applications received before Sept. 15th. Applications should include statements as to the character of the proposed research, the amount of money requested, and the objects for which the money is to be expended.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—A meeting will be held at the Elizabeth Garrett Anderson Hospital on Feb. 10th, at 8.15 P.M., when a paper will be read on the Prevention of Puerperal Morbidity and Mortality: An Experimental Study in Clinical Obstetrics, by Miss Frances Ivens; Dr. V. Russell and Dr. Edith Phelps will also speak.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The fourth of the spring series of post-graduate lectures, arranged by the Fellowship of Medicine, will be delivered in the Barnes Hall at the Royal Society of Medicine, at 5.30 P.M., on Wednesday, Feb. 11th, by Dr. Andrew Balfour, who will show a cinematograph film on Malaria, with special reference to the Malaria Parasite as a Therapeutic Agent. This demonstration is open to all members of the profession, and no fee is charged for attendance.—In March courses will be held in Diseases of the Chest at the Brompton Hospital; Medicine, Surgery, and Gynaecology at the Royal Waterloo Hospital; Infectious Fevers at the North-Eastern Fever Hospital (Tottenham); Gynaecology at the Chelsea Hospital for Women; and an intensive course in General Medicine, Surgery, and the Special Departments at the Royal Northern Hospital, with which is associated the Royal Chest Hospital. Copies of the syllabus, together with the Fellowship Bulletin, may be had on application to the Secretary, at 1, Wimpole-street, London, W.

Appointments.

BAILEY, H., F.R.C.S. Eng., has been appointed Assistant Surgeon, Liverpool Royal Infirmary.
GOODWIN, A., M.D. Lond., F.R.C.S. Eng. and Edin., Surgeon to Out-patients, Chelsea Hospital for Women.
LACK, V. J., F.R.C.S. Edin., Lecturer in Midwifery and Diseases of Women, University of Birmingham
Manchester Royal Infirmary: PARKER, R. W., M.B., Ch.B. Vict., WILSON, S. P., M.Sc., M.B., Ch.B. Vict., ECCLESTON, C., M.B., Ch.B. Vict., SOMERFORD, A. R., M.B., Ch.B. Vict., WALKER, C. L., M.B., Ch.B. Vict., House Physicians; DRINKWATER, S. W., M.B., Ch.B. Vict., MACGILL, A. H., M.B., Ch.B. Vict., HEYWORTH, A. H., M.B., Ch.B. Vict., CLEGG, S. F., M.B., Ch.B. Vict., BROWN, C. V., M.B., Ch.B. Vict., House Surgeons; HUNTER W. E., M.R.C.S., L.R.C.P., House Surgeon, Specials Department; ROBERTS, W. M., M.B., Ch.B. Vict., Junior Pathological Registrar.

Vacancies.

For further information refer to the advertisement columns.
Aberdeen University.—Second Asst. in Pathology. £250.
Bath, Royal United Hospital.—Hon. S.
Bethnal Green Children's Homes, Leytonstone.—Dental Surg. £2 2s. per session.
Bethnal Green Hospital.—Dental Surg.
Birmingham and Midland Eye Hospital.—H.S. £110.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. (male) £200. Also H.S. (male) at rate of £120.
Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £150.
Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Res. Clin. Asst. 50 guineas for six months.
Cardiff Union.—M.O. £568.
Carlisle, Cumberland Infirmary.—Res. M.O. £165 as H.P. and £185 as H.S. Also Jun. H.S. at rate of £145.
Chelsea Hospital for Women, Arthur-street, S.W.—Reg. £50.
Chesterfield and North Derbyshire Royal Hospital.—Cas. and Orthop. H.S. at rate of £150.
Colchester, Essex County Hospital.—H.S. £200. Also Asst. H.S. and Registrar. £150.
Coventry City.—Temp. Asst. M.O.H. £60 per month.
Dewsbury County Borough.—Asst. Sch. M.O. and Asst. M.O.H. £600.
Dorset Mental Hospital, Herrison, near Dorchester.—Third Asst. M.O. £300.

Dublin, Dr. Steevens' Hospital.—Hon. Obstet. P. and Gynaecologist.
 Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250.
 Finchley Urban District.—M.O.H. and Sch. M.O. £900.
 Hastings, Royal East Sussex Hospital.—Hon. Radiologist.
 Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100.
 Lanark County.—M.O.H. £1300.
 Leeds University, Dept. of Pathology and Bacteriology.—Lecturer in Bacteriology. £500.
 Leicester, City Mental Hospital, Humberstone.—Second Asst. M.O. and Pathologist. £700.
 Leicester, Isolation Hospital and Sanatorium, Groby-road.—Res. M.O. £350.
 Leicester Royal Infirmary.—H.P. £150.
 Lincoln City and County Borough.—M.O.H. £900.
 Madras and Southern Mahratta Railway Co., Ltd.—Dist. M.O. Rs.1550 per mensem.
 Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.
 Manchester, Monsall Hospital for Infectious Diseases.—First Asst. M.O. £600. Also Jun. Med. Asst. £350.
 Manchester, St. Mary's Hospitals.—Res. Obstet. O. and Res. Surg. O. Each £200.
 Ministry of Pensions, Birmingham, Highbury Hospital.—Jun. M.O. £350.
 Nottingham General Hospital.—Pathologist. £350 and private fees allowed.
 Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.S. at rate of £100.
 Royal Chest Hospital, City-road, E.C.—Phys. Also M.O. in charge of Tuberculosis Dispensary. £750.
 Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £100.
 Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.
 Royal Northern Hospital, Holloway, N.—Res. M.O. £200. Also Asst. Surg. O. £150.
 St. Mary's Hospital, W.—Second Asst. Pathologist. £250.
 Salisbury, General Infirmary.—H.S. £150.
 Weir Hospital, Grove-road, Balham, S.W.—Sen. Res. M.O. £150.
 West End Hospital for Nervous Diseases.—Asst. S., P. for Skin Dept., H.P. for In-patients. £150. Also Clin. Asst. in Speech Dept.
 West Ham County Borough.—Asst. Sch. M.O.'s. £600.
 West London Hospital, Hammersmith-road, W.—Hon. Surg. Reg. £100.
 Worcester General Infirmary.—Sen. Res. M.O. £180.
 York City Council.—M.O.H. and Sch. M.O. £1000.
 The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Penmachno, Carnarvon; Forfar, Forfar; and Bognor, Sussex.
 The Secretary of State for the Home Department gives notice of a vacancy for an additional Medical Referee under the Workmen's Compensation Act for the Bishop's Waltham, Petersfield, and Portsmouth County Courts. Applications, preferably from medical practitioners resident in Portsmouth, should reach the Private Secretary, Home Office, S.W., not later than Feb. 21st.

Births, Marriages, and Deaths.

BIRTHS.

CORMACK.—At "Elmstead," Felpham, in Sussex, on Dec. 13th, to Major and Mrs. Cormack (I.M.S.), a son.
 HUGHES.—On Jan. 30th, at Heylands, Chagford, Devon, the wife of Dr. H. L. Glyn Hughes, of a daughter.

MARRIAGES.

BRAITHWAITE—SHIPTON.—On Jan. 27th, at Littleham, Devon, John Braithwaite, M.D., D.S.O., to Margaret Shipton, of Isca House, Exmouth.
 DUFF MILLER—WALLACE.—On Jan. 29th, W. Duff Miller, M.B., Ch.B., Flight-Lieut., R.A.F.M.S. Reserve, to Muriel, only daughter of the late A. K. Wallace, Esq., and Mrs. Wallace, of Broadstone, Dorset.
 HORDER—GIVEN.—On Jan. 28th, at Mossley Hill Parish Church, Liverpool, Cecil Arthur Horder, M.B., F.R.C.S., to Jessie Given, daughter of Dr. and Mrs. Given, of Liverpool.

DEATHS.

BLACKLER.—On Jan. 31st, Henry John Blackler, M.B., D.P.H., of Reigate-hill, Reigate, aged 62.
 KNOX.—On Jan. 30th, at Strathray-gardens, Eton-avenue, N.W., Dr. Hugh Knox.
 MACCALL.—On Jan. 29th, at Wilbury-road, Hove, Sussex, William Maccall, M.D.
 ROWS.—On Jan. 28th, at Prestwich, suddenly, after an attack of phlebitis, R. G. Rows, M.D.
 N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	..	..	..	£2	2	0
	Six Months	..	..	..	1	1	0
	Three Months	..	..	..	0	10	6
ABROAD	One Year	..	..	..	2	10	0
	Six Months	..	..	..	1	5	0
	Three Months	..	..	..	0	12	6

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, Piccadilly, W.
 THURSDAY, Feb. 12th.—4.30 P.M. Papers to be read: H. Muir Evans: A Contribution to the Anatomy and Physiology of the Air Bladder and Weberian Ossicles in Cyprinidae. (Communicated by Sir Arthur Keith, F.R.S.) J. S. Huxley: Studies on Amphibian Metamorphosis, II. (Communicated by Prof. E. S. Goodrich, F.R.S.)

Papers to be read in title only: Prof. A. Dendy, F.R.S.: On an Orthogenetic Series of Growth Forms in Certain Tetraxonid Sponge-Spicules. Dr. C. E. Walker: The Melotic Phase in Triton (*Molge vulgaris*). (Communicated by Prof. J. B. Farmer, F.R.S.) W. E. Alkins: *Clausilia bidentata* (Ström) and *C. cravenensis* (Taylor): A Statistical Inquiry into the Relationship of Two Similar Species. (Communicated by Prof. A. E. Boycott, F.R.S.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 9th.

WAR: at 5 P.M.

Paper:

Major A. T. Frost, R.A.M.C.: A Further Report on the Treatment of Gonorrhœa by Kataphoresis.

EPIDEMIOLOGY

COMPARATIVE MEDICINE } Special Discussion at 8 P.M.:
 DISEASE IN CHILDREN } The Control of Tuberculosis and the Milk-supply.

Speakers: Dr. Robertson (M.O.H. Birmingham), Dr. Niven (late M.O.H. Manchester), Lieut.-Colonel J. W. Brittlebank, Prof. S. L. Cummins, Mr. G. P. Male, Dr. M. J. Rowlands, Dr. Stenhouse Williams, and others.

Tuesday, Feb. 10th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.

Laboratory Meeting at the National Institute for Medical Research, Hampstead, N.W. (by invitation of Dr. H. H. Dale).

Demonstrations:

Dr. J. W. Trevan: A New Method of Studying Local

Anæsthetic Action.

Dr. J. H. Barn and Dr. H. H. Dale: A Perfusion Apparatus for Isolated Organs.

Communication:

Dr. Hermann Knaus: The Action of Drugs on Conduction in the Uterus.

Discussion on

The Action of Histamine.

Speakers:

Dr. H. H. Dale, Prof. R. J. S. McDowall.

PSYCHIATRY: at 4.30 P.M.

Clinical Meeting at the Maudsley Hospital, Denmark Hill, S.E.

Tea will be provided at 4 P.M.

Wednesday, Feb. 11th.

SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.

Discussion on

Fistula, to be opened by the President, Mr. F. Swinford Edwards.

The following will also speak: Mr. J. P. Lockhart-Mummery, Sir Charles Gordon-Watson, Mr. H. Graeme Anderson, and others.

Thursday, Feb. 12th.

NEUROLOGY: at 8.30 P.M.

Discussion on

The Etiology and Treatment of Subacute Combined Degeneration of the Spinal Cord, to be opened by Dr. A. F. Hurst and Dr. H. J. MacBride.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.

Papers:

Mr. A. F. MacCallan: Ophthalmology in Egypt.

Captain W. H. Dye, R.A.M.C.: Schistosomiasis and Splenomegaly in Nyasaland (illustrated with lantern slides and epidiascope).

OPHTHALMOLOGY:

Members of this Section are especially invited to attend the above Meeting.

Friday, Feb. 13th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)

Five Cases of Pituitary Disease will be shown by Sir Percy Bassett-Smith, Dr. Douglas Firth, and Dr. George Riddoch.

Dr. Parkes Weber will show a Case of Developmental Deformity of the Right Forearm similar to that sometimes met with in cases of multiple exostoses (diaphyseal aclasis).

OPHTHALMOLOGY: at 8.30 p.m. (Cases at 8 p.m.)**Cases:**

- Mr. Lindsay Rea: Cases of Recovery from Pseudo-Tumour of the Orbit.
 Mr. H. Neame: Case of Optic Nerve Tumour.
 Mr. F. A. Williamson-Noble: Case of Optic Nerve Tumour.
 Mr. R. S. Scott: Case of Optic Nerve Tumour.

Discussion on

The Aetiology of Miners' Nystagmus.

Speakers:

- Dr. T. L. Llewellyn: General.
 Prof. J. S. Haldane: Physiological Consequences of Work in very Dim Illumination.
 Mr. H. S. Elworthy: The Quality of Illumination in Coal-mines.
 Prof. E. L. Collis: Compensation as a Factor in the Occurrence of Miners' Nystagmus.
 Mr. G. H. Pooley: The Personal Factor in the Causation of the Disease.
 Dr. F. Robson: The Effect of Mine Gases.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 9th.—8.30 p.m., Discussion on the Treatment of Lymphadenoma, to be introduced by Sir Thomas Horder, followed by Dr. Herbert French, Dr. Neville S. Finzi, Dr. Robert Knox, and others.

BIOCHEMICAL SOCIETY.

MONDAY, Feb. 9th.—5 p.m. (Meeting in Biochemical Department, University College, W.C.).—*Communications:* H. J. Channon: Cholesterol Synthesis in the Animal Body. G. A. Harrison and H. J. Channon: Observations on the Composition of Subcutaneous Fat in Cases of Sclerema Neonatorum. C. R. Harrington: 3:4:5 Tri-iodophenyl-pyrrolidone-carboxylic Acid. J. C. Drummond and K. H. Coward: Further Observations on the Chemical Nature of the Vitamin Fraction of Cod-liver Oil. J. C. Drummond and K. H. Coward: Ultra-violet Radiation and Growth. S. Tsubura: Comparison of the Reducing Properties of Plain and Striated Muscle. P. Haas and T. G. Hill: An Oxygen Absorbing Mechanism in *Mercurialis perennis* and Accompanying Colour Changes. A. Wormall: The Tyrosinase-tyrosine Reaction: the Theory of Deamination. F. C. Happold and H. S. Raper: The Supposed Deaminising Action of Tyrosinase on Amino-acids. C. Rimington and H. D. Kay: The Phosphorus of Caseinogen (preliminary communication).

CHELSEA CLINICAL SOCIETY.

TUESDAY, Feb. 17th.—8.30 p.m. (in the clubrooms of St. George's Hospital). Sir Thomas Parkinson and Mr. A. R. Thompson will lead a discussion on the Diseases of the Climacteric Period in Both Sexes.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Feb. 13th.—Dr. Harold Pritchard: Some Aspects of Modern Medicine.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.**ROYAL COLLEGE OF SURGEONS OF ENGLAND** Lincoln's Inn-fields, W.C.

MONDAY, Feb. 9th.—5 p.m., Prof. V. E. Negus: Some Disorders of the Larynx.

WEDNESDAY.—5 p.m., Prof. R. Lawford Knaggs: Osteitis Deformans and its Relation to Fibrosa and Osteomalacia.

FRIDAY.—5 p.m., Prof. Stanford Cade: Regional Anæsthesia.

SATURDAY.—4 p.m., Sir D'Arcy Power: Hunterian Oration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

MONDAY, Feb. 9th, to SATURDAY, Feb. 14th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Demonstration arranged by the Fellowship of Medicine, and open to all members of the medical profession. Wednesday, Feb. 11th, 5.30 p.m., Dr. Andrew Balfour will show a Film on Malaria, with special reference to the Malaria Parasite as a Therapeutic Agent.—COMBINED COURSE IN DISEASES OF CHILDREN, Paddington Green, Victoria Hospital, and Children's Clinic. Two sessions daily as per syllabus.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Comprehensive Course. Clinical work daily and lectures.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Demonstrations daily in the various departments. Pathological demonstrations arranged for and Tuesday and Thursday special lectures. Tickets for this particular course from the Fellowship.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, 2 p.m. Clinical Demonstration by Dr. G. C. Low and Dr. Manson-Bahr.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, Feb. 10th.—4.30 p.m., Dr. J. Browning Alexander: Treatment of Pulmonary Tuberculosis, with special reference to Artificial Pneumothorax.

FRIDAY.—4.30 p.m., Dr. S. Cochrane Shanks: Electro-diagnosis.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Feb. 10th.—5 p.m., Dr. W. Griffith: Eczema.

THURSDAY.—5 p.m., Dr. W. Griffith: Eczema.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.

THURSDAY, Feb. 12th.—5 p.m., Mr. A. W. Bourne: Treatment of Placenta Previa.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Feb. 9th.—12 noon, Mr. Shummonds: Applied Anatomy. 2 p.m., Mr. Addison: Surgical Wards. 2 p.m., Dr. Scott Pichin: Medical Out-patients.

TUESDAY.—11 a.m., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 p.m., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—12.15 p.m., Dr. Burnford: Medical Pathology. 2 p.m., Dr. Owen: Medical Out-patients. 2 p.m., Dr. Dowling: Skin Dept.

THURSDAY.—11 a.m., Sir Henry Simpson: Gynaecological Wards. 2 p.m., Mr. MacDonald: Genito-Urinary Dept. 2 p.m., Mr. Bishop Harman: Eye Dept.

FRIDAY.—11 a.m., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 p.m., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 a.m., Dr. Burnford: Bacterial Therapy. 10 a.m., Dr. Saunders: Medical Diseases of Children. 10 a.m., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 a.m. to 6 p.m., Saturdays, 10 a.m. to 1 p.m., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.**POST-GRADUATE COURSE:** FEB.—MARCH, 1925.**CLINICAL LECTURES AND DEMONSTRATIONS.**

MONDAY, Feb. 9th.—2 p.m., Out-patient Clinic: Dr. Hinds Howell. 3.30 p.m., General Treatment of Paraplegia: Dr. Riddoch.

TUESDAY, Feb. 10th.—2 p.m., Out-patient Clinic: Dr. Adie. 3.30 p.m., Compression Paraplegia due to Tumours: Mr. Armour.

THURSDAY, Feb. 12th.—2 p.m., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 p.m., The Diagnostic Significance of Tremors: Dr. Risien Russell.

FRIDAY, Feb. 13th.—2 p.m., Out-patient Clinic: Dr. Gordon Holmes. 3.30 p.m., Some Forms of Acute Encephalitis: Dr. James Collier.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Feb. 12th.—12 noon, The Cerebro-spinal Fluid, Physiology and Pathology: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Feb. 9th.—12 noon, Afferent Paths and Physiology of Sensation: Dr. Hinds Howell.

The Fee for this Course will be £2 2s.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 a.m. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, Feb. 11th.—3.30 p.m., The Optic Nerve: Mr. Leslie Paton.

Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 a.m., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course. J. G. GREENFIELD, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 12th.—4 p.m., Mr. Barrington-Ward: Hernia.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).

FRIDAY, Feb. 13th.—4.30 p.m., Mr. Morley: The Indications for Operation in Tuberculous Adenitis.

ANCOATS HOSPITAL, MANCHESTER.

THURSDAY, Feb. 12th.—4.30 p.m., Mr. Diggle: Diseases of the Oesophagus.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 p.m.)

MONDAY, Feb. 9th.—(At the Children's Hospital.) Mr. Thompson: Congenital Pyloric Stenosis.

TUESDAY.—(At the Southern Hospital.) Mr. Nuttall: Surgical Cases.

WEDNESDAY.—(At the Northern Hospital.) Dr. Leith Murray: Sterility.

THURSDAY.—(At the Stanley Hospital.) Dr. Oram: Radiology of Fractures.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Feb. 10th.—4 p.m., Dr. Bryson and Dr. Orr: Review of Cases Illustrating the Relation of Cardio-vascular Disease to the Kidney. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.

WEDNESDAY, Feb. 11th.—6 p.m., Prof. R. H. A. Plimmer: Diseases Caused by Badly Chosen Diets.

THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS, Victoria-street, S.W.

WEDNESDAY, Feb. 11th.—2.30 p.m. (At the Old Colony Club, Aldwych House, W.C.) Mr. A. H. Barker, B.Sc. (Past President): Unsettled Questions in Heating and Ventilation.

Notes, Comments, and Abstracts.

FOLK MEDICINE.*

BY WILLIAM MURPHY, M.B., CH.B. LEEDS.

FOLK medicine belongs neither to any one period of time nor to any particular race. It arose with the dawn of man's intelligence. It seems likely that it is far older than even the incredibly ancient mythic traditions of the great primitive races, just as it has persisted long after they have passed into oblivion. Folk medicine belongs rather to a stage in mental evolution than to any period in time, and that many of us have not yet passed beyond that stage we have frequent and convincing proof. We still find people who rub styes with wedding-rings, who carry potatoes as a charm against rheumatism, who spit on warts—and even some who believe that Kruschen salts will rekindle the fires of their lost youth. What some of us may be less ready to admit is the connexion between recognised medicine and the crude and superstitious remedies of the witch or the ignorant housewife. The Edinburgh Pharmacopoeia of 1737, which, we are told, was in request all over Europe, and which aimed at a reformation of pharmacy, yet contained such choice ingredients as the juice of woodlice, dried toads, powdered skulls, human fat and urine. The last has apparently not yet disappeared from the pharmacopoeia of superstition. I know of a doctor who, having asked a patient for a specimen of urine, only obtained it after pledging his word that he would not put it in the medicine. After studying a "Materia Medica" so comprehensive as this, one feels that imagination has indeed failed modern pharmacologists. There is, however, one ancient superstition, formerly current in the profession, which cannot be said to have disappeared from it. Chaucer's doctor, we are told, loved "gold in especial" because it was a "cordial in physic." In spite of the growth of scientific knowledge, this strange affection has persisted in our midst, and I doubt not that the reason for it is not very different from that at which Chaucer was slyly hinting.

Essentially, however, folk medicine, though it may from time to time have coloured the teachings and practice of the learned, belongs to the folk themselves, and since it is so intimately bound up with the history of human progress, it must of necessity have some interest to those in any way concerned with the development of human mentality and the relief of human suffering. Folk medicine grew out of man's daily needs and fears and beliefs. It was the outcome of his observation of the great primal facts of existence—birth, suffering, death. It was intimately associated with every aspect of primitive existence. It was part of primitive religion. Originally the doctor and the priest were one—a combination of functions which would nowadays, perhaps, cause many members of the profession some embarrassment.

The Mystery of Death.

To primitive man we may well believe that death was an insoluble mystery. Intellectual man has not yet discovered a wholly satisfactory explanation of death—or of life, although science has formulated and discarded many theories on the subject. The great French philosopher, Descartes (seventeenth century), actually believed that the pituitary gland was the bond between body and soul. One step forward, however, we have made. We have learned to regard death as a natural event. Primitive man—if we may draw conclusions from the beliefs of savage tribes still in existence—was quite unable to visualise it as a natural occurrence at all, possibly because in his experience it was so frequently associated with violence. He connected death with wild beasts, drowning, lightning, or—and this much more rarely—with mysterious affections of his body which he could not understand or account for. So he came to attribute death and all physical suffering to supernatural causes, of which there would seem to have been three of paramount importance: (1) The anger of offended spirits, (2) the supernatural power of an enemy, (3) the displeasure of the dead.

Spirits to our unsophisticated forefathers were an ever-present source of trouble, and disease was long regarded as a mark of the wrath of those powerful beings. Among certain Asiatic tribes a favourite treatment for disease of any kind was for the village sorcerer to thrash the patient until the demon was driven out of him. In Burmah, if thrashing proved ineffectual, the doctor was wont to trample on his patient's abdomen until he killed the demon.

In England the Devil was long credited with the power of inflicting disease and also, if he felt so inclined, of curing it. He seems indeed to have been held in some respect as the head of the medical profession—a view which doubtless still

claims some adherents! Sir George Mackenzie, writing in the seventeenth century, states that "the Devil can cure disease because he knows its natural causes better than the physicians can, who are not present when diseases are contracted and who, being younger than he, must have less experience."

The power of enemies was scarcely less dreaded than the wrath of spirits. A curse was a potent cause of death or misfortune, though most commonly the desired effect was only obtained by the mediation of some person skilled in the practice of magic. The witch—or wizard as it sometimes was, though more rarely in England—might compass the evil by means of incantations or prayers—usually addressed to the Devil—but sometimes she required for the success of her spells something intimately associated with her destined victim, like a lock of his hair or a piece of his clothing. It seems probable that the old-fashioned nurse's eagerness to commit at once to the fire such things as pieces of nails or hair arose out of nothing more hygienic than this old superstition. A method still more favoured by the witches was the burning of a waxen or wooden image of the person upon whom the spell was to work, in the belief that as the wax melted or the wood charred so the body of the victim wasted or was tormented. The "evil eye" was for centuries, and, indeed, in some places still is, an object of superstitious dread. One writer even tells us that the reason why surgeons do not show wounds to every man is that they have observed that the influence of some eyes hinders the process of healing.

The belief that the dead could cause suffering to the living probably belongs to a much later stage in the history of culture than either the fear of spirits or of witchcraft, and it has survived both of them. It is still commonly thought that if a corpse be allowed to remain in the house over a Sunday there will be two more deaths in the family. As late as 1887 the body of a woman who had died of phthisis was exhumed and her lungs burned because she was believed to be drawing the remaining members of her family into the grave after her. This story, I perhaps ought to add, comes from America, where perhaps even popular medicine may transcend common experience, as does the length of the American appendix! The belief in vampires is probably akin to this fear of the dead, a belief not yet extinct even in the civilised world. So recently as a couple of years ago a case was reported from Central Europe in which the body of a dead woman was taken from the grave and a stake driven through her heart—that having been for centuries the recognised means of dislodging the evil creature which was using the dead body to pursue its hideous work.

To say that all misfortune was attributed to one of these three great causes would, of course, be inaccurate, but they were the most potent influences for evil and the most dreaded.

Cure by Transference.

Having discovered for himself a satisfactory reason for his troubles, man naturally turned his mind to what concerned him much more nearly—namely, the curing of them. Disease, he noticed, was frequently though mysteriously conveyed from one person to another, and from this observation he deduced a simple means of ridding himself of his aches and pains. He argued that, since a witch or a spirit could inflict disease upon a man, surely that man ought in turn to be able to transfer it to some creature inferior to himself—a slave or an animal. There were innumerable methods of effecting this transference, the simplest of which was, perhaps, that in which the patient was recommended to sit on a donkey with his face to the tail and wait for his pain to be transmitted to the animal. Ague was cured by more unpleasant though possibly less tedious treatment. The patient, having been securely pegged to the trunk of an oak-tree by a lock of his hair, was bidden to free himself by a sudden wrench, the theory being that as the lock of his hair was transferred to the tree so also was the ague. The physician of James I., Sir Kenelm Digby, treated toothache by cutting the gum with an iron nail and then driving the nail, when it was satisfactorily covered with blood, into an oak beam, a treatment which he claimed to be infallible. Witches were commonly credited with the power of transferring disease—a belief not inconvenient for the medical practitioner, since any failure on his part to obtain a cure was regarded as strong evidence that his patient was bewitched.

Cure by Association.

Cure by association was another popular type of remedy, closely resembling in many cases cure by transference and not always to be distinguished from it. The vulgar direction to "take a hair of the dog that bit you" did not originally mean that you were to have another glass on the morning after, but was intended literally. Dog's hair was commonly applied in cases of dog-bite, being considered especially efficacious if you could procure the hair of the actual offender. In cases of hydrophobia dog's liver was administered to the patient. A case is on record in which a mad dog was drowned and after nine days its body was recovered in order that its liver might be given to a child whom it had infected. The

* A paper read before the Leeds University Medical Society.

chronicler naïvely adds that the child died. It was common among recognised practitioners as late as the seventeenth century to treat the weapon with which a wound was inflicted and not the wound itself—a custom probably fraught with much less danger to the patient. Boyle, in his "Usefulness of Experimental Philosophy," tells of a doctor who, suffering from some apparently incurable disease, was advised to boil an egg in his own urine and bury the egg in an anthill, in order that as it wasted his disease might abate, and—says the great scientist—he found the treatment eminently successful.

As might be expected, many folk-remedies were connected with the offering of sacrifice, though few of them have survived into modern times, possibly on account of their intimate association with pagan religion. A belief which may certainly be said to have been similarly associated, but of which traces still remain, was that in the possibility of entering life afresh by a symbolical "new birth." We still find that in certain districts mysterious powers are attributed to trees whose trunks have split in such a way that it is possible for a person to pass through them—an action which signified that the patient entered upon a new life, leaving behind him all his old pains and troubles. Croker, in his "Legends of Killarney," relates how he came across a tree of this kind and was urged by his guide not to lose the chance of squeezing through. On inquiring the reason he received the following reply: "It will ensure your honour a long life, and if only you was a lady in a certain way, there'd be no fear of you after going through!"

Superstitions and Charms.

The spread of Christianity, whilst it tended to discourage many old pagan beliefs, brought in its train new superstitions. There are still extant many old prayers and invocations which are really nothing more nor less than charms. The sign of the cross, as might be expected, plays a very important part in popular medicine. It served not only to keep away devils of every description, but it was also an infallible protection against the "evil eye." Made in saliva upon a foot which had gone to sleep, its effect was instantaneous. In certain parts of England the patient with ague makes three crosses in white chalk upon the chimney back, and as they slowly blacken with the smoke his disease is supposed to abate. Children with whooping-cough are commonly given a ride on a donkey, because of the cross on its back, supposed to have been imprinted there after the triumphal entry of Christ into Jerusalem. Hairs from the animal's back are, for the same reason, credited with miraculous power. The family doctor might care to know that, hung in a bag round a child's neck when teething, they are very efficacious as a preventive of fits!

Difficult to understand—in view of man's fear of the dead—is the faith placed in the healing properties of objects associated with death. Various parts of a dead body were believed to be possessed of healing properties. A powder made of human bones was commonly administered in cases of epilepsy, and a volatile salt extracted from human skulls was among the remedies prescribed in 1680 by the 14 physicians who attended Charles II. in his last illness—which is now believed to have been an apoplectic seizure. Much of the body-snatching of the seventeenth and eighteenth centuries is doubtless to be attributed to this superstitious belief in the virtue of the dead body. Faith was placed even in the touch of a corpse's hand, and at one time sufferers attended executions in great numbers in order to receive what was known as the "dead-stroke," the fee for the privilege being collected by the hangman!

Such details as colours and numbers were important factors in the art of healing, as practised by the ignorant. Red has always been popular in folk-medicine, and is to this day; we probably have most of us come across people who swear by red flannel as a preventive of chest troubles, and will accept material of no other colour. The following is the time-honoured method of treating a sty:—Catch a black tom-cat on the first night of the new moon, pluck a hair from the end of the tail, and it will be found that after the sty has been rubbed with the hair nine times, it will gradually disappear. Blood from the same cat's tail was supposed to have a beneficial effect when applied to shingles. While on the subject of colour, may I warn all of you that it is extremely dangerous to pass a white horse without spitting at it! Among the numbers, none is so popular as three and its multiples. If a snake be allowed to crawl nine times across a swelling in the neck the swelling will disappear. A child suffering from whooping-cough should be passed three times under and over a donkey on nine consecutive days—another cogent reason why the family doctor should invest in one of these useful animals. The cure for epilepsy was to go head-first down three flights of stairs on three successive mornings!

The Influence of the Moon.

That the moon should be regarded with superstitious awe is not surprising. Galen himself believed that the moon

controlled fits of epilepsy, and it is only comparatively recently that the association between the moon and lunacy was officially discarded by the profession. It is a persistent belief that death commonly occurs at low tide—the tides being simply a manifestation of the potent influence of the moon. The death of the immortal Falstaff will be familiar to all of you. "A parted," says the hostess of the Eastcheap Tavern, "'A parted even just between twelve and one, ev'n at turning o' the tide.'" Still better known is the description of the death of old Barkis—"He's agoing out with the tide," said Mr. Peggotty to me, behind his hand. My eyes were dim, and so were Mr. Peggotty's. 'With the tide?' 'People can't die along the coast,' said Mr. Peggotty, 'except when the tide's pretty nigh out. They can't be born unless it's pretty nigh in—not properly born till flood. He's agoing out with the tide. It's ebb at half arter three, slack water half an hour. If he lives till it turns, he'll hold his own till past the flood and go out with the next tide.'" Then a little further on we read: "I was on the point of asking him if he knew me when he tried to stretch out his arms and said to me distinctly with a pleasant smile: 'Barkis is willin'.' And, it being low water, he went out with the tide."

Apart from these somewhat general superstitions, domestic medicine, of course, recognised healing virtues in innumerable common objects and even in certain individuals. A seventh son was always believed to be possessed of remarkable power, and was from infancy a useful source of income to his parents. That marvellous cures should be performed by a twenty-eighth son born without the intervention of a daughter, is perhaps hardly surprising. Warts might be speedily removed by rubbing them against the person of the father of an illegitimate child, a treatment which we may imagine was not always devoid of excitement. Animals were credited with all kinds of powers. The head of a mad dog powdered and mixed with wine cured jaundice. A horse hair on a slice of bread-and-butter was given to children with worms in the hope that it would choke the worms. Both witches and the medical profession regarded the hare with peculiar favour. Its brain was good for over-sleeping; its lungs healed sore eyes; and the whole animal, skin and all, baked to powder was, we are told, "wonderful good for the stone."

Conclusion.

How many of these old remedies are still in use it is difficult to say, but belief in them dies hard, and we may safely conclude that in private many of them are still resorted to by the ignorant. Victor Hugo says somewhere that when you have killed ignorance, you will have destroyed crime. We may perhaps adapt that to our subject and say that when we have killed ignorance we shall have destroyed superstition. But ignorance can hardly be said to have disappeared whilst we still have in our midst the old man who, having told the doctor his old woman had a pain in her brains, and being asked where she kept her brains, clapped his hand to his abdomen and said, "Why here, Doctor, o' course, in her belly!"

HEALTH CONDITIONS IN KENYA COLONY AND PROTECTORATE.

IN the report for 1923, just issued, it is stated that no census of the non-native population has been taken since 1921, and the native population is the subject of a rough estimate only. The registration of European births is compulsory, and the relative statistics for 1923 are as follows: Births 194, or a crude rate of 20.1 per 1000; deaths 65, or a crude rate of 6.6 per 1000. The respective figures for 1922 were 27.04 and 9.04. Reliable figures of these rates amongst Asiatics and Africans cannot be given, but, taking the total population of certain towns and the total number of deaths reported, it appears that in Mombasa the crude death-rate was 16.6 per 1000 as compared with 16.7 in 1922; in Nairobi it was 23.5 as against 21. The population figures are recorded in the census report as: Europeans 9651, Indians 22,822, Goans 2431, Arabs 10,102, others 627—a total of non-native population of 45,633. The native population is estimated at 2,500,000. Though no epidemic occurred during 1923 there was a disquieting prevalence of small outbreaks of plague. None of these was severe, but it is clear that the range of this disease is spreading, and as the resources of the country are developed it may be expected that the incidence of plague will also grow. Further research work into the epidemiology of plague is necessary. Vaccine is now produced locally in the bacteriological laboratory. The incidence of pneumonia during 1923 calls for remark. The figures from five sources outside the reserves show that 1223 cases were treated, of which 385 terminated fatally, a percentage of 31.5. Included in these are the figures from the Nasin Gishu Railway, where, owing to climatic and other conditions, the incidence and mortality were higher than elsewhere.

Though many more natives applied for treatment for leprosy in 1923, it is not considered that this disease is extending, but rather that confidence in Government doctors is increasing. During the year 236 cases were reported, as compared with 81 in 1922; the bulk of this increase occurred in Chuka, Kisii, and Kakamega. Accommodation for lepers has been provided at these stations. There are also leper establishments at Malindi and Lamu, in which respectively 48 and 8 lepers are resident.

Considerable progress was made in the medical work in native reserves during the year. The total number of in-patients treated at hospitals in 1923 was 32,229, as against 37,384 in 1922, but the number of out-patients increased from 165,538 to 245,554, owing to the greater use made of the 46 sub-dispensaries in charge of African dressers, at which 110,509 patients were treated. No new central hospitals were opened in 1923, but some idea of the extent of the activities of the doctors in charge of these African hospitals is obtained by a glance at the figures of the three essentially native reserve stations, and, in order to show how the work has expanded, comparative figures for 1922 are also given:

	In-patients.		Out-patients.		Out-dispensaries and treated by medical officer on tour.	
	1922	1923	1922	1923	1922	1923
Chuka . . .	4470	3757	552	1775	—*	5,672
Kisii . . .	5624	2796	3,565	8306	—*	22,811
Kakamega . .	2179	1105	27,071	9271	—*	28,017

* Included under out-patients.

There was a great extension of the medical campaign against yaws; 64,344 cases were treated, compared with 34,233 in 1922, and this increase has been made possible by the more frequent tours of medical officers, and, in the Fort Hall district, by the stationing at the out-dispensaries of African dressers specially trained to give injections of bismuth. The expansion of this campaign was facilitated by the perfection and use of extremely inexpensive substitutes for novarsenobillon, and there has resulted a most marked and welcome change in the attitude of natives to the European doctor; whereas formerly the doctor and the hospital were feared, now natives have gained confidence from the knowledge that thousands of their fellows have been quickly cured of a widespread crippling disease. This is shown by the increased number of applicants for admission to hospital, and of those who are willing to submit to prophylactic treatment against such menaces to public health as plague and small-pox. In 1922, 18,737 persons were inoculated against plague, and 57,246 were vaccinated. In 1923 the respective figures were 122,460 and 56,345. The accommodation of the native hospitals at Mombasa, Nairobi, and Kisumu has been severely strained (the total accommodation at Nairobi is 190 cases), and during the year extensions were added—e.g., a dysentery ward at Nairobi and at Kisumu a new ward with 20 beds.

The training centre for African dressers is the Nairobi Native Hospital, where quarters for 15 learners have been provided. A beginning has also been made with the training of African dispensers. It is also the case that at the Bacteriological Laboratory six Africans were engaged in 1922, and are making good progress. A curriculum has been drawn up, and in the course of a few years (the normal training period will be three years) African assistants will, it is hoped, be ready for drafting to out-stations and be capable of performing all the more ordinary microscopical and other examinations required in the routine work of a hospital.

Attention is directed to the action taken to reduce drunkenness in native reserves by the enactment of the Sugar Ordinance Act, 1923. In certain native reserves, especially the Akamba Reserve, there has been prolific cultivation of sugar-cane. The cane was sold to millers, crushed into jagree, and re-sold to the natives, who then allowed it to ferment. Drunkenness increased to such an alarming extent that it became of vital importance to the well-being of the tribe to prohibit the manufacture of jagree. The new Ordinance prohibits the supply to a native, directly or indirectly, of sugar juice extracted by the use of any machinery designed for or capable of producing sugar juice, and the possession of a mill or other apparatus within proclaimed areas except under permit from the Government.

The rainfall in 1922 over the country as a whole was deficient, though on the coast that year was the wettest on record. In 1923 the rainfall was abundant and well-distributed—a fact exemplified no less by the abundance of crops than by the statistics of the various stations. As regards rainfall, Kenya may be divided into three parts. In the northern deserts, in Jubaland, and in the tracts of Tanaland

the rainfall is less than 20 inches a year. The coastal strip and the Nyanza and Kikuyu provinces have between 40 and 80 inches, and the remainder of the country from 20 to 40 inches of rain a year. At the coast the climate is tropical, though the temperature at Mombasa seldom rises above 87° F. in the shade. Up-country the heat is rarely intense, and in the cold season fires at night are welcome. Throughout the country the direct actinic ray compels the wearing of helmets or terai hats from 8 A.M. to 4.30 P.M.

FIRST-AID FOR THE CAR.

A LITTLE handbook entitled *First Aid for the Car* has been recently issued by Sterns, Ltd., and may be obtained free of charge on application to them at Royal London House, Finsbury-square, London, E.C.2. It measures only 4½ in. by 2½ in., but its 24 pages contain information which may be of great value to the puzzled amateur. It is arranged in tabular form under the headings symptoms, cause, and remedy for each vital system of the car. For example, under the section headed *magneto* we find various possible causes for absence of spark or misfires, with the appropriate treatment. Some of the treatment suggested is easier to read about than to carry out, even for the professional repairer, and to the ordinary owner-driver the handbook will probably be more useful as an aid to diagnosis. The two pages devoted to the motorist's own troubles should be revised or omitted. The application of arnica to bruises, the stimulation of a concussed patient, and the administration of brandy in sunstroke are not the methods that would now be advised by doctors, nor is the application of cold to the spine the best treatment for nose-bleeding.

DONATIONS AND BEQUESTS.

Alderman J. Harrison Jones, J.P., left £1000 to Liverpool University, £500 each to the Royal Infirmary, the Southern Hospital, the Bluecoat Hospital, and the Northern Hospital, Liverpool.—Glasgow University students, in a carnival on Jan. 17th in aid of local infirmaries and charities, collected over £700.—Mr. David Dunlap, of Northern Ontario, bequeathed £50,000 each to the Victoria University and the Toronto General Hospital.—During the past month the governors of the Royal Manchester Children's Hospital have received legacies and subscriptions amounting to over £2900, including legacies of £1000 from John G. Litton, £350 from the trustees of the late Mrs. Eliza Smith for X ray apparatus for the hospital, £500 from the Bleachers' Association; Booth charities, £250; Queen Alexandra Flower Carnival, £272; and the executors of the late Mrs. J. W. Burden, £100.—Mr. Frederick Ralph Norman Kendall, of Loxley, Warwick, left £1000 to Dr. Barnardo's Homes; £500 to Stratford-on-Avon Hospital; £300 to Stratford-on-Avon Nursing Home; and £200 to the Society for the Prevention of Cruelty to Children.—The Chelsea Hospital for Women has received from the trustees of the Zuntz Bequest, £600 towards the upkeep of its Annie Zuntz Floor.—Mr. John Henry Beeby, Peterborough, left £1000 to Peterborough Infirmary and Dispensary, and £500 to the National Children's Home and Orphanage.—Mrs. Margaret Booth Leach, Bournemouth, bequeathed a legacy of £500 to the Wigan Infirmary.—Sir Harold Bowden has sent a donation of £1000 to the Nottingham Cripples' Home.—Mrs. Annie Elizabeth Lee, of Thorp Arch, Yorks, left £500 each to the Leeds General Infirmary, the Leeds Women's and Children's Hospital, Cookridge Home, and similar amounts to other Leeds non-medical institutions. After fulfilment of personal bequests part of the residue will go to the Women's and Children's Hospital.—The late Colonel Sir Arthur Lever left, among other bequests, £500 to the Leicester Infirmary and £500 to the Middlesex Hospital.—By the will of the late Miss Sophia Hewitt, of Dedham, near Colchester, the testatrix left, among other bequests, £2000 to the British Home and Hospital for Incurables; £2000 to the Eastern Counties Institution for Idiots, Colchester; and £1000 each to the Association in Aid of the Deaf and Dumb, the Surgical Aid Society, and the Zenana Bible and Medical Mission.—Mr. Edward Thomas Duncombe Stokes, Woodford, Essex, left £1000 to the City of London Hospital for Diseases of the Chest, Victoria Park.—After the fulfilment of certain personal and other bequests the residue of his property, amounting to £8328, has been left by the will of the late Mr. H. C. Durham, of Bedford, to Bedford County Hospital.—Mr. George Somervell, Windermere, bequeathed £500 to the Westmorland County Hospital and a similar sum to the London Association in aid of the Moravian Missions for the Leper House at Jerusalem.—Sir Harry James Veitch, the well-known horticulturist of South Kensington and Chelsea, who left property of the value of £79,395, gave £1000 to Dr. Barnardo's Homes and a similar amount to five other societies and missions.

Recent Knowledge

OF THE SPLEEN.

*A Lecture delivered to the Manchester Medical Students' Club
on Jan. 15th, 1925.*

By JOSEPH BARCROFT, C.B.E., F.R.S.,
READER IN PHYSIOLOGY, UNIVERSITY OF CAMBRIDGE.

THE story I have to relate opens somewhere about the place where the Atlantic becomes the Caribbean Sea, and in the last days of 1921, when, on the deck of the R.M.S. *Victoria* of the Pacific Steam Navigation Company, three of the passengers might have been seen engaged in practices which were, to say the least of it, unusual among the habitués of ocean liners. For Prof. Meakins, then of Edinburgh, now of Montreal, Mr. Doggart, of King's College, Cambridge, and myself were parading the deck, our noses firmly clipped, breathing from rubber bags which we patted and shook the while. By and by we sat down and transferred the ritual of patting the bag to another, but before we ceased from inhaling the "vapour" of the bag a small sample of our blood was taken for analysis. In other words, the blood volume was being measured. The bag contained oxygen, but with it a certain measured amount of carbon monoxide. The carbon monoxide was in time practically all absorbed in the lung by the blood-stream, through which it was distributed, so that if the amount of carbon monoxide in each cubic centimetre of blood was ascertained (which can be done from the sample), and if that amount be divided into the whole quantity absorbed from the bag, the quotient gives the blood volume. So much by way of description of the method of Haldane and Lorrain Smith as we used it.

But although the story commences with our entry into the Caribbean Sea, we had made measurements on ourselves before leaving Europe, and on such rare occasions as the weather permitted of, had done the same on our voyage—we were bound for the Andes—but hitherto our determinations had been consistent; now they seemed to be going wrong in the case of each subject; apparently, the blood volume was increasing. Moreover, it was not simply the quantity of fluid that was gaining, but the hæmoglobin in circulation was mounting up also. This was a most disconcerting circumstance, because our ambition was to study the alterations in the hæmoglobin wrought by high altitudes; for this study it was necessary to obtain a sea-level base line, and now our base line was slipping from us. However disappointing it might be, there was no escape from the facts. Up went the blood volume day by day; up went the hæmoglobin, and this went on until we reached the Panama Canal, when a change took place, and the tide of hæmoglobin—so to speak—commenced to abate. By the time we reached Callao both the blood volume and the hæmoglobin in circulation were above the normal figures, but much below the Panama maximum. What was the explanation? Was it some error in our instruments or was it a real phenomenon, and if the latter were true, what was its significance?¹

INCREASE IN BLOOD VOLUME WITH INCREASED TEMPERATURE.

We had been using but one method for the analysis of the blood—it is always bad to be dependent on one method—coming back we used three. In general the results were the same, though not so clear cut. Of course, having been at all sorts of temperatures and altitudes we were in a less stable condition. Inadvertently this word has slipped out which I had reserved for emphasis—"temperatures"; for it was remarkable

enough that the curve of our blood volumes ran almost parallel to that of mean temperature of our cabins—rising as we approached the tropical heat of Central America, falling as we entered the cooler "Humboldt current" on the West Coast of South America. Were we right in supposing that temperature was the cause, not something coincident with the vascular changes which interested us? The matter was not difficult to test subsequently at home. Two colleagues, Drs. Davies and Fetter, offered themselves for the purpose. Each lived for three days in the glass room which forms part of the equipment of the Cambridge Physiological Laboratory. The season was one of snow; the temperature of the glass room was maintained at 90–95° F. day and night. The blood volume was measured independently by Dr. Davies, Prof. Meakins, and myself. The changes were just such as had taken place at sea and now clearly were due to rise in temperature. The physiological significance is clear enough; large cutaneous vascular areas are opened up in response to the heat, the blood to fill them must come from elsewhere, and as "elsewhere" may have need of it, it is desirable to have a volume of blood commensurate with the size of the vascular bed.

But I must repeat it was not merely the amount of water in circulation which was influenced by temperature—a matter with which Barbour has already dealt.² It was the total amount of hæmoglobin. The mystery was: "Whence came this outpouring of hæmoglobin?" It was not credible that the bone-marrow could have provided the body with new corpuscles at the rate required. Moreover, there was no evidence of increase of immature corpuscles in circulation on the way home from Peru, and only on the third day of the Davies and Fetter experiment—but quite definitely then—was there evidence for increase in the immature (reticular) erythrocytes.

THE BODY'S HIDDEN STORE OF HÆMOGLOBIN.

The question then was forced upon us: Has the body any considerable but hidden store of hæmoglobin which can be drawn upon in case of emergency? Note the two adjectives "considerable" and "hidden." Let me pass to the consideration of the latter. "A hidden store," in the sense I use the term, must mean a store to which carbon monoxide has no considerable access in, say, 20 minutes inhalation of quantities of the gas not too large to be readily tolerated by the central nervous system.

In searching for a locality which might fulfil such a condition one naturally seeks in the first instance for some place where the red blood corpuscles are outside the circulatory system—some backwater outside the arteries, capillaries, and veins. There is only one such place of any considerable size in the body—that place is the spleen. There the general mass of the spleen pulp is laden with erythrocytes. To what extent may these be said to be in circulation? About the time of which I speak Dr. Duncan Scott was making measurements of the volume of the blood in rats.³ His measurements were made by the carbon-monoxide method, and I have to thank him for the permission which he granted me to investigate the spleens of these animals. Although the blood in the general circulation at death contained a very high percentage of carbon monoxide, the hæmoglobin contained in the spleen pulp contained practically none. This observation was confirmatory of one made by Heger⁴ to which little attention has been paid—namely, that in some persons who died of rapid inhalation of carbon monoxide the hæmoglobin of the spleen pulp was almost devoid of contamination with that gas.

RELATION OF THE SPLEEN TO THE SYSTEMIC CIRCULATION.

The quest of the spleen as a storehouse for red blood corpuscles outside the circulation seemed to be worth following in a more systematic manner, and with the assistance of Henry—of the same ilk—I⁵ determined

to find out how long it required for the carbon monoxide to penetrate in spleen, and when and if the carbon monoxide did enter the spleen pulp, how long it remained there after it had been cleared from the general circulation. Our work was continued by Hanak and Harkavy and by de Boer and Carroll. I may deal with the two papers together. The following statements may be made.^{6 7}

1. In rabbits breathing air which contains 0.1 per cent. CO there is a lag of about 20 minutes, more or less, between the time at which the blood contains a certain percentage of CO hæmoglobin and the time at which the erythrocytes in the spleen pulp acquire the same percentage.

2. After the hæmoglobin in the spleen pulp has attained to an equilibrium with that in the blood, if the rabbit be taken out to the air containing carbon monoxide and placed in air free from that gas, the spleen pulp retains the carbon monoxide much longer than the general circulation, so that upwards of an hour may elapse between the time at which hæmoglobin of the circulating blood drops to a certain CO saturation and the time at which the hæmoglobin in the spleen pulp falls to the same saturation.

3. If the animals—cats, rabbits, guinea-pigs, and rats—be placed in air containing a much lower percentage of CO, such, in fact, that the blood in the general circulation does not become more than 20 per cent. saturated with carbon monoxide, the CO may not penetrate at all into the spleen pulp, the hæmoglobin in that situation remains entirely free from the gas for as much as four hours. This phenomenon, which is confined to resting animals, is very important, because it shows that in those animals the spleen pulp is cut off entirely from such circulation as may be taking place in this organ. It shows also that the rhythmic contractions which we are accustomed to associate with the life of the spleen either do not take place during normal circumstances of rest in the body, or if they do, the changes in volume are so small as to trench only on the volume of the blood in the vessels. It is clear that if there were any rhythmic ebb and flow of corpuscles between the circulation and the spleen pulp, the carboxyhæmoglobin must enter the pulp with the corpuscles which contain it.

4. It is the resting animal that I have been discussing; in the active animal it is otherwise. Take up a rabbit by the ears and if it kicks about, as very likely it will, the carboxyhæmoglobin will penetrate at once into the spleen pulp, so that in five minutes the pulp will acquire a percentage of hæmoglobin which five hours would not suffice to give it were the rabbit at rest. The opening of the storehouse door is functional.

MECHANISM OF THE SPLENIC CONTRACTIONS.

5. At this stage something must be said about the mechanism of the splenic contractions. Whilst it is true that CO does not readily enter the spleen pulp, it is also true that a very small quantity of carboxyhæmoglobin in the blood will cause some contraction of, as opposed to peristalsis of, the spleen. This contraction is not the effect of carbon monoxide on the spleen itself, but of carbon monoxide on the central nervous system. It would be more correct to say that it is the effect on the central nervous system of a reduction in the amount of oxyhæmoglobin in circulation. Thus if the spleen of an animal be connected to the rest of the body solely by the nerves, all other connexions being severed, and if it be perfused with blood from an artificial circulation, the spleen will contract if carbon monoxide be given to the animal, but it will not contract as the result of introducing carbon monoxide into the blood with which the splenic circulation is supplied.

Carroll and de Boer made it quite clear that the material wrung from the spleen was largely corpuscles, because the CO content of the blood in the splenic vein, drawn during a contraction, was intermediate

between that of the splenic artery and the spleen pulp—e.g.:

Percentage COHb Content of Hæmoglobin.

	Arterial.	Spleen pulp.	Splenic vein.
Exp. 4	11	0	7
.. 5	15	2	8
.. 6	30	3	13

Let us review the situation up to the point at which we have arrived. We started with the underlying idea that if the body were deprived of blood by a diversion of that fluid to the skin in a warm climate, the blood volume would increase and the necessary corpuscles might be extruded as an emergency measure from the spleen. We have seen that administration of carbon monoxide which reduces the quantity of oxyhæmoglobin in circulating blood will make the spleen contract, and as mere deficiency of oxygen in the inspired air will do the same we are justified in asking whether the spleen is, in fact, a reserve of red blood corpuscles—a place where, if not wanted for the transport purposes of the body, they may be “parked” till some emergency arises which demands an increased number of vehicles of oxygen transport.

THE SIZE OF THE SPLEEN IN THE LIVING BODY.

Yet any suspicion that the spleen can have more than a purely academic function in contributing hæmoglobin from its store to the general circulation raised the question: What size is the spleen? The answer is far from apparent. In any anatomy book some such statement occurs as that the human spleen weighs from 4–10 oz.—i.e., from 110–275 g. But this is the dead spleen. The question is forced upon us: What relation does the bulk of the living spleen bear to that of the dead organ? In search of an answer our group had recourse to the X rays. It is not possible to see the spleen in a radiogram, and, being in no way an X ray expert, I consulted Dr. Dale as to whether at the National Medical Institute he had any experience of methods by which otherwise invisible organs can be thrown into relief. Such, for instance, as the blowing of gas into the abdomen. I would like here to record our thanks to Dr. Dale for a most valuable suggestion—namely, that small pieces of metal might be attached to the edges of the spleen in a preliminary operation and, as their position could easily be seen on the radiogram, an idea of the size of the spleen could be obtained. For the purpose we have used metallic sutures which are easily clipped on to the edge of the organ at suitable points. The operation is very easy; the animals in all cases make rapid and quick recoveries.

Two types of experiment have been carried out by Drs. H. A. Harris, Orahovats, Weiss, and myself.^{8 *} The first may be regarded as preliminary, and have been conducted with a pre-war X ray plant in the Cambridge Physiological Laboratory; the latter, which are much more exact, were conducted in the department of anatomy, University College, London. Fortunately the changes in size are sufficient to give a value to the preliminary series, though one would only accept them in the light of the more exact data. The X ray apparatus at Cambridge only projects rays from below upwards. Consequently in order to get an idea of the position of the sutures in the body it is necessary first to look at the animal when on its stomach and then when on its side. This practice is vicious for several reasons: (1) there is some displacement of viscera in orienting the animal; (2) neither the sutures nor the screen is the same distance from the bulb when the animal is in one position as when it is in the other.

But the method, as a preliminary one, is very convenient for rabbits. It is easy to make numerous observations measuring the distances apart of the suture-shadows on the fluorescent screen with dividers and not the changes which occur by inspection.

* For the success of the results we owe much to Mr. Melville, Technical Assistant in Prof. Elliot Smith's department,

When a definite issue has presented itself the animal was moved up to London and the point proved or disproved by the taking of radiograms by Dr. Harris in the department of anatomy at University College. The installation there admits of $\frac{1}{8}$ second exposures. From the radiograms taken in two planes one can reconstruct the organ in three planes of space.

The investigation of the size of the spleen during life resolves itself into a comparison between the living and the dead spleen. The latter, of course, we can weigh. This comparison has been carried out entirely by orthodiagrams. The following procedure has been adopted. Two radiograms are taken in the lateral and antero-posterior planes, with an exposure of $\frac{1}{8}$ second, one half second being sufficient for the change over from one tube to the other. The animal is then killed in some suitable way; another pair of radiograms are taken shortly after death and a third pair next day. The body is then opened, any adhesions are noted, and the spleen taken out and weighed. From the films prints are made and the following reconstruction takes place. The print from the side (such as those shown in Fig. 1, but of the original size) is laid on a flat paraffin block. Through the point at which the teeth of each suture meet a sewing needle is driven into the wax. This needle is vertical and into the eye is tied a thread. On the view from the back is measured the distance of each suture from the middle line of the animal (or from some convenient line parallel to the middle line) and the needles are driven into the wax until the top of each needle is as

FIG. 1.



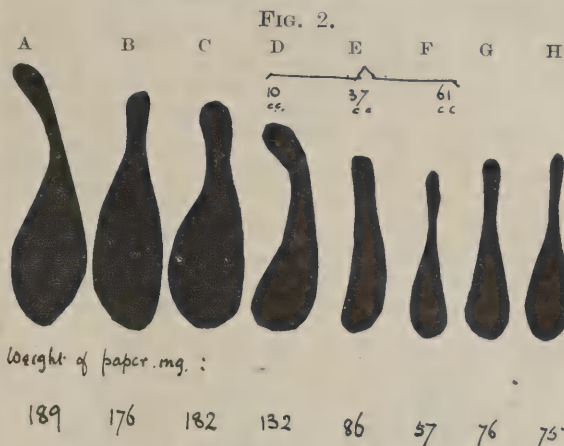
A B

Metal sutures indicate the contour of the spleen. A, after mild exercise. B, at rest.

far from the surface of this wax as the corresponding suture is (on the print) from the middle line of the animal. A piece of soft copper wire is now adjusted to the tops of the needles, being tied to each by the thread and so a wire figure is made which delineates the edge of the spleen. This structure of wire is used as a template; from it an area is traced on paper or sheet lead bent to fit its curvature. This area is then cut out and if flattened would represent the surface which the spleen would cover if taken out of the body and laid on the flat. Of course, the alteration in area of this surface, as between life and death, only represents the change in the size of the spleen in two planes of space. There is no reason from the musculature of the organ to suppose that the thickness of the spleen is more or less involved than the length or breadth, and therefore one may form a crude idea of the changes in volume by taking the square roots of the superficial areas of the lead models (or of the weights of the models) and cubing these square roots.

If the weights, as representing the surfaces, are used, of course care must be taken to see that the sheet lead (or paper) of which they are made is of uniform thickness.

Fig. 2 shows a number of such areas taken from the spleen of Cat 1. Of these the first three and the last two are those which concern us. The first two are



A, normal i.; B, normal ii.; C, urethane; D, E, F, hæmorrhage; G, after death; H, following day.

from the resting cat at observed different times, a week apart. The cat was bled to death within an hour or two of taking the second; the last two were after death, one immediately after, the other the day after. Similar records were taken from Cat 2. In each case the post-mortem weight of the spleen was 6.6 g. The following are the calculated weights corresponding to the records. Cats 3 and 4 were drowned (Table I.).

TABLE I.—Weight of Resting Spleen (Grammes).

Cat.	Weight post mortem observed.	Weight just after death computed.	Weight at rest computed.	Mode of death.
1	6.6	6.7	26.4	Hæmorrhage.
2	6.6	6.5	24.1	
3	10.0	11.8	19.8	"
4	12.1	12.3	31.2	Drowning.

In the case of the cats given above it is calculated, therefore, that the spleen in the living cat is two to four times as heavy as that in the cat which has been bled to death or drowned, the loss of weight during the operation being from 10–20 g., a very appreciable fraction of the blood volume, which would be from 100–150 c.cm. To the latter fact I will return; here I emphasise the striking phenomenon that the living spleen may in the cat be four times the size of the "anatomical" or "post-mortem room" spleen and about 1 per cent. of that of the animal.

EFFECT OF HÆMORRHAGE ON SIZE OF SPLEEN.

The mention of hæmorrhage leads us to some other considerations. If the spleen is to be regarded as a sort of bank of red blood corpuscles in which they are stored in large numbers and from which they can be thrown into the currency of the circulation on demand, the spleen should respond to two calls which have not yet been considered; of these the first is hæmorrhage, in which oxyhæmoglobin is removed from the circulation; the second is exercise in which the utilisation of the hæmoglobin is much increased. Let us consider first the question of hæmorrhage. Cat 1 was not bled to death in a single bleeding but in a succession of bleedings and under urethane. Fig. 2 shows the reconstructed "spleen-surface" after each bleeding. In this case the urethane had little effect on the size of the spleen, but on hæmorrhage it contracted down until in the death-agony the spleen was only one-sixth

of its original size. After death it expanded somewhat; presumably the muscular fibres relaxed, but in the absence of any considerable circulation the expansion could not be very great (Table II.).

TABLE II.

Hæmorrhage.	Relative weight of spleen.	Calculated actual weight. Dead spleen = 6.6 g.
0	1000	24.3 g.
10	604	14.5 g.
37	320	7.8 g.
61	167	4.1 g.
Dead.	273	6.7 g.
Next day.	271	6.6 g.

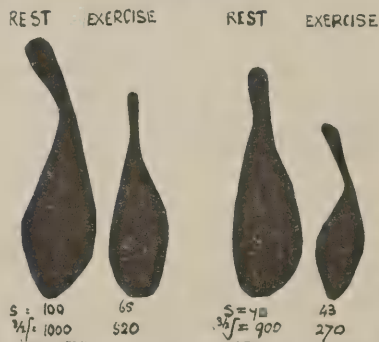
During the hæmorrhage the spleen of Cat 1 shrank from 24.3 to 4.1 g., squeezing out over 20 g. of material. This material, if blood, would correspond to about one-sixth of the blood volume of the cat; if red blood corpuscles, to about one-third of the corpuscles. Quite similar results were obtained on Cat 2.

EFFECT OF EXERCISE ON THE SIZE OF THE SPLEEN.

The picture shown in Fig. 3, taken from Cat 1, show a very simple case of the shrinkage of the spleen with exercise; the photos are taken from the side. It will be observed that this aspect of each suture is nearly the same in both pictures, and therefore evident approximation of the suture-shadows represents, though not quite quantitatively, the approximation of the sutures themselves.

The manufacture of models from these lateral pictures and the corresponding antero-posterior ones taken from the back gives us the second pair of surfaces shown in Fig. 3. The first pair were from

FIG. 3.



Showing reconstructed spleen surface before and after exercise in Cat 1.

Cat 1 a week earlier. Remembering that the dead spleen of the same cat weighed 6.6 g. we can form an estimate of the weights of the spleens before and after exercise. Similar data were obtained from Cat 2 (Table III.).

TABLE III.—Estimated Weight of Spleen.

—	Rest.	After exercise.	Shrinkage.
Cat 1 (a)	26.4	13.7	12.7
„ (b)	24.1	7.1	17.0
„ 2	19.8	9.9	9.9

Here, again, we see that with exercise which was not at all severe the spleen can squeeze out 10–17 g. of something which may be blood, or may even be mostly red corpuscles. In the latter case 17 g. of corpuscles would correspond to about 40 c.cm. of blood, or blood equivalent to about one-third of a quarter of the total blood volume of the cat. Similar but less striking results were obtained from rabbits.

The last specific point to which I shall address myself is this. Can it be shown in point of fact that the possession of a spleen really makes any tangible

difference to the organism? Well, I suppose the greatest difference which anything can make to it is the difference between life and death. Can we, therefore, think out any set of circumstances in which animals without spleens would die where animals with spleens would, on the whole, survive? Such a circumstance might be a certain degree of hæmorrhage, but more easy of experimental proof is a certain degree of carbon monoxide poisoning. Several experiments were performed in which guinea-pigs of three categories were exposed to coal-gas.*

The three categories were: (a) normals; (b) those in which the abdomen had some omentum or pancreas had been removed in the neighbourhood of the spleen; (c) those in which the spleen was removed. In a typical experiment three animals of each category were placed simultaneously in a chamber and the gas tap turned on. The times of death were noted and also the percentage saturation of the blood with carbon monoxide at death. Briefly, it may be said that the fatal percentage of carbon monoxide in the blood of all the guinea-pigs was the same. On the whole the animals in category B died a trifle sooner than those in category A, whilst the splenectomised animals died markedly sooner than either (Table IV.).

TABLE IV.

—	A. Normals (18).	B. Operated controls (16).	C. Splenectomised (17).
Mean percentage of COHb in blood at death. . .	83.3	83.5	83.3
Longevity in gas expressed in a percentage of A ..	100	93	74

Control experiments of another sort were made. The animals were exposed not to carbon monoxide, but to hydrocyanic acid—a gas which does not poison by making a demand on the hæmoglobin in circulation. In this case no difference could be detected between the longevity of the normal guinea-pigs and that of the controls in the hydrocyanic acid.

It is not intended that the views which I have put forward should compete with the current teaching about the functions of the spleen; rather they render it more intelligible. I have no wish, for instance, to deny that the spleen is an important cemetery for red blood corpuscles any more than I have to tilt against anyone expressing the view that London is the largest cemetery in England, but I think that, according to the above experiments, the blood volume should be regarded not as aliquot part of the body-weight, but as a physiological variable which is adjusted to the work required of it, and to the size of the “bed” which it occupies, and of the spleen as being, not a “ductless gland,” but a definite part of the vascular system. It has a function entirely in conformity with its muscular structure, being in fact a reservoir of corpuscles at once fitted by its reticulum to detain them and by its musculature to expel them when required to do so. Finally we are enabled to arrive at an intelligible estimate of when and why the body is likely to “vent its spleen.”

REFERENCES.

1. Barcroft, J., Binger, C. A., Bock, A. V., Daggart, J. H., Forbes, H. S., Harrop, G., Meakins, J. C., and Redfield, A. C.: Report to the Peru High Altitude Committee, 1922. Phil. Transact. Roy. Soc., Series B, vol. 211, p. 419; and Barcroft, J., Meakins, J. C., Davies, H. W., Duncan Scott, J. M., and Fetter, W. J.: *Ibid.*, p. 455.
2. Barbour, H. G., Loomis, N. M., Frankman, R. W., and Warner, J. H.: *Journ. Physiol.*, 59, p. 300, 1924.
3. Duncan Scott, J. M.: *Biochem. Journ.*, 17, pp. 157 and 166, 1923.
4. Heger: *Upon Unequal Diffusion of Poisons into the Organs*, p. 5. James Parker and Co., Oxford, 1894.
5. Barcroft, J., and Barcroft H.: *Journ. Physiol.*, 58, p. 138, 1923.
6. Hanak, A., and Harkavy, J.: *Journ. Physiol.*, 59, p. 121, 1924.
7. De Boer, S., and Carroll, D. C.: *Journ. Physiol.*, 59, p. 312, 1924.
8. Barcroft, J., Harris, H. A., Orskov, D., and Weiss, R.: *Proc. Physiol. Soc.*, January, 1925, *Journ. Physiol.*
9. Barcroft, J., Murray, C. D., and Sands, J.: *Proc. Physiol. Soc.*, October, 1924, *Journ. Physiol.*, 59, p. xxxvii., 1924.

THE TREATMENT OF PURPURA HÆMORRHAGICA BY SPLENECTOMY.

BY G. A. SUTHERLAND, C.B.E., M.D. EDIN.,
F.R.C.P. LOND.,

PHYSICIAN TO THE PADDINGTON GREEN CHILDREN'S HOSPITAL;

AND

BRUCE WILLIAMSON, M.B., CH.B. EDIN.,
HOUSE PHYSICIAN TO THE ABOVE HOSPITAL.

THERE seems to be a considerable difference of opinion as to the prognosis in cases of purpura hæmorrhagica or the *morbis maculosus Werlhofii*. Some view the condition as trifling, others as quite hopeful, and others as often terminating fatally after a more or less prolonged course. There are certain reasons for these discrepancies.

The term purpura hæmorrhagica has been employed by some writers to cover several conditions, and by others to denote one particular type of bleeding disease. Some text-books define purpura hæmorrhagica as an idiopathic disease in which purpuric eruptions are associated with hæmorrhage from a mucous membrane. More modern books use the term to signify an idiopathic disease in which hæmorrhage from mucous membranes and petechiæ are prominent features, and in which the blood shows essentially a thrombocytopenia—i.e., a diminution in blood-platelets. It is only within recent years that any exact differentiation has become possible. With the aid of modern methods of blood examination it has become possible to define one particular type by a combination of clinical history, physical signs, and certain blood tests, and to this type the name "essential thrombocytopenic purpura hæmorrhagica" has been applied by American writers. Despite the obvious drawbacks to such a title, we have adopted it (and shall refer to it in this paper as E.T.P.H.), as it leaves no room for confusion and effectively isolates this from the other forms of purpura. This differentiation becomes a matter of prime importance if splenectomy is to be considered as a method of treatment.

Clinical Conditions.

Thrombocytopenic purpura hæmorrhagica is essentially a disease of early life, although it may occur at any age. It begins commonly between the ages of 2 to 15 years. It would appear to be a primary disease. There is no hereditary tendency, there is no known constitutional or local disease associated with it, and in the acute cases, which tend to a natural recovery, there are no sequelæ. It will be seen that many forms of purpura, those associated with a family tendency and those which are secondary to or associated with some manifest disease, are thus ruled out. The onset is the same as in purpura simplex—namely, the appearance of a crop of purpuric spots or bruise-like marks in some part of the body. In some cases a sudden epistaxis may mark the onset as noted by the patient, but examination at this time will usually show the presence of purpuric spots or ecchymoses in some part of the body.

As many acute cases tend to a natural recovery, with, without, or in spite of treatment, we shall confine our attention to the chronic relapsing cases, which are the only ones in which treatment by splenectomy would be considered. The usual history is one of fresh hæmorrhages recurring from time to time, and lasting for a few days or weeks. Between attacks there are intervals of from a month to three or six months. The hæmorrhage referred to is usually epistaxis. The skin hæmorrhages do not attract so much attention, but they also vary in extent at different times. Hæmorrhage from a mucous membrane does not yield readily to any treatment, and usually ceases spontaneously. In the case of epistaxis

plugging of the nostrils has often had to be resorted to. Direct transfusion of blood may lead to a temporary cessation of the bleeding, but the effect soon passes off, and bleeding of a severe type recurs. Clinical observers have come to the conclusion that in severe cases no reliance can be placed on blood styptics, or sera, or any medical remedies employed in other forms of hæmorrhage. Whatever be the form of treatment the result is the same—the bleeding stops of its own accord, and not as the result of outside agents. It will be found that recurrences of the hæmorrhage take place irrespective of any known preventive treatment, and that these are determined by the alterations in the blood present in and characteristic of this disease. Recurrent, intractable, and often alarming hæmorrhages are amongst the leading features. Oozing about the gums is common, especially when the patient brushes the teeth. Epistaxis is the commonest and outstanding form of hæmorrhage from a mucous membrane. Other sites of hæmorrhage may be in the stomach and bowel, in the kidneys and urinary passages, in the vagina, and sometimes in the brain or meninges.

The onset and progress of the disease are characterised by a singular absence of symptoms of discomfort or ill-health. The patient will probably never complain of anything until the progressive anæmia leads to symptoms. The causes of the anæmia are two-fold, first the underlying changes in the blood, and secondly the loss of blood from recurrent hæmorrhages. Many cases run a prolonged course, lasting sometimes for years, in which, apart from the pallor, languor, tiredness, &c., accompanying the anæmic condition, one cannot find any distinctive symptoms. This absence of symptoms becomes a valuable aid in diagnosis.

On physical examination petechiæ are seen, fresh crops of which come and go. They are usually small and discrete and remain so. We have not met with the larger type of purpuric eruption, such as is common in Henoch's purpura, in which the effusion takes the form of raised hæmorrhagic nodules or urticarial wheals. The petechiæ are most abundant in the lower extremities, but may appear anywhere, often in the mucous membrane of the mouth. Ecchymoses are usually found if the child has been up and running about. The ease with which these ecchymoses are produced from very slight injury and the extent of the resulting hæmorrhage form striking features in this disease. The only other change to be noticed is an enlargement of the spleen. This does not usually attain to any great dimensions and would appear to vary considerably from time to time, and it is probable that an active stage of the disease is accompanied by an increase in size of the spleen, along with an outbreak of fresh purpuric spots and hæmorrhage.

The Blood Tests.

An ordinary blood examination will show the presence of a secondary anæmia varying with the severity of the disease. There are three outstanding features in connexion with the blood which help to differentiate this disease.

1. *A Great Diminution in the Number of Blood Platelets or Thrombocytes.*—In normal human blood the blood platelets average from 150,000 to 300,000 per c.mm. In this disease the number is greatly diminished, falling in different cases to 40,000, 20,000, 5,000, or there may be no platelets at all. This is regarded as so important and characteristic a feature that the term thrombocytopenic has been incorporated in the name of the disease.

2. *Prolongation of the Bleeding Time.*—The bleeding time is determined by puncturing the ear and noting the time during which blood continues to flow. In healthy conditions this will be from two to four minutes. In E.T.P.H. the bleeding time is prolonged to 10 or 12 minutes, and in severe cases may last from 20 minutes to many hours. It is not claimed that this prolongation of the bleeding time is peculiar to

purpura hæmorrhagica, but it is not present in purpura simplex, Henoch's purpura, or hæmophilia. It is rather difficult at first sight to understand why, when the coagulation time is normal, the bleeding time should be prolonged. This difficulty is explained by Duke as follows. Hæmorrhage is not stopped by a clot but chiefly by intravascular plugs (thrombi). A clot is formed from blood at rest and the coagulation of fibrinogen is the essential factor. A thrombus, on the other hand, is formed from blood which is flowing, and for its formation a certain number of platelets is indispensable. Platelets adhere to any injured point in a blood-vessel and are deposited there in enormous numbers by the blood as it flows past, until, finally, thrombosis is complete. It is easily conceivable that an almost entire absence of platelets from the blood should lead to abnormality in the initiation or completion of thrombosis, and be a cause of prolonged hæmorrhage, whether the fibrin-forming elements were normal or not.

3. *Non-retraction of the blood clot* is rather a striking feature. Normal blood will clot readily en masse, and in 20 minutes the clot will be definitely contracting, and within an hour will be firmly contracted and surrounded by the expressed serum. In this disease, while the blood clots in the usual way and in the normal time, no retraction takes place, even if it remains standing for hours. It is evident that some constituent of the blood is lacking—namely, as stated above, the blood platelets. Confirmative evidence of this is supplied by the fact that when the blood platelets reappear in sufficient number in the blood, for example after splenectomy, the clot again becomes retractile and the bleeding time normal.

Diagnosis.

For the exact diagnosis of E.T.P.H., and from the point of view of treatment by splenectomy, it seems advisable that both the clinical phenomena and the blood tests should be found to correspond with the picture outlined above. The recorded cases which have been successfully treated by splenectomy show a great similarity in clinical history, clinical findings, and blood reactions. There is no single symptom or blood test peculiar to this disease. It is the symptom-complex which enables one to differentiate the special type, and when an operation like splenectomy is on trial for one form of hæmorrhagic disease it seems very necessary to limit its application to that type and not to employ it indiscriminately for other forms of purpura.

Pathology.

Recent studies on purpura hæmorrhagica have thrown some fresh light on the old problems. It has long been disputed whether a purpuric eruption was due primarily to an altered condition of the capillaries or to an altered condition of the blood. The escape of blood from the capillaries, with or without slight traumatism, was supposed to indicate an underlying friability or permeability of these vessels. In the case of E.T.P.H. it is clear that the prolonged bleeding time and the absence of clot retraction cannot be dependent on any changes in the vessel wall. That an abnormal permeability of the capillaries is present in E.T.P.H. is shown by the capillary resistance test. This consists in applying a tourniquet for a couple of minutes round the upper arm with a pressure sufficient to lessen, but not entirely stop, the flow of blood in the arteries. In a few minutes a crop of petechiæ appears over the limb below the constriction.

Probably the outstanding factor amongst the blood changes is the diminution in the number of blood platelets, the so-called thrombocytopenia. The fact seems to be that if the blood platelets are reduced below 40,000 per c.mm. in place of the normal 150,000 to 300,000, a tendency to purpura is at once produced, and is increased as the platelets diminish further in numbers. The presence of a sufficient number of platelets seems to be necessary to prevent

capillary leakage (petechiæ) and also in connexion with the normal clotting of the blood. Hence in E.T.P.H. the prolonged bleeding time and the non-retraction of the clot are supposed to depend on some constituent of the blood, which has been removed with the platelets, and which is probably produced by the platelets.

The importance of a sufficiency of blood platelets has been shown experimentally. Duke was able to produce the clinical signs of purpura hæmorrhagica (petechiæ, prolonged bleeding time, and non-retractile clot) in rabbits by reducing the platelet count with diphtheria toxin. In the treatment of cases of purpura hæmorrhagica by direct transfusion it has frequently been found that the hæmorrhages ceased coincidentally with an increase of the platelet count. Hæmorrhage recurred when the platelet count fell again, usually a matter of a few days. It seems now to be generally accepted that a condition of thrombocytopenia is directly and causally associated with purpuric manifestations. The recognition of this association does not imply the acceptance of any extreme views, such as that the sole cause of purpura is a thrombocytopenia or that purpura hæmorrhagica is invariably accompanied by a small platelet count. The one point of progress in the pathology is the differentiation of a type of disease—namely, thrombocytopenic purpura hæmorrhagica.

Another advance in our knowledge was the recognition of the fact that the spleen played a part in the production of E.T.P.H. So far no one has been able to prove that the spleen has any beneficial function, nor have bad effects been traced to its removal in certain forms of disease. On the other hand, we have now much evidence of the evil results following on disease, or, to be more precise, disordered action of the spleen. In splenic anæmia and in acholic jaundice we have examples of disordered action of the spleen. This action takes effect on the blood and is of a destructive character, affecting more especially the red cells and the hæmoglobin. In E.T.P.H. there seems to be another type of disordered action in the spleen, which takes effect more especially on the thrombocytes and leads to a great diminution in their number. Whether the platelets are actually destroyed by the spleen or are merely withdrawn from the circulation and stored up in the spleen seems still uncertain. In some cases of splenectomy for E.T.P.H. the blood in the spleen has been found to contain many more platelets than red cells.

It may naturally be asked, Why incriminate the spleen in connexion with these blood platelet changes and purpura hæmorrhagica? A bold man, Frank of Berlin, held the view that the spleen inhibited the formation of platelets and suggested its removal in purpura hæmorrhagica. A bolder man, Kaznelson of Prague, was of opinion that the spleen destroyed the blood platelets in purpura hæmorrhagica and proceeded to remove it. His patient was completely cured of all symptoms and has continued well. In the United States, Brill, Rosenthal, Murray Bass, Cohen, and others, have employed splenectomy in this disease with excellent results. It has been proved by these workers that whatever the exact rôle of the spleen may be in E.T.P.H. it certainly is a very important one.

The whole subject of the relationship between E.T.P.H., the blood platelets, and the spleen requires further elucidation. It is not definitely known whether the spleen (1) inhibits the bone marrow formation of platelets (Frank), or (2) removes the platelets from the circulation (Kaznelson), or (3) alters the nature and agglutination properties of the platelets (Brill), or (4) removes abnormal platelets produced by abnormal megacaryocytes (Seeliger). It is clear that the spleen is directly associated with the great diminution of platelets in the blood in thrombocytopenic purpura hæmorrhagica, because after splenectomy they soon reappear in normal numbers, and there is also found a restoration of the normal bleeding time and clot retraction. The fact that the spleen is enlarged in

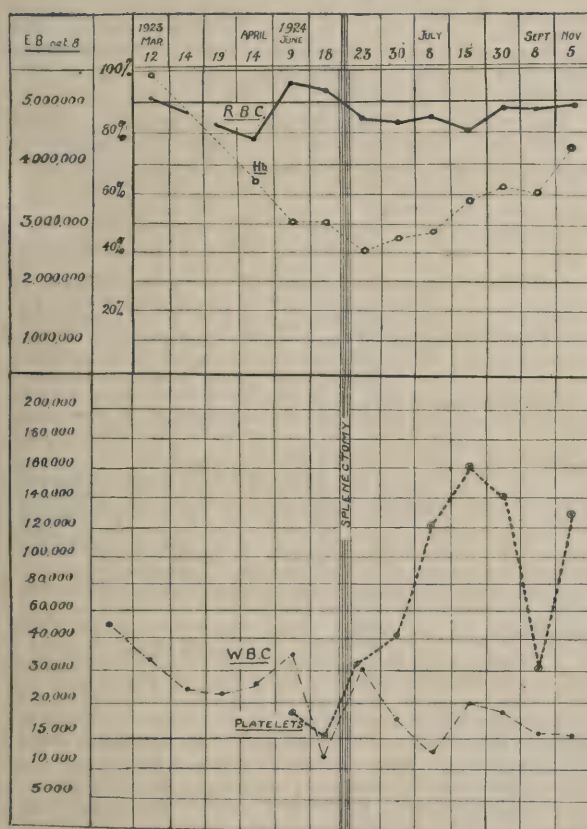
this disease can usually be made out on clinical examination and is always evident when splenectomy is performed. So striking have been the results of splenectomy in E.T.P.H. that the duty of pathologists now is not to question the direct action of the spleen in this disease, but to determine the exact change or disturbance in the spleen leading to thrombocytopenia, and also its cause.

Treatment by Splenectomy.

So far as we are aware no cases of purpura hæmorrhagica treated by splenectomy have been recorded in this country. The following cases have been under our care recently, two of which were considered suitable for splenectomy. A study of the literature of the subject shows that the operation is by no means devoid of risk in this disease. The physician ought to have sufficiently clear indications for splenectomy and see that the time selected is the best for the patient. In the two cases operated on it was considered that the general health of the patient was suffering, and that radical treatment was required. Both patients had suffered from severe recurrent epistaxis, one for six months and the other for three years, and were confined to bed owing to the anæmia and debility. At the time of operation there was no active epistaxis or other internal hæmorrhage going on. It certainly seems advisable, although it may not be necessary, to operate during an interval between the recurring attacks of active bleeding. The presence of petechiæ and the tendency to bruising do not seem

CHART 1.

Operation, June 19th, 1924.

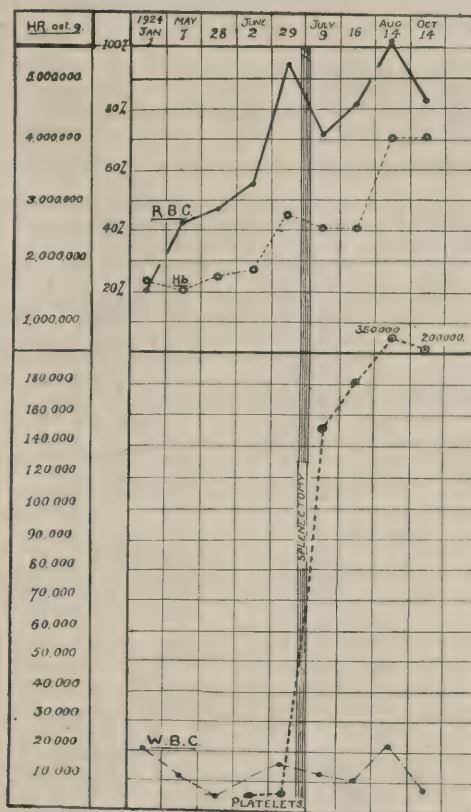


to be of prime importance, as they are more or less constantly present. As all forms of active movement tend to increase the hæmorrhage, it was considered advisable to give the patients a month's rest in bed before the operation. Transfusion of blood seems to

be regarded in America as a useful preliminary, but we did not employ it. The third case was not considered suitable for operation because active epistaxis had ceased for nine months and the general condition was satisfactory. In the recorded cases of operation the platelet counts vary considerably, and some

CHART 2.

Operation, July 3rd, 1924.



writers describe a fall to the previous low level after a temporary rise. In our cases, as shown in the charts, the number of platelets rose markedly after operation, and never reached the former low level. All the blood examinations in our cases were made by Mr. Herbert Perkins, who used Bedson's method for the platelet count.

Case Records.

CASE 1.—E. B., female, aged 8 years, presents a typical history of purpura hæmorrhagica. She first came under notice in July, 1921, for profuse epistaxis and hæmatemesis which occurred spontaneously without any antecedent symptoms. Prior to this abrupt onset there had been no actual hæmorrhage, but a tendency to be easily bruised is said to have existed for some time. The chronicity of the disease has been an outstanding feature, and we have records of nine admissions to hospitals for serious hæmorrhage with collapse during a period of three years. Remissions undoubtedly did occur, as is evident from the condition of the blood in March, 1923, in the second year of the illness (vide Chart 1). On many occasions her condition was extremely grave, and so precarious was it from January to June of last year that she was bedridden in hospital on account of repeated hæmorrhages.

Petechiæ and ecchymoses have been constantly present, occurring in crops in the skin and mucous membrane of the mouth. Large extravasations have been found in the loose tissues of the eyelids, and on one occasion a spontaneous subconjunctival hæmorrhage took place. The retinæ have never been involved. The purpuric rash could not be detected by touch, and no urticarial element has been noted. Epistaxis and hæmatemesis constituted the grave

dangers. During the first half of last year severe epistaxis occurred about every third week, hæmatemesis was less frequent, melæna was a common finding, but the urine was always free from blood. The resultant anæmia was essentially of the chlorotic type (Chart 1). The hæmoglobin was often reduced to 40 per cent. The red cell count always maintained a high level despite the depletions by hæmorrhage, and this indicated a vigorous erythroblastic reaction in the red marrow. In type the red cells were immature. The most striking feature of the blood was the marked thrombocytopenia, the highest count being 18,000 per c.mm. Evidence of the anæmia was present in the generalised pallor, to which was added a definite yellow tinge, well seen in the conjunctivæ. Much soft subcutaneous fat was present all over the body. Fatigue and dyspnœa were easily induced.

The diagnosis presented no difficulty. No cause for the hæmorrhages could be discovered. The spleen was usually palpable with ease and varied considerably in size. Hæmophilia could be definitely excluded. The special characteristics of the blood in purpura hæmorrhagica were all present and constant: (1) thrombocytopenia, (2) prolonged bleeding-time (about ten minutes), (3) clotting-time normal with non-retractile clot, and (4) capillary pressure test positive.

In June of last year the patient was transferred to us from an infirmary where she had been confined to bed for six months. Her condition was extremely serious. Epistaxes had been so numerous that a nasal plug was practically always in use. Her resistance to infection was very low. There were excoriations about the nares, styes were present on the lids, and the teeth and gums were in an unhealthy condition. A state of chronic invalidism was established.

On June 19th, 1924, splenectomy was performed by Mr. John Murray. The loss of blood at the operation was no greater than normal. The recovery was uneventful and healing occurred by first intention, the scar later showing keloid characteristics (as in Case 2). The spleen weighed two and a half times the normal and externally presented a normal appearance; on section the Malpighian corpuscles were prominent to the naked eye. Microscopically the striking features were the great diminution in the number of lymphocytes, and the marked endothelial proliferation in the Malpighian bodies and the sinuses. The connective tissue of the sinuses was swollen and hyaline. Blood platelets were not in evidence.

The present condition of the patient shows a remarkable improvement in her general health, and she now leads the ordinary active life of a child with her family. The yellow tinge in the skin and watery fat are no longer evident. No external hæmorrhage in any form has occurred since the operation five and a half months ago. Petechiæ and bruises still occur but to a less extent than formerly. The blood condition as indicated on the chart steadily progresses to the normal. The bleeding-time is about two to three minutes and the clot contracts firmly and expresses clear serum.

CASE 2.—H. R., male, aged 9 years, presents a shorter history than the previous case. He was a perfectly healthy, sturdy boy until December, 1923, when the disease first made its appearance. The initial symptom was the development of a tendency to bruise readily on the slightest injury. Inquiry failed to disclose any constitutional disturbance of any kind. Since the onset the patient has been under constant medical supervision and has spent most of his time in hospital.

During the first two months of 1924 the disease was at its height. He became subject to spontaneous hæmorrhages in the form of epistaxis and purpuric manifestations. Melæna was a frequent finding and hæmatemesis occurred on three occasions. Petechiæ and ecchymoses, presenting the same characteristics as described in the previous case, became constant and prominent features in the skin and mucous membrane of the mouth. The retinæ showed no involvement. Profuse epistaxis at times proved very intractable to treatment, and occurred every second or third day. Within a month of the onset the patient was profoundly anæmic. The red cells were reduced to $1\frac{1}{2}$ millions, and the hæmoglobin was down to 20 per cent. His condition was extremely grave and caused much anxiety. Complete rest in bed was essential.

The succeeding three months saw a gradual amelioration. The intervals of freedom from hæmorrhage steadily increased from days to weeks, and he was able to take moderate exercise. The danger of hæmorrhage was always present and necessitated very careful supervision. The blood condition improved greatly, especially with regard to the red cells as indicated on Chart 2. A careful examination

failed to locate any source of infection. The spleen was found to be moderately enlarged and easily palpable at the left rib margin. The mouth was rendered more healthy by the extraction of carious teeth, and the sinuses were thoroughly examined for signs of sepsis with negative results. Cultures from the faeces produced no significant factor, and intestinal parasites were not found.

Hæmophilia could be eliminated. Repeated examination of the blood revealed all the characters of purpura hæmorrhagica: (1) The thrombocytopenia was very marked; (2) clotting occurred in the normal time of five minutes, the resultant clot being ill-formed and non-contractile; (3) bleeding-time was prolonged to 12 minutes. The capillary pressure test in this case gave negative results. Externally he exhibited the same appearance as the previous case. A definite yellow tinge in the skin and conjunctivæ and much soft, watery adipose tissue were present. Petechiæ and ecchymoses occurred daily in large numbers. No serious loss of blood had taken place for a month. Fatigue and dyspnœa were readily induced by slight exercise and his activities were greatly curtailed. The blood condition showed a steady increase in his red cells, the other features remaining unchanged.

Splenectomy was performed on July 3rd, 1924, by Mr. John Murray. The operation was entirely successful and, as in the first case, there was an absence of any excessive bleeding. Convalescence was interrupted by an attack of acute appendicitis, which was treated by operation. Both scars later showed keloid characteristics. The morbid anatomy of the spleen, which was enlarged to three times its normal size, showed changes identical with those described in the previous case. Thrombocytes were not in evidence. A lymph gland removed from the mesentery at the time of operation also exhibited marked endothelial proliferation.

The general health of the patient is now excellent, and he has returned to the normal active life of a boy of his age and attends school again. Despite the loss of much fat, his weight has increased by 2 lb. No hæmorrhage in any form has occurred since the operation five months ago. The skin has been free from any purpuric manifestations and the bruising tendency has entirely ceased. The blood now fails to show any feature characteristic of purpura hæmorrhagica. The bleeding-time is normal and the clot contracts well and expresses clear serum. Thrombocytes showed a striking increase immediately following the operation, and this has been maintained.

The results in this second case are even more striking than in the first. All signs of the disease appear to have been eradicated. The charts accompanying these two cases show more clearly than any detailed description would do the changes in the blood which are common in this disease, and more especially the effects of splenectomy on these changes.

CASE 3.—Z. H., female, aged 13 years, was apparently a perfectly healthy child of normal development until she reached the age of 4, when, without any prodromal symptoms, she developed a marked tendency to bruise easily. Within a few months the additional symptoms of purpura which was very profuse and frequent epistaxis became features of her condition, and a profound anæmia soon became established. The condition of the blood, one year from the onset, showed red cells diminished to 3,030,000 and hæmoglobin down to 40 per cent.

The next four years saw many instances of grave collapse from hæmorrhage, and her history is one of numerous admissions to various hospitals as an emergency case. On one occasion she was detained for three months owing to repeated severe epistaxis. A condition of chronic invalidism set in with serious effect upon her schooling. The ever-present danger of hæmorrhage precluded her from leading a normal child life, and during the last four years she has attended a special school, an ambulance being used for her conveyance. Bleeding occurred as profuse epistaxis, and we have records of hæmatemesis on one occasion only. Melæna and hæmaturia were never found. Petechiæ in the skin and mucous membrane and larger subcutaneous extravasations of blood have been remarkably constant features since the onset of the disease over eight years ago.

No treatment apart from local hæmostatics has been of any benefit. Thymus, calcium lactate, human and horse sera have all failed to influence the fundamental cause, and transfusion performed on two occasions brought only temporary relief. During the last two years there has been decided improvement as regards the hæmorrhages, which are now less severe and not so frequent. The last attack of epistaxis occurred about nine months ago. The same improvement cannot be recorded with regard to the purpuric rash and the tendency to bruise easily which are still in evidence.

The classification of this case of hæmorrhagic disease presents no great difficulty. The sex and complete absence of any known diathesis in the family history precludes hæmophilia. The blood picture and tests conform in the main to those of purpura hæmorrhagica. Only two complete blood records in this case are available, both taken recently. The thrombocytes numbered 100,000 and later 55,000 per c.mm. The bleeding-time varied from six to ten minutes, and the coagulation-time was found to be normal with good clot retraction on each occasion. The capillary pressure test gave negative results. The red cell count was normal and the colour-index 1. The prognosis would appear to be decidedly hopeful, as there are numerous indications, clinical and otherwise, that the disease is gradually subsiding. The profound anæmia has given place to a healthy appearance, with a blood picture which is practically normal, and which bears only traces of the features upon which a diagnosis of thrombocytopenic purpura is based. Clinically, apart from the bruising and the purpuric rash which are never totally absent, the patient is in good health, and despite the chronicity and severity of the disease in the past, her development is about average, both mentally and physically. Under our advice she is to attend an ordinary school, and the future appears to hold the promise of complete recovery unaided by any active treatment.

Literature.

- Frank: Berl. Klin. Wochensh., 1916, Nos. 27 and 41.
Kaznelson: Wien. Klin. Wochensh., 1916, xxix., 1451;
Zeit. f. Klin. Med., 1919, lxxvii., 133.
W. H. Duke: Arch. Int. Med., 1912, x., 445.
Nathan Brill: Internat. Clinics, 1924, i., 32.
Brill and Rosenthal: Amer. Jour. Med. Sci., 1923, clxvi., 503.
Ross and Cohen: Amer. Jour. Dis. Child., 1924, xxvii., 332.
Osler and McCrae: System of Med. iv., 687.
Hamilton and Waugh: Annals of Clin. Med., 1924, iii., 298.
A. Myerstein: Berl. Klin. Wochensh., 1924, xxxviii., 11.
On the subject of blood platelets, see THE LANCET, 1924, vol. ii., editorial, p. 229; G. J. Crawford, p. 595, and S. C. Dyke, pp. 714 and 1048. Also S. P. Bedson, Brit. Jour. Exp. Path., 1923, iv., 5.

THE PREVENTION AND TREATMENT OF POST-OPERATIVE PULMONARY EMBOLISM.¹

By E. C. LINDSAY, C.B.E., F.R.C.S. ENG.,
ASSISTANT SURGEON, THE LONDON HOSPITAL.

THERE is a growing belief that the post-operative lung complications such as pneumonia, pleurisy, and collapse, which have been an endless source of contention and mutual reproach between surgeon and anaesthetist, are not the simple matter of either irritation or congestion and infection that has been alleged. Wharton and Pierson, in the *Journal of the American Medical Association* in 1919, gave it as their considered opinion, after the investigation of 1600 gynæcological operations, that 40 per cent. of cases of pleurisy and 12 per cent. of cases of pneumonia after operation were in reality cases of pulmonary embolism and infarction.

It would be as well at this stage to point out that the size of the embolus is the important factor, and, depending on this, we may distinguish (a) the classic type of massive embolism, occluding one or other pulmonary artery, or bestriding the bifurcation and obstructing both (more usually the right is affected, as Rupp has shown); (b) the infarction type, with severe onset followed by pleurisy and signs of consolidation; (c) the type where the site of the embolus prevents recognition as an infarction on the inner surfaces of the tubes. This type is associated with slight respiratory increase, a slight evening rise of temperature, and the bringing up of small collections

of blood and mucus. There is but little mention in English surgical literature of this last type, but De Quervain, Wharton and Pierson, and Lee all recognise its significance and its warning of the more severe types. Two cases of my own illustrate this condition.

The first case—one of duodenal ulcer—was a man of 52, upon whom a gastro-enterostomy was performed. On the fifth day he brought up a little blood and mucus, as he described it, "from the back of the throat." There was no pain in the chest on deep inspiration, but his temperature swung to 99.4° F. for two or three nights. His chest was examined on two or three occasions by a physician, and no physical signs could be detected. We contented ourselves with the old story of a tuberculous focus temporarily lit up (an illusion which I recall in my house surgeon and registrar days as being a commonly cherished one and covering a multitude of sins!). The whole disturbance quieted down, the patient was up and about, when on the eighteenth day he had an urgent desire to defæcate, intense dyspnoea and cyanosis, and expired in five minutes with all the signs of massive embolism.

To digress for a moment, it will be noted that this patient had a sudden desire to defæcate followed by the signs of embolism. My experience has been that this is a common premonitory sign. The ward-sisters at the London Hospital who see these unfortunate accidents occur, state that it is much more commonly the case for a patient to call for a bed-pan and fall back dying, than to have the attack while actually on the pan. The only explanation I can offer is that the clot, moving up from the femoral or iliac vein, sets up a vaso-motor reflex (or it may be a congestive effect) in the sigmoid, which the patient interprets as a need for evacuation of the bowels.

The other case is in a ward at London Hospital at the moment; a man of 26, whose gangrenous appendix I removed, and who went on well until the ninth day, when he brought up the same type of collections of blood. There was no disturbance of the chest at all in this case; my corresponding physician failed to detect any signs, although he knew my suspicion. The evening temperature was swinging up to 100° F. On the thirteenth day definite signs of thrombosis of the veins of his right calf were detected.

Sir Charles Gordon-Watson emphasised the importance of this slight rise of evening temperature; Wharton and Pierson gave it as a constant premonitory sign. Such a type is not common, yet its origin is presumably the same as that of the massive type (a). I would reiterate once again that deciding factor, the size of the embolus, in its relation to the result produced.

On looking hurriedly through the literature I was struck by the absence of any really large collection of cases, and also by the fact that there was a general tone of alarm at the increase in the frequency of the condition, an alarm which I hope to show later there is no real ground for. I therefore had recourse to the records of the London Hospital on the subject of the massive embolic type (already referred to as type (a)) and found that certain cases of pulmonary infarction (type (b)) were also included under this heading. I began by taking all cases of pulmonary embolism in the surgical records from 1914 to 1924, and found that the total for these years was 152, but as the notes for the war years, 1914-18, were scanty and not altogether reliable, and the proportion of autopsies to deaths very much lower, I excluded 38 cases occurring in those years, leaving 114 cases.

Incidence.

It has been a matter of comment that the condition is on the increase. I certainly shared the impression when in one year among my private patients I had two cases of infarction and one of massive embolism, all three perfectly clean cases. And I notice that Sir Charles Gordon-Watson had a similar experience.² Some surgeons state that about 1916 they began to notice the increase in these tragic complications of operative surgery. In the war we saw practically none

¹ Being a contribution to the discussion at the Royal Society of Medicine reported on p. 333.

² See THE LANCET, 1924, ii., 345.

of them, and the reason is clear now that it is generally recognised, as Mr. Lockhart-Mummery has stated in his address³ to the Section of Surgery at the B.M.A. meeting in Bradford, that sepsis is only an incident in its production, and that the principal factor is venous stasis in patients of advancing years. One eminent physiologist has advanced the theory that there has been a change in blood character and coagulability, possibly depending on national food. About 1916 we were certainly feeling the full force of the importation of foreign albuminoids, such as Chinese eggs and American bacon. Certainly the figures over the whole 11 years would indicate that the numbers are greater since the war; at the same time, the numbers of each year since the war remain about the same. It is probable that the old diagnoses of sudden heart failure and shock after operation included a fair proportion of massive embolism cases.

In the series presented here, there are five fractures, three carcinoma cases, and one prostate case, in none of which operation was performed. There were, in addition, nine cases of sepsis, carbuncles, abscesses, &c., in which simple incision only was made. The post-operative list is thereby reduced to 96 (and this, I think, may be accepted as the mortality from this source) in 31,426 operations for the years 1919-24, which works out at 0.3 per cent. This agrees fairly closely with Rupp's figures published in the *Berlin Archives of Clinical Surgery*, March 21st, 1921. He found, as the result of the investigation of 22,689 operations from 1903 to 1920 inclusive, a mortality of 0.26 per cent. from pulmonary embolism, a difference of only 0.04 per cent., or 1 in 2500. From the figures of 1919-24 at the London Hospital we may fairly conclude that its frequency remains much the same. It must be remembered, however, that with the large increase in the number of operations performed, the absolute mortality to pulmonary embolism will naturally rise.

Lest it should be thought that surgery is mainly responsible for cases of pulmonary embolism, it is of interest to recall here the collateral figures which were published by Rupp from 13,000 autopsies over the same period of 18 years. He found that the mortality from pulmonary embolism in internal disease without operation worked out at 1.1 per cent.—that is, four times as great as that following operation.

The Age Factor.

On analysing the series on this point, a highly important fact emerges—that is, that massive embolism is a disease of later life. The average age for this series was 52; for some diseases it was higher. The urinary bladder and prostate operations worked out at 60. Even appendicitis cases showed an average age of 40.4 years, and, considering there were included three cases whose ages were respectively 2½, 11, and 13 years, the average age of the remainder can only be considered as a very late age for acute appendicitis to occur. The average age of cases of hernia suffering this complication was 53.

If, further, we examine the frequency in different types of operations (and I may say here that the short time at my disposal has not allowed of the complete analysis of 31,000 operations) we find that in stomach operations 21 occurred in 2778 operations; in major gynaecological operations (excluding obstetric cases) 22 in 2004; in appendix cases 17 in approximately 4000, and hernia 12 in 1967. In other words, as in other published series, gynaecological operations head the list. All groups show that it is the older cases in which this complication occurs. This may be some explanation of the apparent increased frequency, as there is no doubt, with the perfected technique and team-work of recent years, age has not been considered the great contra-indication to operation that it once was.

Site of Thrombus.

Post-mortem examination has revealed thrombosis in 42 per cent. of cases in the veins of the pelvis and lower extremities, 50 per cent. of which were in the left iliac or left common iliac vein. Wharton and Pierson agree with this when they state that 41 per cent. of cases are associated with femoral phlebitis. In gynaecological cases, thrombosis of the pelvic, iliac, and femoral veins was found in 47 per cent., and in the stomach cases thrombosis of similar veins was discovered in 57 per cent. of cases. It can definitely be said that this is lower than would have been the case if full post-mortems had been allowed, and not the abdomen only, as is so often the case in death after abdominal operations. I have mentioned these two types of operation, specially as one is portal and the other systemic. In none of the notes of the post-mortems examined was there any mention of extensive thrombosis in the area of operation. In many of the cases crossed thrombosis occurred. As has been noted above, the left common iliac vein accounts for 50 per cent. of the cases in which a thrombus was discovered. Presuming that stasis is one of the most important factors, with the sigmoid and the rectum emptying themselves irregularly, or with the aid of enemata, it is possible that there is a greater stasis on the left side. The less direct drainage of the left common iliac vein may be a further factor. The time when embolism took place after operation in this series averaged out at the tenth day for stomach, appendix, &c.

The Anaesthetic.

As the operations were practically all carried out under general anaesthesia, ether or its mixtures, I have no information as to the effect of anaesthesia. The question of primary pulmonary thrombosis has been discussed at length by Prof. Glynn, and commented on by Mr. Lockhart-Mummery and Sir Charles Gordon-Watson.⁴ Prof. Glynn claimed that of his 35 cases death was due in 30 to primary pulmonary thrombosis. While admitting that it may be responsible for a certain proportion of cases of sudden death after operation, and more especially by cerebral emboli, I think it is difficult to reconcile the high percentages of known sources of thrombi in this series with such an explanation. The size of the thrombus, similar to that of the big femoral or iliac veins, its frequently unbranched appearance, its considerable length (as much as 8 inches in one case and of very nearly equal diameter throughout), the fact that it is nearly always rolled up, seem to me to be strong arguments in favour of a thrombus formed elsewhere than in the lungs. Rupp says the embolus is nearly always in the right lung. Finally, the pulmonary artery, though carrying venous blood, is arterial in type to support the pressure of the ventricle, and it would seem unusual for a thrombus to be loosened and advance against the blood-stream. The experience of all, I think, goes to show that the embolus is loose and coiled up. It has a thin external shell of lamination, and a core of red unorganised clot.

Summary.

(1) There is no evidence, from a consideration of statistics, that the condition has relatively increased. (2) Age is a most important factor in its production, the average age in the series being 52 years. (3) The primary thrombus formation occurs in the veins in which there is marked stasis—namely, the pelvic and femoral veins. In this series, in 42 per cent. this thrombus was discovered. (4) Sepsis is probably only a contributory cause, acting by lowering the vitality of the patient, and therefore promoting stasis. Why thrombosis should occur in conditions of stasis in the aged and not in the young, seems to me to be a problem for the physiologist rather than for the surgeon, and when that has been discovered we shall be nearer to a method of prevention of this complication.

³ THE LANCET, 1924, II., 344.

⁴ *Ibid.*

"POST-ANÆSTHETIC" VOMITING.

By J. D. MORTIMER, M.B. LOND., F.R.C.S. ENG.,
SENIOR ANÆSTHETIST, THROAT HOSPITALS (GOLDEN SQUARE
AND CENTRAL LONDON); HON. SURGEON-ANÆSTHETIST,
ST. PETER'S HOSPITAL.

It is now nearly 15 years since a surgeon's remark led me to make careful inquiry into the after-condition of upwards of 1000 patients to whom I had given anæsthetics, excluding only short cases.¹ The results were as gratifying as unexpected, for I found that in about three-fifths (including many administrations lasting an hour or longer) there was no after-sickness, and it was inconsiderable in the majority of the rest—there having been only 23 (about 2 per cent.) in whom it was continued or severe. As every variety of patient and operation had been comprised, and no special methods employed, my conclusions were as follows:—

1. Whilst it can by no means be denied that an anæsthetic badly selected or badly given may be the direct and sole cause of severe after-vomiting, sickness even to a slight extent is *not* necessarily a result of an administration, and should not occur in a marked degree unless there are conditions which have exaggerated its effect or independently caused the disaster.

2. That severity of vomiting is *not* in proportion to mere length of administration, but depends mainly on the individuality of the patient, the nature of the operation and of the disorder for which it is done, and after-complications.

3. That when it occurs, instead of assuming that the anæsthetic is answerable, other possible causes should be carefully considered and the anæsthetic only admitted as such by a process of exclusion.

It seems advisable again to draw attention to the subject, for the experience gained during this period has confirmed my conclusions, but, judging from discussions and recently published books, its practical importance has not been realised either by surgeons or anæsthetists. In my former articles I gave full statistics and other details, to which I beg leave to refer those who are interested in the question. In these I also considered the causation and management.

In regard to individuality, I should like to quote from a paper by my former teacher, Sir D'Arcy Power²: "Just as some people are always sea-sick or train-sick while others are not, so some always vomit after an operation and others do not." Personal peculiarities unquestionably cause remarkable differences in behaviour during induction, and it cannot be expected that after full anæsthesia has been endured an abnormal person—whether sensitive, overfed, or otherwise—will make a normal recovery.

The Effect of Some Operations and Complications.

It has always been recognised that the functional importance of any structure or organ, and its anatomical and physiological connexions, materially affect, after an operation upon it, certain results, e.g., pain and spasm; but there has been a curious inability to recognise—one may venture to say a reluctance to admit—the extent to which gastro-intestinal and pulmonary complications may be thus produced. If one considers that the viscera in or adjacent to the upper abdomen are not only of much and continuous functional importance, with far-reaching connexions, but are also in close relation with the diaphragm, the action of which has been shown to be temporarily inhibited by an operation in its region,³ one would expect gastro-intestinal atony and nausea to follow, for example, one on the kidney much more than one on the uterus, and such I found to be the case.

I have been told that the late Mr. Clinton Dent, in his lectures on surgery, used to say that sickness always followed removal of the cervical glands; this confirms a statement made to me by the matron of a children's hospital. If in the course of a mastoid operation the labyrinth is touched, retching is liable to occur at once, although the anæsthesia is deep enough to prevent it during other proceedings, and it is liable to occur afterwards if this structure is involved.

I have many times been asked to see patients in whom sickness after an anæsthetic was taking place to an abnormal extent, with which it was agreed after discussion the anæsthetic had little or nothing to do. For instances: in a girl, found in an over-heated, ill-ventilated room, menstruation had come on a few days before expected, and her relatives stated that she was "always bad and often sick" at these times. A lady complained also of an unpleasant taste and smell; after removal of iodoform packing from a cavity in the jaw there was no more sickness. Examination with the ophthalmoscope at my suggestion after operation on a mastoid gave evidence of commencing thrombosis of intracranial sinuses, from which the patient died a day or so later. After an abdominal operation (by a surgeon now deceased) there was much vomiting, for which the anæsthetist (not myself) was blamed; some stitches gave way, and an anæsthetic for replacing them was needed; it was then discovered that the first operation had been an incomplete one.

A physician called to deal with acute vomiting attributed to an error in diet would hardly risk making a serious mistake by accepting such an explanation without further inquiry and strict examination. Post- (non ergo propter-) anæsthetic disorders may, like fatalities under anæsthesia, be due entirely, in part, or not at all to the anæsthetic.

The Need for Preparation and Diagnosis.

The result of an impression still prevalent—that vomiting usually and inevitably follows the inhalation of an anæsthetic (except a momentary one of nitrous oxide) is that prevention and treatment are too often perfunctory and ill-directed.

If it were possible to insist that all patients before operation should submit to appropriate general and special preparation, instead of, as is not unusual, entering a hospital or nursing-home "overnight," there would often be saving of time, trouble, expense, and even danger. In subjects of various forms of malnutrition, auto-toxæmia and neuroses, after-effects are apt to be out of all proportion to the length or gravity of the operation. Although we are still without certain knowledge of "acidosis" or "post-anæsthetic toxæmia," it seems established that, whilst an anæsthetic (and especially chloroform) may be the determining cause, it depends also on antecedent conditions which may be to some extent remediable.

It is unfortunately the case that some authors of books on anæsthetics fail to urge that, when after-vomiting is excessive, all possible influences must be taken into account, and if the "personal idiosyncrasy" cannot be eliminated there must be discrimination between its many varieties; thus one may aim at a rational plan of treatment, instead of that admitted to be "purely empirical" and "usually somewhat unsatisfactory": and by repeating a stereotyped list of sedatives and domestic remedies which "have been tried with apparent success at one time and failure at another," as commonly happens when treatment is nothing but symptomatic.

In conclusion, it may be remarked that anæsthetists, especially Dr. Dudley Buxton,⁴ have urged that better opportunity should be afforded them than is usually arranged for examination of the patient beforehand. It is equally if not more desirable, that

¹ THE LANCET, June 17th, 1911, and Oct. 25th, 1913.

² Practitioner, July, 1920.

³ Pasteur: Medical Society of London, May, 1911.

⁴ THE LANCET, August 6th, 1910.

when there is an unsatisfactory condition afterwards, for which the anaesthetist may be held blameable, or it may be, legally responsible, he should, in conjunction with the operator, investigate the circumstances and advise as to management. By fuller coöperation these disorders will be better understood and more often avoided, or, if they must happen, more effectively treated. The anaesthetist's responsibility will be increased rather than diminished, because it will be more accurately defined.

TYPES OF TUBERCLE BACILLI AND THE EPIDEMIOLOGY OF PHTHISIS.

By G. R. ROSS, M.B., D.P.H. ST. AND.,
LECTURER IN BACTERIOLOGY, LEEDS UNIVERSITY.

THE statistical inquiry into the epidemiology of phthisis pulmonalis in Great Britain, conducted by Brownlee, and published in the Special Report series of the Medical Research Council, is perhaps one of the most arresting studies of the disease in recent years. As a result of the investigation, Brownlee succeeded in demonstrating three clear-cut statistical types of the disease.

The first of these, the "young adult" type, shows a maximum mortality in males between the ages of 20 and 25 years; the second, the "middle age" type, exacts its maximum toll, in males, between the ages of 40 and 45 years; while the third, the "old age" type, has its maximum mortality in males between the ages of 55 and 65 years. The distribution of these types is unequal throughout the country, but there are districts in which each of the "elementary" types are found in characteristic form. Thus in Shetland, and to a lesser extent in Ireland, the "young adult" type is prevalent, in London the "middle age" type, and in Cornwall the "old age" type.

Brownlee, after most exhaustive inquiry into the meteorological, geological, sociological, and industrial factors which may account for the unequal distribution found, advances two possible explanations for their occurrence. The first suggestion is that there are "two distinct strains of tubercle bacilli, each having a special age-distribution. One of the strains attacks in early manhood and possibly also in old age, the other in childhood and middle life." The second explanation is that "the physiological response to attack by the organism may be different according to the environment in which the individuals attacked have lived." He is not, however, prepared to accept either explanation as wholly sufficient to account for all the phenomena of the disease, and considers the "double origin" of the disease as more probable.

The first hypothesis throws out a challenge to bacteriological research. In recent years much advance has been made in the bacteriological study of pneumonia and epidemic cerebro-spinal meningitis by the demonstration that "types" of each of the organisms responsible for these diseases exist. The resulting improvement in the efficacy of the specific treatment of these diseases suggests that were the existence of "types" to be demonstrated among tubercle bacilli there might be hope of a corresponding improvement in the specific treatment of tuberculosis in addition to the confirmation of the statistical hypothesis.

It is not merely the demonstration of the classical "human" and "bovine" types of tubercle bacilli that is required, for the part played by these in the aetiology of the clinical forms of the disease has been fairly definitely established. Brownlee deals only with phthisis pulmonalis, and as this is practically always due to the "human" variety of the bacillus, it follows that the "types" postulated by Brownlee must exist therein. It would perhaps be better to speak of them as "groups," in order to avoid the confusion which might arise in view of the already existing use of the

term "type" to denote the human and bovine varieties of the bacillus.

Attempts to demonstrate such groups have been few in number. Many difficulties have to be overcome, the chief of which is probably the difficulty of preparing a uniform non-granular suspension of tubercle bacilli. Owing to its fatty and waxy content the tubercle bacillus tends to form clumps when suspended, and as the agglutination and absorption of agglutinin test appears the most satisfactory method for the demonstration of "types" or "groups" in bacteria, it is obvious that this spontaneous agglutination presents a considerable obstacle to the carrying out of such tests. A recent observation is that by Smith, who investigated 11 strains of the human type of the tubercle bacillus. The suspensions used were made homogeneous by long shaking, and the immune sera were prepared by the inoculation of such suspensions into rabbits. He found that the strains fell into three groups, the first agglutinating to the full titre of the serum, the second agglutinating to partial titre, and the third showing no agglutination.

With bovine bacilli out of six strains examined four failed to agglutinate, while two agglutinated partially. No absorption of agglutinin test was employed. The strains used by Smith were mostly stock strains, and their origin was somewhat obscure. The number of strains examined was too small to permit of any definite conclusion being drawn from the results, but the indication was in the direction that "groups" did exist.

Attempts to Differentiate Groups.

An attempt to demonstrate "groups" has been recently conducted on a more extended scale by Tulloch, Munro, Ross, and Cumming. In this investigation 100 strains of tubercle bacilli were first isolated from cases of phthisis pulmonalis mostly in adults. The patients were resident in Glenlond Sanatorium, Fifeshire, which receives all stages of pulmonary phthisis in both sexes. At the time of isolation no particular attention was paid to the age of the patients, but it can be taken that the various age-groups were adequately represented. Seven of the strains were isolated from children under 13. Among adults, 50 strains were isolated from males and 43 from females. The age of the oldest adult from whom growth was obtained was 63 years. The series, therefore, were representative.

At the time of isolation it was impossible to test the pathogenicity of all of the strains, but 20 of them chosen at random were tested and all exhibited characteristic virulence for laboratory animals. The strains, with two possible exceptions, were all of the human type. These two were not completely bovine in characteristics, but were markedly dysgonic as compared with the remaining strains of the series. In this connexion it is of interest to note that Park and Krumwiede, in 592 strains of tubercle bacilli isolated from cases of pulmonary phthisis, only found one strain which seemed to be of the bovine type. They did not, however, accept it as a typical bovine strain.

The method adopted by Tulloch and his collaborators for the suspension of the bacilli was to extract with acetone and ether for four days in order to get rid of some of the fatty or waxy components, and then to grind up with a drop of 1.4 per cent. sodium bicarbonate, and finally, to suspend in 0.5 per cent. carbolic saline. Fleming and Douglas had previously shown that acetone extraction of the *B. typhosus* did not alter its antigenic qualities, and this observation was extended before proceeding to test the tubercle bacilli. It was shown that extraction by acetone and ether, in the case of *B. typhosus* and *B. paratyphosus* B, did not alter their antigenic qualities, nor did it interfere with their agglutination and absorption of agglutinin in the presence of specific anti-sera. The immune sera could be prepared equally well with a suspension of acetone and ether-extracted bacilli as with a suspension made in the ordinary way.

It was therefore postulated that there was no objection to the use of acetone and ether extraction in the case of the tubercle bacillus, and as the suspensions resulting from this technique were homogeneous and exhibited no tendency to auto-agglutination, all the bacilli examined were extracted and suspended in this manner.

The strains were tested by the agglutination and absorption of agglutinin test and the end-result was that of the 100 strains examined: (1) There was no member which failed to agglutinate in a dilution equal to at least half the titre of three-type anti-sera, by far the greater number agglutinating to full titre. (2) There was no one member which failed to absorb the agglutinins for the type bacilli from their respective homologous anti-sera. (3) The three-type strains employed were equally and mutually agglutinable by their anti-sera, which in turn were equally absorbable by the suspensions of the type bacilli.

Conclusions.

The conclusions drawn from these results are—that the tubercle bacilli isolated from 100 cases of pulmonary tuberculosis all conform to one well-defined serological type, and that while certain small variations do exist, these variations are negligible, being no greater than those found in other monotypical pathogenic micro-organisms. It would seem, therefore, that the statistical postulate of the existence of two groups of human tubercle bacilli still requires proof, and that the present bacteriological evidence is against the idea.

The second explanation advanced by Brownlee is one which has been more widely noted than the first, and some observers have claimed that it can account to a very large extent for the existence of the statistical types of the disease. Cummins has drawn attention to the relative frequency of tuberculosis in isolated and non-isolated communities. He shows that in the former tuberculosis is rare, due to a rarity of the tubercle bacillus, but that should an inhabitant from an isolated area enter an environment in which tuberculosis is common, he exhibits a greater susceptibility to the disease than the native inhabitants. Moreover, the disease in such a subject tends to be generalised, and rapid in its course. He considers that the immunity of the inhabitant of the "tuberculous" environment depends upon an active immunity which has developed as a result of contact with the bacillus from birth. At birth the infant is "virgin soil" and if, in infancy, infection with large doses of the bacillus takes place, the disease will develop in an acute and generalised type. If, however, the exposure is gradual and the infecting doses small, then a condition of active immunity is brought about which increases with every exposure to the bacillus, provided that the inoculation be not in overwhelming doses.

Cummins's explanation of the three types is coloured by his belief in this theory of infection and resistance. He considers that the "young adult" type, occurring as it does in the more isolated parts of the country, is intermediate in type between the "virgin soil" tuberculosis of isolated primitive communities and the "middle age" type occurring in communities where there is much intercommunication, and that the difference in environment and relative frequency of tubercle contamination determines the statistical type developing.

In view of the work of Tulloch and his collaborators the theory gains weight and would seem at present to be the most suited to explain the facts of the case.

References.

1. Brownlee: Medical Research Council, Special Report series, 18 and 46.
2. Smith: THE LANCET, 1922, ii., 13.
3. Tulloch, Munro, Ross, and Cumming: Tubercle, 1924, vi., 18-27 and 57-73.
4. Park and Krumwiede: Jour. Med. Research, 1910, xxiii., 205.
5. Fleming and Douglas: Brit. Jour. Exp. Path., 1921, ii., 346.
6. Cummins: Inter. Jour. Public Health, 1920, i., 137.

Clinical and Laboratory Notes.

AN UNUSUAL CASE OF PENETRATING WOUND OF THE ABDOMEN.

By J. B. HANCE, O.B.E., M.B., B.C. CAMB.,
F.R.C.S. EDIN.,

MAJOR, I.M.S.; CIVIL SURGEON, DERA ISMAIL KHAN,
N.W.F. PROVINCE, INDIA.

CASES like the one under discussion, where a man lived for five months with a large arrow-head fixed in his abdomen after injury to important organs and recovered from the operation for its removal, must necessarily be infrequent.

The patient, a young Marwat Pathan of about 18 years of age, was admitted to the Civil Hospital, Dera Ismail Khan, on Oct. 27th, 1923, for abdominal pain, worse after food. The history of the case was that, five months previously, in the course of an intra-tribal feud, he had been shot in the eighth right intercostal space in the anterior axillary line with a steel-headed arrow. At the time he grasped the shaft and extracted it, and was carried to his village, where he remained for about four weeks ill. He could not remember if he ever spat up blood, but during this illness respiration was painful. After about four weeks he got up and went about as usual except for attacks of vague abdominal pain, which was aggravated by taking food. His attempts at dieting gave him transitory relief. A month previous to admission he noticed a swelling, which had been tender, in the left epigastric region. He then concluded that part of the arrow had remained behind, and consulted the nearest Government dispensary, whence he was referred to hospital, a journey of some 22 miles by camel.

Condition on Admission.—There was a reddened oval swelling about $1\frac{1}{2}$ in. by 1 in. in the left epigastric region, opposite the tip of the ninth left costal cartilage, and $\frac{3}{4}$ in. from the costal margin. This swelling was reddened and softened in the centre, but the patient stated that it was not nearly so tender as it had been before he started on his camel ride. He informed me that the feathered shaft of the arrow, complete, was in his possession, but that there was no trace of the steel head. He was put to bed preliminary to X ray examination next day.

During the night of Oct. 27th-28th, 1923, the patient "felt something move inside him," and next morning complained of a severe gnawing pain 1 in. below the left nipple. The patient was kindly skiagraphed for me by Captain H. H. Elliot, M.C., I.M.S. A black linear shadow was visible lying obliquely across the lower ribs. Operation had, unfortunately, to be postponed owing to a smart attack of malaria that evening with rigor and body pains, and on examination benign tertian parasites were found in the blood. Intensive quinine was given and operation postponed in the absence of acute indications. The pulse dropped to 72 with the sweating stage and remained down.

Operation.—Under chloroform anaesthesia an incision 5 in. long, best described in the words of Mr. R. P. Rowlands as a "left-sided Kocher's gall-bladder incision," was made, with the reddened swelling at its centre, and deepened at that point in order to localise any collection of pus that might exist. None, however, was found, the swelling consisting of partially organised granulation tissue, and the abdomen was opened along the length of the incision. On exploring with the hand, the arrow-head could be felt high up in the left hypochondrium pointing downwards, forwards, and to the right, moving markedly with respiration; and, on retraction, could be seen to be either intra-gastric or retro-gastric. The severe pain felt by the patient under the left nipple strongly suggested the former alternative, and the stomach was accordingly turned up and the gastro-colic omentum opened bloodlessly and the lesser sac investigated with the finger. It was then ascertained that the point of the arrow-head was firmly fixed in the posterior fibres of the diaphragm, and the lesser sac was obliterated round it, fairly firmly organised adhesions binding the stomach to the posterior abdominal wall.

The exact anatomy could not be made out, but Fig. 1 roughly represents the condition. It is to be supposed that the point of the fixation was in the neighbourhood of, but above, the left suprarenal capsule. It was thought to be advisable to leave the posterior gastric wall in this condition, and the lesser sac was accordingly closed with a catgut suture and the anterior cardiac end of the stomach drawn as

far as possible into the wound, fixed with Allis's forceps, packed off, and incised. The haft of the arrow-head was felt for, found in the fundus of the stomach, grasped with Mayo-Ochsner forceps and pulled out, and the stomach

FIG. 1.

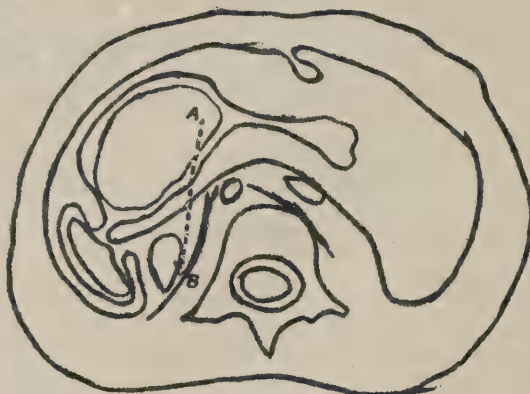


Diagram to show position of arrow-head (A . . . B).

cavity investigated. Haemorrhage was fortunately negligible, and the anterior gastrotomy was closed with two layers of fine catgut sutures—through-and-through and Lembert—placed "in reverse." The abdomen was then closed, layer by layer, as recommended by Rowlands, and dressings having been applied, the patient was returned to bed.

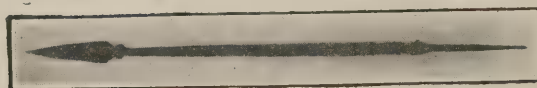
The patient was kept on rectal feeds of glucose-soda bicarb. saline for 48 hours, after which peptonised milk was given for a further similar period, when diet was gradually but steadily increased till full diet was reached on the fourteenth day. Skin sutures were removed on the tenth day. The only incident of the convalescence was the necessity for catheterisation for 48 hours after the operation. This was largely temperamental, since the patient evinced marked objection to such novel (to him) experiences as the usual nursing measures. The difficulty, however, was definitely and finally solved by the injection of 1 c.cm. of pituitrin when the bladder was full. An hourly record of the pulse was maintained for 24 hours after operation, and the highest count, 96, was recorded on his return to bed from the operating-room.

Convalescence was uninterrupted, and the patient left hospital cured, and on full diet, on the twenty-first day after operation.

Commentary.

One hesitates to attempt to outline the course followed by the arrow-head, of which Fig. 2 is a

FIG. 2.



Arrow-head and shaft.

photograph, and of which the actual length is $6\frac{1}{2}$ inches. The position of the entrance wound and the situation in which the weapon was discovered would seem definitely to establish the injury of the following structures: (1) the right pleural cavity, (2) the right dome of the diaphragm, (3) the liver, and (4) the stomach, and it is the strongest possible commentary on the extraordinary vitality of the Frontier tribes that the patient came to the table at all; further commentary, if needed, being afforded by the uneventful convalescence.

My thanks are due to the assistant surgeon, Dr. Bhagwan Dass Dhamija, and to the staff of the Civil Hospital, already overworked, for their unremitting care and attention to this unusual case.

TWO UNUSUAL CASES IN SURGICAL PRACTICE.

BY LESTER SAMUELS, M.D. SHEFF.

THE following two cases—of fibro-lipoma of the kidney and irreducible hernia with colonic band—are, both from their comparative rarity in surgical history and their unusual symptoms, worthy of record:—

CASE 1. Fibro-lipoma of the Kidney.—This patient was a well-nourished married woman, aged 46. She was not neurasthenic; non-drinker. Symptoms: Pain left side of abdomen, two years, at times exceedingly severe with vomiting and semi-prostration; no hæmaturia. Frequency of micturition without pain during the severe attacks. Menstrual periods normal; urine normal; occasional severe occipital headaches. Examination: Heart, chest, and nervous system normal; retina normal. Fullness of left loin. Smooth tumour felt in left umbilical region, movable with respiration; tumour very tender to palpation. Urea-concentration test normal. Cystoscopic examination showed deficient flow from left ureter. X ray report: Dense patchy shadow left kidney; suggests hard growth. No calculus entire urinary tract. Right kidney normal.

Operation.—Lumbar incision. Opening into perirenal tissues a hard encapsuled mass presented. Kidney and descending colon pushed forward. Kidney normal in size and no abnormality found in substance. Incising tumour capsule a fatty mass quickly extruded and was easily removed. The capsule proved exceedingly difficult to remove, and was adherent to lower pole of kidney. Nephropexy was performed and wound closed with drainage. Recovery uneventful, with disappearance of symptoms. Pathological report: Tumour presents naked-eye and microscopical appearances of fibro-lipoma, benign in character.

Fibro-lipoma in this situation is of sufficient rarity to merit attention. The urinary symptoms were probably those of intermittent hydronephrosis.

CASE 2. Irreducible Hernia with Colonic Band.—The patient was a man, aged 50, with increasing pain and constipation; bowels moved about once in five days. Dyspeptic attacks. Double inguinal hernia. Examination: Large direct left inguinal hernia, irreducible. Some thickening felt over descending colon with tenderness on deep palpation. X ray report: Some obstruction, not complete in area of ileal and pelvic colon. May have some connexion with hernia.

Operation.—Incision as for radical cure of hernia. Lipoma surrounding cord structures. Cord structures separated and sac identified. Numerous adhesions between intestine and sac. Incision prolonged upwards, and peritoneum incised in line of sac incision. Fibrous band found encircling descending colon and constricting it to small finger opening. This band was about 1 inch thick, and continuous with the lipomatous tissue around the cord. Impossible to remove band around intestine, therefore excision of part involved and end-to-end anastomosis performed. Radical cure of hernia on both sides completed operation. Recovery uneventful.

The association of a lipoma of the cord and fibrous constriction of the bowel is not usual. The X ray report in this case was invaluable, otherwise the constricting band could easily have been missed with consequent non-amelioration of symptoms.

I have to thank Dr. A. H. Marsh of the Jewish Hospital for his accurate and helpful X ray work, Dr. Arthur Davies for his pathological reports, and my anæsthetist, Dr. V. R. Hirsch, for his assistance.

London, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF SURGERY, ANÆSTHETICS, MEDICINE, OBSTETRICS AND GYNÆCOLOGY, AND PATHOLOGY.

A MEETING of the combined Sections was held on Feb. 4th, Mr. HERBERT J. PATERSON, President of the Section of Surgery, being in the chair, when a discussion took place on the Prevention and Treatment of

POST-OPERATIVE PULMONARY AFFECTIONS.

Mr. E. C. LINDSAY (Section of Surgery) opened the discussion, and his paper appears in full in another part of this issue.

Dr. FRANCIS E. SHIPWAY (Section of Anæsthetics) said the two outstanding features of the two chief post-operative complications (bronchitis and pneumonia) were, first, their more frequent occurrence after abdominal (especially upper abdominal) operations than after operations elsewhere; secondly, their comparative rarity in private practice. Recognition of these facts would, he said, help to elucidate the problem of their ætiology, and therefore assist in their prevention. Bronchitis after operation might cause bursting of the wound, thus necessitating immediate operation, with its risk of sepsis, of aggravating the bronchial affection, and the formation of adhesions. Sometimes bronchitis arose, in mild degree, in a healthy patient after ether anæsthesia. It was caused partly by exposure, but was chiefly the result of loss of body heat.

Ether Impurities.

In some methylated ethers there were impurities, such as peroxides and aldehydes, which were increased on exposure of the ether to sunlight. Profound and prolonged ether anæsthesia was definitely harmful, particularly to certain types of patients, and, wherever possible, the concentration of the vapour should be materially diminished and relaxation obtained by the substitution of chloroform, or the employment of a local anæsthetic. Often spinal anæsthesia was very valuable for patients who were to be operated upon below the umbilicus. Dr. Shipway urged that the wonderfully good results obtained during the war from a combination of gas-oxygen and novocaine should not be forgotten. Excepting in hot weather, ether should be given warm. He considered that the ordinary hospital ward was too draughty, and could not be maintained at the optimum temperature for each patient.

Intratracheal Insufflation of Ether.

The speaker said he had used ether intratracheally in nearly 500 cases of facial, nasal, buccal, and pharyngeal operations, many of the patients having been of advanced years, and some of them chronic bronchitics, yet bronchitis seldom occurred after the operation on these, and pneumonia never. Hillman was favourably impressed by splanchnic analgesia, especially in cases for whom general anæsthesia was unsuitable. Expansion of the bases of the lungs by coughing or by breathing exercises was recommended.

Lord DAWSON favourably contrasted the giving of anæsthetics nowadays with that of former times, and said that, in his opinion, the anæsthetist was seldom or never responsible for post-operative complications, an exception being made, perhaps, in the case of the aged bronchitic, in whom only a slight irritant was necessary to determine an attack. Embolism was the most difficult and interesting of the complications, and Mr. Lindsay's figures were of high value. When a large clot became arrested at the bifurcation of the pulmonary artery, or at one of the larger branches, it might cause death instantly, or within a few minutes. When the clot was in a smaller artery the

area of infarction was usually limited by a patch of pleurisy, but many physical signs might be absent, and the diagnosis might have to be made on only vague evidences. He considered that small emboli were responsible for the attacks of slight pain and transient, irritable cough on the second or third, even to the eighth, day after operation. The larger the infarct, the greater was the danger of infection. Morphine was valuable not only in soothing the pain, but in rendering movement of the corresponding lung and chest possible. In his opinion the most common infecting organism was the pneumococcus, type 4, and that explained why so many of these cases recovered. Lord Dawson went on to discuss the *modus operandi* of emboli.

The Origin of Emboli.

Lord Dawson considered that thrombi form within the auricles of degenerated hearts, which had been enfeebled by operation or other cause; but he agreed that the majority of emboli in the lung originated in the systemic veins, the femoral and iliac being favourite vessels, mostly those on the left side. The accidents under discussion were those prone to occur in the second half of life, when the circulation was sluggish and the vessel walls deteriorated. Though trauma was so very common during the war, embolism of the lung was relatively infrequent, the subjects of these traumata being young and vigorous. Before thrombosis could occur he thought some activating agent in addition to sepsis must be operative. People with low blood pressure were specially apt to get thrombosis. The speaker thought the pneumonia in these cases was nearly always of the lobular type, and instances of this following operation were so few that they could not be regarded as anything more than accidents. The milder forms were probably unrecognised. Pneumonia might be the first indication that embolism had occurred. It was not always that the sputum was blood-stained following infarction.

With regard to infection, there should be a careful routine examination of the upper air passages before these abdominal operations. The influence of a common cold was well known. Following massive collapse there might be immobilisation of the diaphragm and interference with movement in the lower intercostal spaces, and this led to stagnation of the lung and impairment of the circulation of both air and blood, resulting sometimes in a blocking of the afferent bronchi and so also collapse. Massive collapse was usually recovered from, the symptoms disappearing long before the signs. It was a manifestation of exhaustion. Broncho-pneumonia could be much reduced by avoiding operation in non-urgent cases at times when influenza and lung troubles were rife, and by getting the upper air passages clean before the abdominal operation was undertaken.

The Obstetrical View.

Mr. J. PRESCOTT HEDLEY said that gynæcological operations had the unenviable reputation of being more commonly followed by fatal pulmonary embolism than any other kind of operations; but the records at St. Thomas's Hospital did not support this view. Wilson's figures at the Mayo Clinic gave ten fatal cases in 7993 gynæcological operations, or 0.12 per cent. In the same period 23 fatalities occurred in 12,229 operations on the gall-bladder, liver, prostate, colon, rectum, and for hernia—i.e., 0.18 per cent. In some cases, in which the pulmonary disturbance started with signs of bronchitis 12 to 36 hours after operation, the anæsthetic seemed to be the cause. If the patient had a common cold at the time of the operation the danger of complication seemed to be increased; possibly the anæsthetic stirred into activity a mild or latent infection. Emphysematous patients also were liable to these sequelæ. Not infrequently they occurred after local anæsthesia; in some, more examination under anæsthesia provoked them. Yet they were remarkably rare in accidental wounds and

fractures. The temperature of the operating theatre should not be below 70° F., and the patient should be protected from cold and draughts after the operation. Since the provision of tents over the conveying trolley, and curtains round the bed, there had been fewer cases of bronchitis following operation. Efforts should be made to prevent inhalation of vomit, mucus, or blood during the semi-conscious stage; there should also be careful handling of tissues. A patient whose circulation had become depleted by prolonged bleeding before operation, or by excessive bleeding at the operation, or who had been starved or purged, thereby had his liability to thrombosis increased.

Sir CHARLES GORDON-WATSON also referred to the danger of pulmonary complications after operations on the upper abdomen. During the war he saw many cases of severe abdominal wounds—especially wounds involving both abdomen and thorax—in which there was collapse, or inhibition, or paresis of the diaphragm. Dr. Pasteur's explanation was that an abdominal condition which was severe enough to cause reflex rigidity of abdominal muscles produced a relaxation of the diaphragm. In these cases, too, collapse of the base of the lung, especially the right, was very common, with blocking of bronchioles, stasis, and perhaps lobar pneumonia.

Prevention.

If severe operations on the abdomen could give 10·8 per cent. of pneumonia, prevention became a very important matter. There must be many accessory factors, of which irritation caused by the anæsthetic must be one, but Dr. H. W. Featherstone seemed able to show that it was not the important one. During the war Geoffrey Marshall's plan of warming the ether was followed by immediate good results. More recently the intratracheal method had further reduced the incidence of complications. Despite improvements in surgical technique, pulmonary embolism after operation was still a bugbear. At St. Bartholomew's Hospital three years before the war the surgical deaths from pulmonary embolism were 0·5 per cent.; for three years after the war they were 1·7 per cent.; and in the next two years the percentage rose to 2·9.

Causation.

Sir Charles Gordon-Watson considered that trauma and stasis were the two most important causative factors, but that there must be another to complete the process, possibly the absorption of thrombokinas, as had been suggested by Mr. Lockhart-Mummy. Factors in the production of the sluggish circulation which he discussed were: (1) purging, bleeding, sweating, and the withholding of adequate fluid after the operation; (2) lowering of blood pressure by trauma and the shock of prolonged operation, aided by morphia and continued immobility; (3) constrained posture during operation. He did not favour venesection, as he thought the patient could not spare the blood so withdrawn.

Dr. H. W. FEATHERSTONE said that if, as many believed, ether was an important factor in the production of the sequelæ under discussion, they should be more frequent after severe operations on the head and neck than they were. It had been found that ether, given by the intratracheal method, was particularly safe. He attributed great importance to the presence of an epidemic, such as of influenza, or ordinary colds in the causation of post-operative pulmonary conditions, and urged, therefore, that non-urgent abdominal operations should be deferred to times of comparative health among the main population.

Dr. ROBERT HUTCHISON remarked that more progress would be made in this matter if the cause of these complications was known. He considered that thrombosis which resulted in embolism was largely the result of the postural conditions required by the operation. The patient was placed into the position of a double-inclined plane, so that his body was really kinked, and the return of venous blood thereby inter-

fered with. This was aggravated by the fact that the operation, for the time being, practically paralysed abdominal respiration. He urged that the importance of chill after operation should not be overlooked; it was too much the custom to put insufficient clothing on to the chest after an operation, and to subject the enfeebled patient to direct draught from an open window.

Dr. W. J. MCCARDIE (Birmingham) agreed with Dr. Shipway and Dr. Featherstone in regard to the small part played by anæsthetics in these complications. He also contrasted the conditions surrounding private and hospital patients, to the great advantage of the former, especially in the matter of preliminary preparation and after-care. He advocated the establishment of recovery wards, specially staffed for cases which had undergone severe operations, on the plan adopted in Vienna. The responsibility in regard to the occurrence, prevention, and treatment of these complications rested, he considered, with the surgeon, not with the anæsthetist.

Dr. F. W. LONGHURST, also speaking as an anæsthetist, gave the result of his investigation of 700 consecutive operations at St. George's Hospital, and criticised the lack of efficient after-care of operation cases in hospitals. He considered various methods of anæsthetisation, and condemned ether by the open method because of the great amount of evaporation. Only ten cases of complication out of the 700 operations inquired into could be in any way attributed to the anæsthetic.

Dr. Z. MENNELL said he did not think the anæsthetist could be blamed in any way for the occurrence of pulmonary embolism, though perhaps some of the inflammatory effects following chest operations could be laid at his door. Ether he considered to have a more irritating effect than chloroform. A preliminary cold or infection predisposed to pneumonia after operation. It was found at St. Thomas's Hospital that a mixture of atropine, adrenalin, and strychnine definitely aided recovery from bronchitis or pneumonia.

Dr. C. F. HADFIELD referred regretfully to the too prevalent habit of making the anæsthetist the scapegoat when trouble occurred. Ether, he said, was not harmful to the healthy lung, and it would not harm patients if their alveolar secretion were reduced. It was the peroxides and aldehydes in some makes of ether which did the damage.

Sir CHARLTON BRISCOE said his own surprise was that so few patients had post-anæsthetic complications. He discussed the various unnatural conditions which were imposed by the operation on the patients, and showed how these favoured infection of the lower lobes of the lungs. An important pre-operation step was to see that the mouth was sound and clean.

Dr. G. H. BURFORD referred to the occurrence of glycosuria at the same time as these patients showed respiratory distress. The glycosuria usually cleared up some days before normality returned to the lungs.

Mr. J. E. ADAMS expressed his agreement with the points which Dr. Hutchison had put forward, and his approval of placing curtains round the beds of severe cases especially in the winter. He thought some of the patients were over-nursed, and especially too frequently washed.

Mr. LINDSAY briefly replied.

SECTIONS OF EPIDEMIOLOGY, COMPARATIVE MEDICINE, AND DISEASES OF CHILDREN.

A COMBINED meeting of these Sections was held on Feb. 9th, Prof. F. T. G. HOBDAV, President of the Section of Comparative Medicine, being in the chair. A discussion on the

CONTROL OF TUBERCULOSIS AND THE MILK-SUPPLY

was opened by Dr. J. ROBERTSON, who expressed the opinion that such a discussion was most opportune, particularly in view of the not inconsiderable difference of scientific and medical opinion as to the part played by bovine tuberculosis in the production of human

mortality and morbidity. On the one hand was the statement that 3000 children succumbed annually to a tuberculous infection of bovine origin, while tens of thousands suffered from other forms of bovine tuberculosis resulting in crippling and chronic ill-health; on the other hand, many experienced physicians stated that moderate invasion by bovine bacilli provided just that amount of immunity necessary to save the individual from infection with human tuberculosis, and that a few living bacilli in milk was a good thing for the preservation of the race. Dr. Robertson pointed out the close clinical and pathological parallel between the lesions and progress of the disease in cattle and man, and said that the same predisposing causes might undoubtedly be cited in both cases—viz., hereditary predisposition, bad housing, absence of light and air, poor food, exhausting conditions of life, &c. In his opinion the evidence available as to the amount of tuberculosis due to unhealthy milk-supply was sufficient to warrant public expenditure on the attempt to reduce the infectivity of milk. The three methods in use in Birmingham were the testing of milk samples taken in the city and the tracing and elimination of cows found to be yielding infected milk; the offer to farmers of free testing of their herds, provided they undertook to remove animals giving positive reactions; and the process of pasteurisation. During the last 18 years the percentage of churns sent into the city containing live tubercle bacilli had averaged 8·7, but the figure was decreasing. Microscopic examination alone was never relied on, the guinea-pig inoculation test being used; this resulted in a delay of two months, during which time the infected milk continued to enter the town. A small compensation for immediate slaughter had been paid by the city for many years before the Tuberculosis Order of the Board of Agriculture had come into force, and Dr. Robertson was certain that good had been done by the elimination of many wasting cows and in the education of the farmers, but the method as a whole was far too slow, and was expensive both in the time of the veterinary officer and in respect of travelling and laboratory expenses.

Bang's Method—Pasteurisation.

In 1906, as the result of a visit to Denmark, the isolation and testing methods of Prof. S. Bang had been introduced, and all cows were tested free twice in each year, and new additions to the herds at any time required. By this method a herd might be freed of tuberculosis in five years without any very serious expense to the farmer. The farmers had been willing to coöperate, as they anticipated from the periodic advice of the veterinary officers a reduction not only in the number of "wasters," but also in other cattle diseases and contagious abortion; 38 herds had by these means been freed, or nearly freed, by 1914, but the war had spoiled the best herds, and at the present time only 30 had been restored to pre-war level. In Dr. Robertson's experience the tuberculin tests gave as good results as any known form of test, when used by careful veterinary officers on ordinary dairy cattle housed quietly. On an average, 30 per cent. of the animals tested gave positive reactions.

In 1921 a visit to America to examine the results of pasteurisation in that country had convinced him of the value of this method if properly carried out, and at the present time from 60 to 70 per cent. of the milk retailed in Birmingham had been heated sufficiently to kill tubercle bacilli, and he hoped that soon no raw milk would be sold except from tested herds. Even then he would advocate the heating of milk for nursery use on account of the danger of contamination with scarlet fever, sore-throat, or other infection. In conclusion, he stated that he was in favour of the freeing of dairy herds from tuberculosis, but in view of the slowness and difficulties of this method and the need of many more veterinary officers, of much greater expenditure on cowsheds, and of prolonged education of agriculturists, he recommended adequate pasteurisation and bottling of all milk.

Lieut.-Colonel J. W. BRITTLEBANK pointed out that this battle must be waged, and its cost must fall in the domain of the agriculturist. Of the seven and a half million head of stock in Great Britain some three million were in milk, and of these at least one million were infected with tuberculosis, though in many cases so slightly that it did not affect their well-being, and indeed the encapsuled lesions were perhaps a protection to them. In Manchester 10 per cent. of the milk samples taken in the city showed living tubercle bacilli, and, unlike Birmingham, the proportion had increased since 1901. Nevertheless, farm inspection had revealed tuberculosis of the udder in 597 cows during that period, and these were mostly animals producing plenty of milk and in the middle of their active period, so that some good must have been done by the elimination of that amount of infection. But the piecemeal measures so far adopted had done nothing to reduce the incidence of bovine tuberculosis; they could be but preliminary to the introduction of future adequate legislation. Their danger lay in the lulling of some portion of the health service into a false security. Dairy farmers as a class were unable to appreciate the value of preventive medicine and were liable to regard any progressive measure with suspicion, and it was hard to convince them of their error so long as it remained a fact that the public would buy the cheapest milk on the market; and the more so in that the earliest animals to react to tuberculin were those producing the greatest quantity of milk, which were of the greatest value for breeding. The isolation measures proposed by Bang were not feasible on a wholesale scale except in specially selected herds, and freedom from disease could only be secured where there was indefatigable industry, ceaseless vigilance, ample accommodation, and plenty of money. Colonel Brittlebank described the breeding of a model herd before the war; it had been found that the introduction of animals from outside, even though they were tested on entry, had resulted in infection; the herd had therefore been made self-contained, and of the 257 calves reared not one showed any tuberculosis, and the average output per cow per annum had been raised by some two or three hundred gallons. The pneumonia incidence was considerably lowered, and there was no contagious abortion. After 1915 no veterinary advice had been obtainable, and although the farmer had attempted to carry on the testing himself an infected cow entered the herd and by 1916 37·5 per cent. reacted positively to tuberculin, demonstrating the remarkably rapid spread in unprotected animals. At the present time Manchester relied on clinical examination of herds and testing of mixed samples. Colonel Brittlebank gave some interesting figures illustrating the conditions in farms visited by him in 1909. Of 136 farms seen, 6 were clean and 52 fairly clean, the others being frankly dirty, even judged on a moderate cowshed standard, and in summer. Five only had any sort of provision for manure storage. Of 346 sheds inspected, only 10 were clean, and in 78 the lighting, in 88 the ventilation, was satisfactory. Eleven cows out of 3019 had tuberculous udders. Watching the local markets, Colonel Brittlebank noted that wasters were being sold in large numbers for sums ranging from 10s. to 35s., and of the 17 cows he saw sold in one market 14 had advanced tuberculosis, in nine cases of the udder. He had revisited these farms in 1925, and found that they were all in precisely the same condition as at his previous visit. He felt that there was little hope of being able to proceed to the wholesale elimination of bovine tuberculosis so long as such conditions remained; there was a colossal task before us in this respect, though the work was well worth doing and would result in most valuable results both to public health and to agriculture. He recommended that the Tuberculosis Order should be so amended as to require the inspection of every dairy farm in the country without waiting for the notification of obvious tuberculosis; that compensation should not be offered for decrepit and emaciated animals, but that rather it should be a disgrace for such a beast to be kept on

any farm; that meanwhile pasteurisation should be extensively practised, although it had certain disadvantages and was not a panacea, and however good the pasteurisation plant might be it was still essential that all dairy herds should be examined and that the sources of supply should be only such as would give a reasonably clean milk.

Prof. S. L. CUMMINS emphasised the paramount importance of the very difficult question as to the danger or possible value of living tubercle bacilli in milk, and urged the necessity of consolidation of opinion between medical men and veterinary officers with a view to formulating a definite policy to lay before the public. He had been much impressed by Colonel Brittlebank's example of the dangerous position of a tuberculous-free herd unless the extraordinary protective measures could be maintained indefinitely, and pointed out that in places, such as large tracts of Africa and India, where bovine tuberculosis did not occur, the human form, if it appeared, was of a far more virulent type than elsewhere.

The Quantitative Element.

He urged a consideration of the quantitative element in the problem, it being undoubtedly true that the presence of bacilli in sufficient dilution produced no clinical infection. In the production of an adequate dilution the process of pasteurisation was undoubtedly important, however much it might be impugned theoretically as leaving a certain number of bacilli alive in some cases; also of importance was the mixing of milk in cities. A far more intense danger of infection arose in country districts where a child might be fed on milk from one or a few cows on the home farm only. Another point in this connexion was the lack of consistency between the attitudes towards human and bovine milk. Doctors advised mothers to feed their babies provided there was no active clinical tuberculosis, in spite of the fact that something like 80 per cent. of human beings gave a positive tuberculin reaction. The cow was submitted to a far higher standard, but of course the cow was living in an extremely artificial state, and it was possible that that influenced the infectivity of the milk; perhaps also the handling of the udder might tend to activate lesions otherwise quiescent. Prof. Cummins maintained that the death of a guinea-pig as a result of inoculation of the centrifuged deposit of a large quantity of milk could not necessarily mean that a diet of that milk would be fatal to a child. As a poor country we could not at present attempt the complete extirpation of tuberculosis in cattle; we must deal with the practical problem of elimination of dangerous infection first.

Dr. J. NIVEN described the methods employed in Manchester since his appointment in 1894—viz., the distribution in three successive years of handbills advising the boiling of all milk, a record of the conditions in all farms supplying milk to the city and immediate suppression of unsuitable sources of supply, instruction of health visitors and school-girls in the preparation and keeping of milk for infants, the appointment of a veterinary inspecting officer, testing of samples of mixed milk, visitation of farmers, and education of agriculturists and consumers. He then referred to Dr. Robertson's report on the milk control in America, the success of which he attributed to the extensive powers of local authorities independent of the central governments. Any small town could exclude from its shops the milk of a dirty dairy, all retailers had to have a permit, which would be rescinded if they were found selling adulterated milk; this term included milk from any cows fed on distillery waste or unwholesome food and from cows living in crowded or unhealthy conditions. The inspectors had power to seize, test, and destroy the milk of any retailer at any time without compensation. Dr. Niven urged the insistence on sterilised milking pails of good pattern, of the clipping, washing, and drying of the udders, of not leaning against the cow whilst milking, of special milking sheds, shavings

rather than straw for bedding, dusting of floors with powdered quicklime, and proper washing of the bodies of the animals. He considered that the leeway in this matter in our country could be made up if the recommendations of the Astor Committee were followed, though a difficulty here was the inadequate supply of ice. He did not consider that we were ready for a system of compulsory grading at present. He considered that all local authorities should have power to carry out adequate inspection of the sources of supply, combined with instruction by the veterinary inspector.

The discussion was adjourned until March 2nd.

SECTION OF OTOTOLOGY.

A MEETING of this Section was held on Feb. 7th, Dr. KERR LOVE, the President, being in the chair.

Mr. G. J. JENKINS read a paper on

Septicæmia and Acute Middle-ear Infections.

He said that in his experience the septicæmic state was more common in middle-ear infection than in any single intracranial complication. There was a danger that middle-ear infection in early septicæmia might not be recognised. The septicæmic state was much more likely to be met with in children than in adults, and perhaps mostly in those who had not previously had a gross lesion of the ear. When the incidence of the septicæmia occurred in the early stages of infection of the middle-ear tract there might be no obvious local inflammatory signs. If the septicæmia came on at a later stage of inflammation the appearances presented were those of chronic suppurative middle-ear disease. In some cases the septicæmic state so masked the local signs that even the skilled otologist might find it difficult to recognise the serious local lesion, so that it was not surprising that it was sometimes missed in general practice. A sudden cessation of pain and discharge, with an obvious alteration in the patient's general condition, should send the doctor to a careful examination of the ears. A "laking" of pus in the big cells, a thin, pale mucous membrane, and absence of congestion were characteristics of the mastoiditis preceding the septicæmic state. Mr. Jenkins stressed the importance of thoroughly dealing with the middle-ear condition, a Schwartze operation and paracentesis being generally needed. With regard to the treatment of the general infection, until recently it had been his custom to give these patients large doses of normal horse serum as soon as that was possible, continuing this as long as needed; but recently he had employed immuno-transfusion, and, so far, he was favourably impressed by it. He had not been successful with vaccine-therapy in these cases. Severe cases were of much more rapid development than the milder ones, and treatment appeared to have on them little or no effect.

In the discussion which followed, Mr. SYDNEY SCOTT, Dr. W. T. GARDINER, Dr. NEIL MACLAY, Mr. A. R. TWEEDIE, and Dr. W. S. SYME took part.

Anastomosis of Facial Nerve in Facial Palsy.

Mr. LIONEL COLLEDGE and Dr. L. D. BAILEY gave a cinematograph demonstration of results of three operations for anastomosing the facial nerve after the occurrence of facial palsy. The actual behaviour of the various facial muscles on stimulation at various stages were well depicted by this means, and the question was discussed by Sir CHARLES BALLANCE, Dr. SYME, Mr. SYDNEY SCOTT, Mr. JENKINS, and Dr. A. A. GRAY.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, S.E., to-day, Friday, Feb. 13th, at 8.45 p.m., the President, Dr. H. S. Knight, in the chair, when Dr. Harold Pritchard will read a paper on Some Modern Aspects of Disease.

MEDICAL SOCIETY OF LONDON.

THE TREATMENT OF LYMPHADENOMA.

AT a meeting of this Society on Feb. 9th, with Dr. E. M. CALLENDER, the President, in the chair, a discussion took place on the treatment of lymphadenoma.

Sir THOMAS HORDER, in opening, said that his request to report to the Society two cases of the Pel-Epstein or relapsing pyrexial type of lymphadenoma, in which a certain treatment was followed by much better results than had hitherto been recorded, was met by a suggestion that he should open a discussion on the general subject of the treatment of the disease, and to this he readily agreed. He first described the two cases, both of them men between 40 and 50 years of age, in which there was a periodical rise of temperature of such a nature that, in one case at any rate, it was regarded initially as influenza. In the first case he gave the history in detail and showed the temperature charts. In June, 1922, other treatment having produced no results so far as the pyrexial condition was concerned, he decided on an intensive course of arsenical treatment by intravenous injection, coupled with X rays applied to the liver area, the first application of X rays being made a few days after the completion of the arsenical injections. This treatment upset the rhythm, hitherto constant, of these recurring attacks, but improvement was not maintained, and in October he (with Dr. Knox on the radio-therapeutic side) determined to proceed a second time with neokhar-sivan and X rays, but with closer synchronism than was observed in the first instance. An attack which was ordinarily due in November was aborted, and although there was an isolated attack in January, 1923, there had been no other recurrence up to the time the patient was last heard of (midsummer, 1924). The treatment had been continued until the end of March, 1923, the X ray applications being given every second day during the course of arsenical injections. In the second case, the patient, who was very ill indeed, was subjected to the same treatment, with the same result. As to which of the two agents employed—neokhar-sivan given intensively and intravenously and the X rays—was of the more value therapeutically, his own impression was in favour of the X rays, but it might be that the combination was desirable even if not essential. It was also his experience that to synchronise rather than to separate these two measures was the more effective procedure. In the arsenical dosage one must be a little courageous, but he could lay down no hard and fast lines; the individual case must be the guide. In the first of his cases he had no proof, either from what was seen at a laparotomy or from physical signs, that the liver was badly hit, the patient was never jaundiced, and was well between the periodical attacks, so that although he thought the lymphoid tissue of the liver was the avenue of infection, he was prepared to "bank" on a good deal of hepatic sufficiency and to give the neokhar-sivan in fairly liberal doses. So far as the dosage of X rays was concerned, he would leave that to Dr. Knox. He had had no experience of radium in this type of case, but radium had been used in cases of localised glandular or nodal lymphadenoma which had come under his observation. One case in particular was that of a boy, 7 or 8 years of age, who had abdominal lymphadenoma, with recurring ascites and large masses of glands. This boy took arsenic by the mouth very badly, and was treated at the Radium Institute with very striking results. He had also had some recent experience of one of those very interesting but rare cases of lymphadenomatous disease of the spinal cord. Here an attempt was made to synchronise the intravenous injection of arsenic with radio-active measures; with X rays very little result was forthcoming, but with radium the improvement was surprising, and the patient, who had not previously been able to walk

at all, was now able to get about with a stick. With regard to other treatments, he wondered whether anyone had tried any other drug than arsenic—antimony or bismuth, for instance—or any other route than the intravenous. Had anyone succeeded with protein shock in altering the course of one of these more generalised types of lymphadenoma? Surgery was of recognised value, but must necessarily be limited to those cases in which groups of glands were enlarged with as yet no sign of the general lymphatic tissue being involved. Cases with which he had been faced several times lately presented a special problem—cases which, although the glands had been got rid of, and the liver and spleen showed no signs of disease, were cachectic and showed progressive loss of weight and strength, with an obviously bad blood picture. These cases appeared to be more common than formerly; probably the truth was that, the early stages being more amenable to treatment, medical men were made aware of them more frequently. He did not think that arsenic would be of any use in such cases, and X ray treatment was probably contra-indicated. The thing to do would be to put these patients out into the sun and to try to enable them to recover their general resistance.

Dr. ROBERT KNOX said that in response to radiation treatment lymphadenoma gave sometimes an extraordinary result—a rapid disappearance under appropriate dosage, a period of usual health, extending sometimes to many years, followed by recurrences, in some cases amenable to further treatment, but in the end in all cases defying it. Next to the simple inflammatory tumour, lymphadenoma gave the best response to radiation treatment. The treatment must be systematic, and there were differences of opinion with regard to the particular type of radiation which should be employed. X rays gave a marked response in glandular and mediastinal conditions, while for the manifestation of the disease in the deeper regions, and particularly in relation to bones, radium appeared to give rather better results. The dosage with either agent need not be excessive, preferably small doses at short intervals of time, extended over a long period. In cases which had responded favourably and apparently had cleared up the treatment had been stopped; this in his opinion was a mistake. Having established a degree of control over the morbid condition it should be their object to maintain that influence by giving at regular intervals a moderate dose. The nature of the control exercised by radiations was somewhat difficult to understand; in all probability the influence was exercised through the blood-stream, and in treatment by radiation certain biological processes were modified and directed towards a more normal course. He favoured the use of combined treatments. In the acute cases rest in bed, fresh air, sunlight and its artificial equivalents, arsenical preparations, were all useful. The employment of X rays and radium to the internal organs of the body might be regarded as an extension of surface light treatment, and the action might be the same in both. No case should be treated by the radiologist before he had discussed it fully with the clinician. The day had gone by when one could say, "Here is a case of lymphadenoma, let us treat it with X rays." All factors must be considered, and a definite scheme of dosage evolved. It was useless to pretend that it was exactly known what happened when combined measures were used, but he felt convinced that in the present method of attack they were proceeding in harmony with the fundamental principles of radiation therapy, and that such work as had been referred to by Sir Thomas Horder would lead a long way on the road to a complete understanding of what actually took place when radiations were used. That a degree of control could be exercised in a number of diseases there was no doubt. If in the end they were enabled to understand the rationale of radiation therapy it might only be a short further step to appreciate the disordered functioning of the living cell which constituted disease as at present understood.

Dr. PARKES WEBER said that he took it that lymphadenoma was what was mostly called Hodgkin's disease in England. This disease had a definite pathological anatomy. One of the essential points was the presence of the so-called Hodgkin's disease giant cells. The general opinion in America, Germany, Austria, and, he thought, also in England, was that in all probability Hodgkin's disease, as it was called here, was not a variety of tuberculosis, but a disease of unknown origin—that is, unless some suggestions put forward in America as to a specific bacillus turned out after all to be correct. He believed that precise diagnosis was essential. The enlargement of cervical or axillary lymph glands might be more or less imitated, not only by tuberculosis and syphilis, but also by various tumours. A chronic swelling on one side of the neck in a young woman, which he had at first thought was of the nature of Hodgkin's disease, turned out, on exploratory biopsy, to have the structure of adenocarcinoma. He did not understand that any biopsy was made in the two cases brought forward by Sir Thomas Horder. He found it difficult to accept both cases as true examples of the condition stated, although they were none the less valuable because of the wonderful results of the treatment, which, after all, from the patient's point of view, was the great thing, and they would give a great stimulus in the treatment of cases which resembled this Pel-Epstein type of fever. He also wished to ask the X ray specialists whether, in treating cases which were apparently those of Hodgkin's disease, they did not think that sometimes their treatment did harm—that although they brought about a rapid diminution of a group of glands on one side of the neck, they set up other disturbances. For his own part he had a suspicion that X ray treatment did sometimes hasten death in these cases.

Dr. A. SALUSBURY MACNALTJ said that his own experience of the treatment of lymphadenoma had been restricted chiefly to cases of the disease with relapsing pyrexia. The most beneficial results had been obtained with arsenic. As Dreschfeld found, this drug not only benefited the general health of the patient, but in two of his (the speaker's) cases it caused a diminution in size of the enlarged lymphatic glands and abolished the pyrexia. He proceeded to describe the two cases, but added that, unfortunately, both of them had been lost sight of and could not be traced. Treatment by salvarsan or its substitutes had proved disappointing in several instances. In cases of chronic lymphadenoma application of the X rays or of radium might cause the affected external glands to diminish, but, in his experience, neither treatment had a permanent beneficial effect on the form with relapsing pyrexia. One patient in his series first came under observation as a case of chronic lymphadenoma. Under X rays the enlarged external glands entirely disappeared. Soon afterwards he developed lymphadenoma with relapsing pyrexia and enlargement of the internal lymphatic glands. A troublesome dermatitis not infrequently ensued in cases exposed to X rays and compelled the discontinuance of the treatment. Operative treatment was indicated only as a palliative measure to relieve pressure by the enlarged glands on the trachea. In a case reported by Dr. Batty Shaw a certain number of lymphadenomatous glands in the neck were removed. Surgical treatment proved no safeguard to the onset of the acute form of the disease.

Dr. DOUGLAS WEBSTER referred to the great importance of diagnosis. He had had about 40 cases of this condition within the last few years, and several of them had later turned out to be tuberculous. Tubercle followed lymphadenoma like a shadow. Undoubtedly several of the patients he was at present treating had both lymphadenoma and tubercle. He fully subscribed to the view emphasised by Dr. Knox with regard to the need for collaboration between the radiologist and physician. One interesting point was as to whether X rays or radium had the better

effect. In this connexion he related the case of a patient who was treated on one side of the neck with X rays and on the other side with radium. Radium proved to have the quicker effect, but the side treated by radium recurred sooner.

Mr. WARREN LOW remarked that, some years ago, he operated on glands which were regarded as lymphadenomatous, but which the pathologist afterwards demonstrated to be both lymphadenomatous and tuberculous. Until then he had not realised that the two things might coexist.

Sir THOMAS HORDER, replying to Dr. Parkes Weber, said he was a little surprised that there should be any doubt as to the nature of his two cases. He was not dealing with Hodgkin's disease. Hodgkin could not in the nature of things have suspected what was the matter with his two cases. Nor could he have made such an apotheosis of biopsy as Dr. Parkes Weber, because biopsy was then unknown. Dr. Parkes Weber left out of account the observation that when these cases died—as they always did until these particular patients put up some resistance—the liver was found to be almost indistinguishable from the liver in a fatal case of Hodgkin's disease. He felt that he had been justified in bringing before the Society two cases of lymphadenoma of a particular type, seeing that the results of treatment in these cases must certainly be of value, as they threw light on the treatment of the common type of Hodgkin's disease which was so much more frequent and so much more likely to come under the observation both of the physician and of the radiologist. His own feeling was that the key to the treatment of the common case might often be found in the treatment of the uncommon.

GLASGOW ROYAL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Jan. 26th, Mr. JOHN PATRICK, the Vice-President, being in the chair, when a discussion took place on

TETANY.

Prof. LEONARD FINDLAY, in introducing the discussion, recalled briefly some of the outstanding events in the history of the disease. Although convulsions during the dentition period had been known to Hippocrates and Galen, it was only at the beginning of last century that tetany was first appreciated as a distinct entity, when Clarke, in 1815, devoted a chapter of his book "Commentaries on Some of the Most Important Diseases of Children" to "a peculiar species of convulsion in infant children." In 1860 Trousseau once more described the three signs of carpopedal spasm, laryngismus stridulus, and convulsions as manifestations of one disease. In 1874 Erb described the increased electrical excitability, and in 1876 Chvostek noted the increased mechanical excitability of the peripheral nerves, both of which phenomena were of great value in detecting the latent stage of the disease. Prof. Findlay then referred to the various hypotheses as to the pathogenesis of the disease and to the relationship of idiopathic tetany to tetania parathyreopriva and concluded by describing the investigations of Prof. Noël Paton and himself, which had led them to the adoption of the guanidin intoxication hypothesis.

Dr. STANLEY GRAHAM then discussed briefly the main theories regarding the aetiology of tetany as suggested by various workers from a study of the blood chemistry. The four main hypotheses held at present were (1) guanidin intoxication; (2) a disturbance of the ratio of sodium and potassium to calcium and magnesium; (3) calcium deficiency; and (4) alkalosis. With regard to the guanidin intoxication hypothesis he was of the opinion that until more accurate methods for the estimation of guanidin

were devised little further confirmation could be obtained. The action of sodium and potassium as irritative salts and of calcium and magnesium as sedative salts had been known for many years, and it had been suggested by several workers that a relative increase of the irritative or decrease of the sedative salts in the blood would account for the increase in the excitability of muscle. He considered that, though theoretically such disturbance of the ratio could be responsible for an increase in electrical excitability of the muscle, it seemed to play very little part, if any, in the production of tetany as seen clinically. The association of a diminished calcium content in the serum with certain forms of tetany he had found to be by no means constant, and in two recent cases of active tetany the calcium content had been normal. Also in other forms of tetany—gastric and hyperpnoëic—the calcium content might be normal. In uræmia with a low calcium content no instance of tetany had been recorded. The disappearance of the signs of tetany on the administration of calcium chloride, supposed to be due to the supply of calcium-ions, was now considered to be due to the acidosis produced. Ammonium chloride had been found to be as effective as the calcium salt, while calcium lactate failed to relieve the tetany. The acidosis of a gastro-enteritis had been found to cause the signs of tetany to disappear. Dr. Graham concluded by discussing the alkalosis hypothesis in its relation to the various types of tetany, and showed that while it was greatly concerned as a factor in all the types of tetany it was unlikely to be the causative factor. A toxic factor in the presence of an alkalosis might account for many of the symptoms, but such hypotheses at present lacked substantial confirmation, and the part played by the phosphorus was also deserving of further investigation.

In the unavoidable absence of Dr. GRACE H. ANDERSON, Prof. FINDLAY read her contribution on the treatment of infantile tetany. Some of the earlier methods of treatment were first described and the reasons for their failure discussed. Dr. Anderson then went on to describe the mode of administration of calcium chloride adopted by her. In the active stage with the three cardinal symptoms present it was best to give the drug in 30 gr. doses every four hours till all symptoms had disappeared. It was found that the urgent symptoms disappeared after one or two doses, but the latent signs took two or three days to vanish. In the latent stage of the disease smaller doses could be given and continued over a longer period. The drug was well tolerated by infants, though the disagreeable taste made the tabloid form preferable in older children. Dr. Anderson concluded by referring to the treatment of tetany by ultra-violet radiation, of which, however, she had no personal experience.

In the discussion which followed, Dr. G. H. CLARK concurred in the view that some form of intoxication was responsible for tetany with probably an alkalosis as an important or even determining factor. He found it difficult, however, to agree with Prof. Findlay in blaming the parathyroid gland for idiopathic tetany and believed the cause to be gastro-intestinal. He thought it unlikely that a disease showing practically the same symptoms in adults and in children should have a parathyroid origin in the latter and not in the former, and no one would suggest that parathyroid disease was the cause of tetany in cases of dilated stomach, cholera, or enteric fever, for example. Diseases of endocrine origin were with a few exceptions uncommon and not readily amenable to treatment, whereas idiopathic tetany was by no means uncommon and was fairly readily treated. Dr. Clark then referred to a case already described by him and considered to be a case of true parathyroid disease which had yielded to the administration of dried parathyroid extract.

Dr. J. ADAM spoke of the experience gained in treating a large number of cases of laryngismus stridulus. He likened this condition to an asthma of the larynx

and spoke of the toxæmic factor associated with asthma. He had found also in spasmophilic children an eosinophilia similar to what was found in toxæmia. He referred also to the importance of diet in the treatment, and to the part played by carbohydrate excess.

Dr. GRAHAM and Prof. FINDLAY replied briefly to the various points raised in the discussion.

Clinical Cases.

Dr. JAMES R. RIDDELL described briefly a series of five cases of *malignant disease of the throat and mouth* which had been treated by deep X ray therapy.

1. Epithelioma of the lower jaw and gum—confirmed by pathological report—treated with three doses of X rays by the Erlangen method over a period of five months. No recurrence since healing took place 18 months ago.
2. Tumour of left vocal cord, clinically malignant, treated by two doses—has remained well for 20 months.
3. Ulcerating tumour in region of left vocal cord and anterior commissure involving the subglottic region. Treatment commenced in August, 1924, and has been followed by complete disappearance of the tumour and restoration of function and marked improvement in general health.
4. Alveolar carcinoma of left tonsil and soft palate and gum. Treated by three doses of deep therapy. Showed an apparent cure, but recurrence followed on the hard palate within a fortnight for which radium was used. Patient has remained well for one year.
5. Sarcoma of right maxilla—confirmed by pathological report—treated by both radium and deep therapy. Patient has been well for six months. Two of the patients were shown to the Society.

Discussion.

In the discussion which followed, Dr. J. L. HOWIE remarked that he had found the results of the Erlangen method somewhat inconstant—some did well and others did not, and was of the opinion that the treatment should be commenced as early as possible. Some of his patients had complained of thirst after the treatment, owing probably to interference with the salivary glands.

Dr. ADAM considered that the results with the Erlangen method would be much improved when the control of the dosage could be more accurately determined. He had had some very good results in sarcoma of the mediastinum. In malignant disease of mucous membrane radium gave excellent results at first but recurrence was common. He had found radium more effective in sarcoma.

Prof. J. H. TEACHER inquired as to the extent of the reaction produced by the method.—Mr. PATRICK referred to the difficulties of operative interference after deep therapy from the presence of a very hard tough slough and from the slowness of healing afterwards.

Dr. RIDDELL replied to the various points raised, and emphasised the importance of regulation of the dosage, with a view to the avoidance of delayed necrosis, which had been noted in some cases as long as 18 months after treatment had ceased.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The sixteenth meeting of the Royal Commission on National Health Insurance was held at the Home Office, Whitehall, on Feb. 5th, Lord Lawrence of Kingsgate in the chair. The main part of the sitting was devoted to the examination of Mr. F. W. Daniels, chairman, and Mr. P. Rockliff, secretary, of the Joint Committee of Approved Societies. The subjects dealt with included the scope and quality of medical benefit, the possibility of limiting cash benefits so as to leave more funds available for treatment benefits, the benefits of married women, the pooling of surpluses. Thereafter, Mr. E. E. England, representing the Stock Exchange Clerks Approved Society and the Baltic and Corn Exchange Society, and Commander E. G. Holdway, representing the Lloyds Health Insurance Society, were examined on a variety of matters relative to these societies. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting of Jan. 22nd are now on sale at H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2, from which they may be obtained on remittance of cost (2s. 3d.) and postage.

Reviews and Notices of Books.

ALLEN'S COMMERCIAL ORGANIC ANALYSIS.

Fifth edition. Vols. I. and II. Edited by S. S. Sadtler, S.B., E. C. Lathrop, Ph.D., and C. A. Mitchell, M.A. London: J. and A. Churchill. 1924. Pp. 796 and 807. 30s. for each volume.

DURING the ten years which have elapsed since the fourth edition of this well-known work was published organic analysis has made rapid strides, and this progress is reflected in the volumes under review. Each of the contributors to the different sections is an authority on the subject upon which he writes. The arrangement is the same as in former editions; there is, however, evidence of a closer collaboration between the English and American authors.

From much of the elementary subject-matter contained in the introduction one might assume that the book is mainly suitable for students; but "Allen" has long been recognised as perhaps one of the most valuable English handbooks available for the use of the practising analytical chemist. While many other instruments employed in analytical work are described in detail, no account is given of the microscope. The subjects dealt with in this volume include the alcohols and alcoholic beverages, yeast, alcohol derivatives (ether, chloroform, formaldehyde, chloral, &c.), sugars, starch, paper, and the aliphatic acids, and under these headings will be found many substances of therapeutic value with their methods of preparation briefly described; physical and chemical properties, methods of detection and estimation, together with tests acting as criteria of purity are given in all cases. The methods of analysis described, whether official or otherwise, are given with full details of manipulation. Little fault is to be found with the subject-matter, although it is difficult to understand why various forms of apparatus for the physical testing of paper are included in a volume on organic analysis. Again, the reader who turns to the eight pages on urine analysis will be disappointed to find that these deal only with the detection and estimation of sugars in urine, other constituents being referred to elsewhere under different headings.

The volume falls below the level of its predecessors only in so far as a number of minor blemishes are to be found. Some of the references both in the text and also in the index are incorrectly paged, misspelt words are by no means uncommon, and the page-headings in some cases have no connexion with the subject-matter beneath; whilst many items of more or less importance are missing from the index. A volume of such undoubted merit is worthy of more care in the proof-reading and indexing. The general reliability of the volume maintains the high standard of former issues.

Vol. II. deals with fixed oils, fats, and waxes, and the methods of analysis of butter, fat, lard, linseed oil, higher fatty acids, soap, glycerine, wool-fats, cloth oils, and sterol alcohols. That portion of the work dealing with the general properties and analytical methods is contributed by Mr. C. A. Mitchell, the English editor of this new edition, and it constitutes nearly one-half of this volume. It is a valuable monograph and an unusual amount of care has been taken in its compilation. An interesting section on butter-fat and its analysis is revised by Mr. E. R. Bolton. The use of hardened or semi-hardened fats has complicated indeed the analysis of margarine mixtures, for, as is well known, the process of hydrogenation destroys the identity of the original fat or oil except so far as the saponification value may serve, and if the process be carried to any great extent the liquid vegetable oils begin to assume the properties of the solid fats. One of the American editors, Dr. E. C. Lathrop, writes on soaps and their methods of analysis. This

and the following section on glycerol by Dr. T. W. Lawrie are interesting alike to the general reader and the specialist. That somewhat complicated class of bodies known as the sterols are lucidly dealt with by Mr. J. A. Gardiner; the description of and the separation of these bodies from tissues and their chemical examination will be appreciated by physiologists and biochemists.

A perusal of this volume conveys the impression that the work has been more carefully prepared and better edited than Vol. I. Although it is intended primarily for laboratory use, there are many parts of it which will be of the greatest use to those who are concerned with the chemical side of medical science.

AN INTRODUCTION TO DERMATOLOGY.

Eighth edition. By Sir NORMAN WALKER. Edinburgh: W. Green and Son, Ltd. 1925. Pp. 273. 20s.

A NEW edition of this work is always awaited with interest by English-speaking dermatologists, for, in spite of his engrossing activities in other fields, Sir Norman Walker contrives not only to keep himself informed of new lines of investigation and treatment in dermatology, but also to test them for himself. His verdicts thus command respect, even if they do not always meet with general agreement. The convenient size of the book—and to convey so much information in less than 300 by no means closely-printed pages is a remarkable achievement, the charm of the writing, the practical "tips," and the many beautiful illustrations, of which 92 are coloured plates, make this volume an admirable introduction to dermatology.

It is worthy of note that Sir Norman Walker, whose experience in the treatment of lupus vulgaris is admittedly very large, states that under no other method of treatment has he seen such rapid and satisfactory improvement as in under treatment by one or other of the "Sunshine" lamps. Even quicker and better results are obtainable with actual heliotherapy in places where the amount of sunshine admits of more or less continuous treatment. The value of heliotherapy or artificial light-baths in infections other than tuberculosis—e.g., chronic staphylococcal and streptococcal infection—is not yet sufficiently appreciated either in this country or abroad. It is curious that Sir Norman Walker still clings to what may be called two dermatological heresies, one that psoriasis is the "extremely dry form of seborrhœa," the other that alopecia areata is due to an external infection and is contagious. As Civatte has insisted in a recent paper, the histological features of psoriasis are pathognomonic, so much so that, in cases in which the clinical diagnosis between the two conditions is uncertain, microscopical examination of a sufficient number of sections will decide it. Moreover, in seborrhœic dermatitis, the "bottle-bacillus" and staphylococci are always found in a state of active growth and multiplication, whereas in uncomplicated psoriasis the "bottle-bacillus" is never found, and the lesions are remarkably amicrobial. Again, seborrhœic dermatitis can always be cured, but we know of no method of curing psoriasis or of preventing its recurrence. With regard to alopecia areata, there is no evidence that will bear analysis in favour of its causation by an external infection or of its contagious nature. The section on xanthoma requires revision. It is stated that the substance that produces the yellow colour in xanthoma lesions is fat, but the substance in question consists not of true fat, but of cholesterol-esters; no mention is made here of the high degree of cholesterinæmia that obtains in this condition.

The original edition of this manual, published in 1899, was based on Sir Norman Walker's lectures to students, and the arrangement of the subject-matter adopted was no doubt a convenient one in accordance

with the knowledge and views of the aetiology of diseases of the skin that obtained at that time. In 1908, however, there appeared Darier's "Précis de Dermatologie," by common consent one of the best short treatises on dermatology that has yet been written in any language, in which for the first time a rational classification of skin diseases was attempted. It is a matter for regret that for the most part other authors of text-books have not followed this example. A purely ætiological classification of diseases of the skin is not possible, for, not only is the actual cause of some of them unknown, but certain eruptions, such as urticaria and eczema, are non-specific reactions, which may be provoked by various agents. But a reasonable arrangement is to group together the various forms of eruption due to one specific cause, e.g., those caused by staphylococci or streptococci, and the diseases produced by infection with the same class of organisms, e.g., the bacillary, protozoal, and higher fungus infections, and to classify eruptions of unknown origin or of multiple causation according to their morphological characteristics, e.g., the erythemata, the erythematous-squamous dermatoses, and so on. This method, it seems to us, alone enables the student to obtain an orderly conception of dermatology, and we venture to suggest that in the next edition of Sir Norman Walker's classical text-book a rearrangement of the subject-matter on these lines should be made.

We have long held the opinion that Sir Norman Walker's book is one of the very best foundations on which a student can base his study of dermatology, and the professed dermatologist will find in it much original thought and shrewd philosophy.

SURGERY.

Surgical Operations. Second edition. By E. W. HEY GROVES, M.D., B.Sc., M.S., F.R.C.S., Professor of Surgery, University of Bristol; Surgeon, Bristol General Hospital. London: Oxford University Press. 1925. Pp. 225. 21s.

THIS book is intended as an introduction to operations and to the technical methods by which they are performed. The methods of sterilisation of dressings and the various materials used in operations are described, as well as the usual methods of preparing a patient, and the general organisation of an operation. There follow brief descriptions of several typical amputations, of other operations on the limbs, and on the head and thorax. Much more space is devoted to operations on the abdominal viscera and the genito-urinary systems, and the volume concludes with 36 pages of illustrations of the chief instruments in ordinary use.

The book does not aim at a complete technical description of operative procedures, but merely at giving the onlooker some idea of the aims and methods of the surgeon. It is luxuriously printed and so well illustrated that a nurse or a student can learn enough from its pages to take an intelligent interest in surgical technique unconfused by a mass of detail. It forms an admirable introduction to the larger works to which the student must refer if he wishes really to master the details of operative procedure.

Operative Surgery. Second edition. By J. SHELTON HORSLEY, M.D., F.A.C.S., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. London: Henry Kimpton. 1924. Pp. 784. 52s. 6d.

IN the second edition of this work there are certain changes which constitute an important advance and make Dr. Horsley's manual of operative surgery a most valuable one. An entirely new chapter is included on the principles underlying operations for malignant disease. The author deals briefly with the ætiology of cancer, the natural resistance to it, and its metastases. He gives a thoughtful

account of the technical considerations in operations on malignant disease. The scope of the actual surgical procedure is discussed for different types of growths in varying situations, and he gives his opinions on the desirability of the use of such procedures as electro-desiccation and coagulation, and of radium and X rays as prophylactic aids to surgery. The chapter is completed by a short account of the surgical treatment of radium and X ray burns. A considerable number of new operations are described in their appropriate chapters, many of which have not yet found their way into any text-book of operative surgery. In those desperate cases of diffuse septic peritonitis and late intestinal obstruction, in which the patient is overwhelmed by a toxæmia, W. A. Costain has shown that absorption occurs through the thoracic duct. His operation of lymphaticostomy—i.e., of draining the duct in the neck—is described by Horsley, who suggests that it is a procedure worthy of attention in these cases. B. Stookey's method of providing paralysed muscles with a new nerve-supply is fully explained. It consists of anastomosing a free nerve graft—e.g., from a cutaneous nerve—to a motor nerve at one end and to the muscle at the other. Fair results are reported. Two operations for diseases of the heart appear in this edition for the first time; one is the division of the mitral valve as practised by Cutler and Levine. Essentially the technique consists of a thorough exposure of the heart, the passage of a special valvulotome through the walls of the left ventricle, and the division of the cusps. The second cardiac operation is designed for the relief of angina pectoris, and consists of the resection of the superior cervical sympathetic ganglion or its branches, as described by R. C. Coffey and J. Y. Brown. Among other new features are the operations of pulmonary lobectomy by Evarts Graham, chordotomy of C. H. Frazier, and a special method of intestinal resection by H. H. Kerr, which has so impressed Horsley as to cause him to substitute it for his own operation.

It will be remembered that this book does not set out to be a text-book of all operations. Those described are the procedures used and advocated by Horsley, and the book is therefore all the more valuable.

General Surgery. Practical Medicine Series. By ALBERT J. OCHSNER, M.D., F.A.C.S., LL.D., F.R.C.S.I., President of the American College of Surgeons. Chicago: The Year Book Publishers. 1924. Pp. 706.

THIS is a useful review of the surgical literature which appeared during 1924. The book covers the whole field of general surgery, and all important publications have been extracted. The resulting volume will be of value not only to the practitioner but to the active surgeon, particularly in this country, since much of the information is gathered from sources which are inaccessible to him. The book well maintains the admirable standard set up in previous years by its predecessors in this series.

ORTHOPÆDICS.

The Advance of Orthopædic Surgery. By A. H. TUBBY, C.B., C.M.G., F.R.C.S., Consulting Surgeon to the Westminster and Royal National Orthopædic Hospitals. London: H. K. Lewis and Co., Ltd. 1924. Illustrated. Pp. 144. 7s. 6d.

THE six chapters of which this book is composed have appeared as articles in the *Clinical Journal*. In the introductory chapter some sound advice is given on the ways of taking radiographs and on their interpretation, as well as more general considerations. The other chapters describe Congenital and Growth Deformities, Static and Postural Conditions, Infantile and Spastic Paralysis, dealing with the disabilities and deformities caused by anterior poliomyelitis and Little's disease, Reconstructive, Regenerative, and Recreative Surgery, and Re-education. A surgeon

of Mr. Tubby's eminence and experience cannot fail to have much that is worth hearing to say on these subjects, and he has made good use of the small space at his disposal. The statement, however, that no authoritative treatise on orthopædic surgery has been published in this country since 1912 is hardly correct. The authoritative and comprehensive work of R. Jones and R. W. Lovett was published simultaneously in London and New York in 1923. Sir Robert Jones's share in that fine book was such a large one, that it cannot be ignored, as if the work were, like Whitman's "Orthopædic Surgery," a trans-Atlantic production.

There is no doubt that the republication of Mr. Tubby's articles in volume form will be welcomed by practitioners who cannot spare time to study larger treatises.

PRÉCIS DE CLINIQUE SEMIOLOGIQUE.

Diagnostics, Prognostics et Traitements. Eleventh edition. By GASTON LYON. Ancien Chef de Clinique Médicale de la Faculté. Paris: Masson et Cie. 1924. Fr.28.

THIS little French volume seems to correspond with our "Hutchison and Rainy" and to fulfil its purpose extremely well. It deals very carefully with the method of examination of the patient as a whole, and of each particular system, and with laboratory methods of investigation. A comprehensive chapter on prognosis closes with a number of special cases in which a prognosis is urgently required. The concluding part, on therapeutics, includes reference to most of the modern methods. For any student entering upon his clinical work this book would be of value, both for preliminary reading to give him a good general idea of the ground he has to cover, and as a bedside companion when he is learning to examine cases. The practitioner, too, will find interest and information in the up-to-date presentation of work which is liable enough to become an incompletely fulfilled routine.

DIVAGATIONS OF A DOCTOR.

By ALEXANDER JAMES, M.D. Edinburgh and London: Oliver and Boyd. 1924. Pp. 192. 6s.

THE divagations of doctors have led to the production of books which are among the treasures of literature. We need only mention the works of Sir Thomas Browne, and of his near namesake, Dr. John Brown, who wrote those two classics, "Pet Marjorie" and "Rab and His Friends," and in the same class Osler's "Essays." Somewhat lower in the scale are Benjamin Franklin's "Essays," Moxon's "Pilocereus Senilis," and those excellent bedside books by Andrew Wynter "Our Social Bees" and "Curiosities of Civilisation." Dr. James discourses pleasantly upon such subjects as socialism in evolution, juvenile crime, tuberculous disease, and germ- and State-made "millenniumitis." He is no lover of the Education Act of 1872, and many will agree with him in his view that the Act has not produced benefits in accordance with the hopes of its begetters, that it has lessened parental responsibility, and, finally, that most persons do not rightly value what they do not pay for. In lighter vein is the Esculapian Oration on its 150th anniversary, a delightful piece of scientific fooling for the most part, though full of sound sense. As for the occasional songs, they naturally lose some flavour when the occasion has passed, but even so the whole book makes pleasant reading.

JOURNALS.

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE. Vol. LXVIII., Part 4. November, 1924. Edited by E. S. GOODRISH, F.R.S. London: Oxford University Press. £1 1s.—The latest number of this excellent journal is essentially like its forerunners of recent

years—that is to say, it exhibits such a variety of contents that specialists in every direction need to consult its pages, while finding therein room for their own contributions to biological science.—Pure embryology finds its exponents in Prof. J. P. Hill, of University College, and a pupil in their contribution to the early development of the cat.—"Natural History," not anatomical, is represented by Prof. W. C. McIntosh, whose exposition of structure and life-histories of the polychæteous annelids is so well known; his communication is entitled Two Tubes of Polyodontes and on the Discharge of the Ova in Thelepus.—Prof. E. N. Pavlovsky, of Petrograd, deals with the anatomy and some points in the development of a variety of scorpions, in continuation of a considerable series of memoirs upon this group of arthropods contributed to other journals in the immediate past.—Two contributions, one by Mr. J. F. G. Wheeler on the Growth of the Egg in the Dab, another by Mr. G. R. de Beer on the Ophthalmic Nerves in Some Fishes, complete the list.

AMERICAN JOURNAL OF PATHOLOGY. Vol. I., No. 1. January, 1925.—In September, 1923, the *Journal of Medical Research*, founded by Dr. Harold C. Ernst, became the official publication of the American Association of Pathologists and Bacteriologists under the control of a strong editorial board with Dr. Frank B. Mallory as editor-in-chief. It now, under the same auspices, becomes the *American Journal of Pathology*, and is to be published bi-monthly, making a volume of at least 600 pages a year. The subscription rates remain the same—viz., \$5.00 in the United States, \$5.50 in Canada, and \$6.00 for foreign countries. The alteration of title is all to the good, for "medical research" embraces far too big a field to be served by any one publication, and the new journal is frankly restricted to pathology, especially morphological pathology. The number contains ten papers. Ernest W. Goodpasture contributes four separate articles dealing with Experimental Herpes and Herpetic Encephalitis in the Rabbit. He concludes that the herpetic virus reaches the central nervous system from the periphery by growth along the axis-cylinders of nerves. Herpetic lesions are associated with the appearance of minute, though characteristic, intranuclear inclusions.—Louise H. Meeker writes on Riedel's struma, describing a case which was associated with remnants of the post-branchial body. The article is well illustrated by drawings of microscopic preparations.—E. R. Saleeby describes a case in which two tumours composed of practically normal bone marrow were found at autopsy in the thoracic cavity, adherent to but distinct from the ribs. He discusses their significance.—In Microglia and the Process of Phagocytosis in Gliomas, Wilder Penfield discusses for the first time the relation of these cells to gliomas; their function is that of active phagocytosis. This article is also illustrated by drawings.—In The Formation of Macrophages, Epithelioid Cells, and Giant Cells from Leucocytes in Incubated Blood, Margaret Reed Lewis brings the tissue culture method to bear on the polyblast question. The technique adopted was simply the incubation of hanging drops of blood.—Studies on Blood Fibrin, by E. W. Schultz, J. K. Nicholes, and J. H. Schaefer. The authors show that the fibrinogen content of blood is increased by tissue injury, including mild liver injury. Liver necrosis causes a diminution in the amount of fibrin which disappears altogether with complete destruction of the liver.—The Relation of Chronic Poisoning with Copper to Hæmochromatosis, by F. B. Mallory. The author met with ten cases of hæmochromatosis in one year's autopsies. The pathology of the condition is fully discussed and the conclusion is reached that the essential cause is chronic poisoning with copper. The source of the copper is the vessel used in the preparation of food or distilled liquors, and the disease is also an industrial one, occurring in workers in copper. The condition develops very slowly, taking some 15 to 25 years to declare itself.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 14, 1925.

THE WELSH NATIONAL SCHOOL OF MEDICINE.

THE histories of the origin and development of the medical schools of the United Kingdom cannot fail to be of absorbing interest to anyone concerned with the broad aspects, or even the details, of medical education. Some of them have grown in established seats of learning, homes of the humanities, where the struggle for recognition has been long and arduous, if, indeed, it has even now entirely ceased. Others have formed, as it were, the nucleus on which the other faculties of the university have crystallised. Yet others have developed out of the private schools of eminent teachers and have always had a frankly utilitarian purpose. But whatever their origins they are now in all essentials stabilised; only one, the Welsh National School of Medicine, whose home is in Cardiff, is still in the making.

The beginnings of medical education in Wales date back to 1893, when, in addition to the teaching of the first-year subjects already in existence as part of the science school, departments of anatomy and physiology were founded at the University College of South Wales and Monmouthshire, Cardiff. In 1909 the Treasury gave a special grant of £1500 per annum to the medical school which enabled a chair of pathology and bacteriology to be established at the Royal Infirmary. It was obvious that the matter could not rest here; the desire for a complete National School of Medicine was strong in the Principality, and in 1914 a deputation representative of university education in Wales presented a memorandum to the Chancellor of the Exchequer on the proposed completion of the medical school. In the next few years the whole question of university education in Wales, and especially medical education, was considered by various important bodies, including a Royal Commission presided over by Lord HALDANE, which numbered Sir WILLIAM OSLER among its members. The Royal Commission recommended that the school of medicine should be constituted an independent college of the University of Wales, and the medical faculty, the Board of Medicine of the school, and the managers of the Cardiff Royal Infirmary have endorsed this recommendation. More recently the matter came before the Council of the University of Wales, which decided that the school should be separated from the local administration of Cardiff College and should be established as a constituent school of the university with its own administrative authorities, directly responsible to the university. The reasons which influenced these responsible authorities in coming to this decision are difficult to appreciate without a complete understanding of conditions, but the question of administration must have weighed very heavily with them. Under the existing conditions there are upwards of ten different bodies or committees which in one way or another exercise jurisdiction over the school of medicine. Some of them, and some of the important among them, are of unwieldy size; while of

their members it may justly be said that the majority can have little or no first-hand knowledge of the needs of a modern medical school. In an old-established institution a multitude of committees may not be harmful; they may have been called into being to meet existing needs; they may even at times serve as useful safety-valves. But a young, expanding school must have freedom to grow; it needs the wise guidance of the knowledgeable few rather than the control of the uninstructed many. Another cogent reason for the fusion with the University is the undoubted desire of the Welsh people for a National School of Medicine. A practical proof of this was given in the response to an appeal for funds made on behalf of the school by the University of Wales to the Welsh people. Not only was money obtained in the form of subscriptions from individuals all over the country, but an $\frac{1}{2}$ d. rate was given by every local authority in the Principality. Now the Federal University of Wales consists of four constituent Colleges: those of Aberystwith, Bangor, Cardiff, and Swansea, in all of which Welsh students can obtain University teaching in most faculties. But there is only one medical faculty, and it is part of Cardiff University College. It is not unnatural to suppose that the rest of Wales may ask why the National School of Medicine should be the property, as it were, of a single one of the constituent Colleges, especially if the school itself is dissatisfied with this close association. This consideration might well have weighed with the Federal University, which, as recipient and distributor of all grants in aid of the University and its Colleges, is naturally concerned lest the school might become a financial burden if this support from the rates were withdrawn.

There is, of course, another side to the question, or there would be no opposition to the separation of the school of medicine from Cardiff College. This opposition is genuine and not merely the expression of respect for vested interests. But it seems to be based chiefly on a misconception as to what is meant by separation. If separation meant the withdrawal of the school of medicine from the academic life of Cardiff College and from association with the Federal University, few would be found to advocate it. But, as Sir CHARLES SHERRINGTON, P.R.S., points out in a judicial article in the *Western Mail* of Feb. 7th, the very reverse is intended. If the proposals are carried out the school will be brought into closer connexion with the University itself, while the existing cross representation between the academic authorities of the school and the College will continue. The school will only be independent in the same sense that the College is; it will, of course, be a constituent part of the Federal University, as the College is, and administratively and financially it will be governed by the University. An argument against separation, one upon which considerable importance seems to be placed locally, is that the general culture of the medical students will suffer if they are separated from their fellow undergraduates in the other faculties. But this argument scarcely bears examination. The social amenities of the older residential universities can never be enjoyed in modern universities situated in large cities. A student may spend six extremely profitable years at a London hospital without exchanging one single word with an arts or a divinity student. In working hours there is an inevitable tendency for birds of a faculty to flock together; in their social intercourse there is not the slightest reason why the different faculties in Cardiff should not mingle in the future as they have done in the past. The whole weight of considered opinion is so strongly in favour

of the proposed separation as the natural solution of a difficult situation that it cannot but come to pass. It is to be hoped that it will not be unduly delayed, so that the Welsh National School of Medicine may develop unhampered along the progressive lines sketched out by Sir WILLIAM OSLER.

HYGIENE OF THE NOSE AND NASO-PHARYNX.

THE function of the nose is to warm, moisten, and filter the inspired air; and this function is performed in such an efficient manner that in normal conditions the air, by the time that it reaches the naso-pharynx, is sterile, saturated with aqueous vapour, and raised to the body temperature. The current of air, passing in through the narrow anterior nostrils in a rapid compact stream, on entering the wider irregularly shaped nasal passages, slows down and is broken into a number of sluggish eddies which, coming into intimate contact with the warm moist surface of the mucous membrane, deposit their dust and receive warmth and moisture. For this purpose a considerable activity is required from the mucous membrane; it has been reckoned that it contributes half a pint of water a day to the inspired air. It is well equipped for its work, being freely supplied with blood to warm, glands to secrete moisture, and ciliated epithelium to sweep the mucus-entangled dust backwards to the throat. If the normal activity of secretion is disturbed, as in anæmia or dyspepsia, dryness results; or, if part of the mucosa is replaced by scar-tissue, a scab of dry mucus forms. Hence the importance, in operations in the nose, of interfering as little as possible with the normal mucous membrane.

Under the healthy conditions of a simple open-air life these functions are ordinarily well performed, any extra mucus is easily expelled by blowing the nose, and artificial assistance is quite unnecessary and, indeed, likely to be harmful. It was remarkable, in the war, that soldiers living under primitive conditions, in wet and muddy trenches, were seldom afflicted by catarrhal troubles; but among those living in the circumstances of modern life in civilised countries, especially in towns, these troubles are only too common; in the United States they are especially frequent, and the predisposing factor is probably the over-heating of houses which results from the prevalent system of central heating. The proper cure for catarrh is, therefore, a return to the simple life; unfortunately, this is rarely possible, but the nearer it is approached the better. Sufficient open-air exercise and, above all, well-ventilated rooms and houses are the great preventives; draughts are less severe when plenty of windows are open, but a small opening into a hot room causes a concentrated current of air. The custom, common among nurses, of cleaning the nostrils of infants with a pledget of cotton-wool is unnecessary, though harmless; but, as soon as the child is old enough, he should be taught how to blow the nose. The proper method of performing this simple act is to close one nostril with the finger and to blow steadily and strongly down the other, and then to repeat the process through the opposite nostril. Both nostrils should never be closed at once during the blowing; this is obviously ineffectual in clearing the nose, and may blow discharge through the Eustachian tubes. Sniffing is an unpleasant and unsocial habit; but if a child cannot blow the nose properly, it is better even that he should sniff and swallow stagnant secretion than leave it in the nostrils; the catarrh or obstruction

should be cured rather than the child punished for sniffing.

Nasal obstruction is a common cause of chronic catarrh and of susceptibility to colds; mucus tends to stagnate behind such an obstruction and to form a nidus for the growth of micro-organisms. It often, however, takes years for such catarrhs to develop seriously; cases of deviation of the septum frequently suffer but little inconvenience in their youth, and only develop much discomfort from catarrh when middle age is reached, after which time the condition steadily becomes worse. In childhood, adenoids are the common cause of persistent catarrh, and are themselves due to repeated attacks of catarrhal inflammation; the possibility of their prevention is a matter of importance. Something can be done by attention to ventilation, open-air exercise, and general hygiene; and something by seeing that young children learn to remove excessive secretion by proper blowing of the nose. In the early stages, when some nasal obstruction has developed, breathing exercises regularly performed improve the ventilation of the naso-pharynx, help to remove stagnant secretion, and so break the vicious circle; but when the naso-pharyngeal tonsil is so enlarged as decidedly to obstruct nasal respiration, breathing exercises will not effect a cure, and may do harm by increasing the deformity of the chest. The use of irritating snuffs to encourage sneezing has at times been widely recommended; theoretically, at least, it would appear that irritation of the delicate nasal mucosa must be hurtful. "Handkerchief drill" in schools, to encourage proper blowing of the nose, is excellent and should be more generally adopted. In infants and young children with catarrh, 20 or 30 drops of warm normal saline lotion may be dropped down each nostril from a fountain-pen filler while the head is thrown back; this undoubtedly removes secretion and clears the nasal obstruction, while it appears to be quite harmless and to cause shrinkage of the adenoid in its early stage of catarrhal swelling. There is no danger of choking an infant if not more than 30 m is used at a time. In older children, over 6 or 7 years of age, and in adults, the effect is best obtained by washing out the nasal passages. Much controversy has arisen over this, the principal objection being that it can cause inflammation and suppuration of the middle-ear. But it does relieve and cure many cases of nasal and naso-pharyngeal catarrh, and, if certain simple precautions are taken, there is little danger of spread of inflammation to the ear. The lotion should be at or slightly above body temperature; it must be quite unirritating and painless and should consist of normal saline solution, or of a similar isotonic mixture of harmless salts; plain water is hypotonic and damages the delicate epithelial cells, and any powerful antiseptics are harmful. It must never be used while there is a raw surface resulting from an operation, as after the removal of adenoids, or in the acute stage of a cold, but is valuable when the "sticky" stage has been reached. The flow should be interrupted if any gagging occurs, and this happens automatically when a syringe, and not a gravity douche, is employed. Probably the best instrument is a 2 oz. indiarubber ball with a short firm nipple of the same material moulded in one piece; it is easily sterilised by boiling, and is too small to produce any considerable pressure; if there is unilateral obstruction, as from a deflected septum, the syringe is applied only to the obstructed side, so that there is a free exit for the lotion from the other. The patient fits the syringe to one nostril, inclines the head forward, and breathes deeply through the open mouth, while he slowly squeezes the ball

empty and the lotion trickles out by the opposite nostril; this is ordinarily repeated through the other nostril, and then the nose is gently blown as already described. A child of 6 or 7 years of age can easily do this for himself, and soon appreciates the increased comfort it brings to a stuffy nose; it is better that he should do it himself, for he immediately relaxes the pressure if he gags. He must be particularly careful not to close both nostrils at this stage, or a cracking may be felt in the ear, and it is in this way that the ears may become infected. But such an accident is certainly very rare, and the good which results from this procedure in cases of catarrh is very definite; for some patients susceptible to colds, its regular use through the winter months serves as a decided preventive.

REX v. BATEMAN.

THE decision of the Court of Criminal Appeal to quash the conviction of Dr. PERCY BATEMAN corrects a manifest miscarriage of justice, and will be in every way satisfactory to the medical profession. A report of the arguments of counsel appears upon another page, but the Court, while quashing the conviction, decided to give their considered reasons in judgments later. We regard the result with peculiar satisfaction, not only because Dr. BATEMAN is to be congratulated upon having been saved from a period of degrading imprisonment which he had done nothing to deserve, but because a precedent has been established for the reviewing of a jury's verdict which had been delivered upon an interpretation of medical evidence. New facts were not brought forward, but the old facts were made to wear their right interpretation. To those who could understand the scientific evidence as it was given, the original verdict appeared wrong. The story of the circumstances in which Dr. BATEMAN's patient died, and in which he was convicted of manslaughter by criminal negligence, has been read and considered by a large number of his colleagues, liable through the nature of their practice to find themselves performing their professional duties in a like situation. These have, of course, been more capable than any jury of basing a correct opinion upon the clinical evidence. They will have seen, as indeed did the jury, that the injuries following a complex presentation were the cause of death, but did not imply such negligence on the part of the operator as would justify his conviction for manslaughter. Medical men will also have appreciated, as a jury would not even though properly guided by a judge, that the physical injuries that affected the deceased did not by themselves prove guilt, but that their occurrence was equally consistent with complete innocence. And under the conditions in which Dr. BATEMAN found himself, in spite of the exercise of all reasonable care and skill, such tragedies may fall out. We have not here a specialist working in the ward of a hospital or nursing home, or in the convenient environment of upper or middle-class practice, but a general practitioner attending a poor patient in a poor man's room; and with the conditions obtaining in such places many general practitioners are familiar. The conditions determined the tragedy. Medical men must have wondered what standard of skill and care had been laid before the jury by the judge who tried Dr. BATEMAN as necessary for a medical man to reach in order to avoid a criminal charge on the death of a patient in whose case, in popular phraseology, "Something had gone wrong."

Annotations.

"Ne quid nimis."

CANCER AND GOITRE.

GOITRE is endemic in certain parts of Switzerland. That country has also the highest death-rate from cancer, and this high death-rate is due mainly to the frequency with which the upper part of the digestive tract is attacked by cancer. Thus the mortality per 100,000 from cancer of the oesophagus and stomach in males is 75.4 for Switzerland, as compared to 21.6 in England and Wales; in females it is 46.2 for Switzerland, 16.2 for England and Wales. For all other organs combined the rates are—in males, 45.7 for Switzerland, 55.7 for England and Wales; in females, 72.0 for Switzerland and 86.5 for England and Wales. These facts suggest the possibility that a common factor may be involved in the incidence of goitre and of cancer, and raise the further question whether a condition of hypothyroidism renders the body more liable to develop cancer.

The current number of *Biometrika* (vol. xvi., December, 1924) contains a paper by Dr. Percy Stocks in which he tries to answer these interesting questions by a comprehensive statistical investigation. He finds that in those regions in Switzerland where goitre is frequent there is also a higher incidence of cancer of the stomach and oesophagus than in areas where goitre is less frequent. The same is stated to hold good for other goitrous regions in Europe and in the United States. Graves's disease, on the other hand, shows a negative correlation with cancer mortality. A consideration of 1000 post-mortem records from the Middlesex Hospital shows that enlargements and other anomalies of the thyroid gland are more frequent in cancer cases at death than in non-cancer cases, and these anomalies are of the types usually associated with depressed thyroid function. The general conclusion is drawn that defective functioning of the thyroid gland is favourable to the incidence of cancer of the stomach and possibly of other organs also, and it is suggested that the administration of iodine after middle age, as practised in Switzerland for prophylactic purposes against goitre in young people, might result in diminishing the incidence of cancer.

A number of objections suggest themselves to these conclusions. The statistical evidence does not show that cancer of the stomach is more frequent in individuals suffering from goitre. It only shows that in some countries it has a similar regional distribution as goitre. It is known that goitre is more frequent in women than in men, while cancer of the stomach is more frequent in men than in women. That is contrary to what we would expect if hypothyroidism predisposed to cancer. Moreover, no reference is made to countries like Holland—which are not goitre countries, but where cancer of the stomach has an exceptionally high incidence. If a direct relationship between the incidence of goitre and of cancer of the stomach existed, there ought to be clinical evidence in goitrous countries such as Switzerland of a frequent coincidence of the two diseases in the same individual. So far as we are aware so such evidence exists. The argument based on post-mortem findings is fallacious, because cancer is a chronic disease entailing prolonged inactivity of the patient with treatment by drugs. That in itself might account for the abnormalities found. The slightly diminished incidence in Graves's disease is readily explained by the fact that Graves's disease has a much higher mortality than goitre, especially if we include affections of the heart resulting from the disease. It is, moreover, not an endemic disease, and, unlike goitre, is not dependent on environmental conditions which affect the whole population living in a district where the disease occurs. We mention these objections, not because we wish to deny that a correlation between thyroid activity and incidence of

cancer exists, but in order to illustrate the limitations of statistical methods in investigating such a complex medical problem, even when they are applied with the competence and care which distinguish Dr. Stocks's investigation. If the relationship between thyroid activity and cancer incidence exists which Dr. Stocks postulates, then there are direct methods available to demonstrate it. The basal metabolism is generally recognised as a measure of thyroid activity. By determining the basal metabolism in various diseases of the stomach, including sufficiently early cases of cancer, it should be possible to obtain more direct evidence on the interesting question which Dr. Stocks has raised. Until such direct evidence is obtained, the suggestion of indiscriminately dosing with iodine must be considered premature. In Switzerland the suspicion has arisen that the continued use of iodine to prevent goitre may lead to the production of exophthalmic goitre.

"BRONCHIAL SPIROCHÆTOSIS."

MUCH has been written in recent years upon a pulmonary condition to which the term bronchial or broncho-pulmonary spirochætosis has been applied. Dr. Y. Schwarz recently described in THE LANCET¹ five cases which he had had under his care in Cairo, while a case in a suspected tuberculous subject at Montana was described in our correspondence columns² on Jan. 17th. In the last-named case a radiograph showed a definite opacity at the apex of the right lung. Bronchial spirochætosis was first described by Castellani,³ who based his diagnosis on the presence of numerous spirochætes in the sputum of two cases of hæmorrhagic bronchitis observed by him in Ceylon in 1904. Since that time a considerable literature has gathered round this subject. Macfie,⁴ Galli-Valerio,⁵ Violle,⁶ Dalimier,⁷ Dargallo,⁸ Farah,⁹ Mendez,¹⁰ Robert,¹¹ Korthof,¹² Carini,¹³ Browne,¹⁴ de Mello,¹⁵ Risquez,¹⁶ and Faust¹⁷ have reported cases from Africa, France, Italy, Switzerland, Spain and Portugal, England, Brazil, Venezuela, China, and Dutch East Indies. These papers, though informative regarding the cause of the disease, its treatment, and manner of spread, are curiously silent regarding its true pathology. Some underlying pathological condition has been presumed to exist, but the possibility of the spirochætes complicating other well-known pulmonary conditions, such as tuberculosis, appears to have been overlooked. The question of the relationship of the spirochætes of the mouth to one another and to the *Spirochaeta bronchialis*, described by Fantham,¹⁸ in 1915, needs clearing up. Fantham regarded this organism as distinct from other spirochætes occurring in the mouth, whereas Schwarz,¹ in his recent paper, figures these organisms associated with fusiform bacilli as in the case of the familiar Vincent's spirochæte; in both instances recorded pyorrhœa alveolaris was present, in the pus of which these latter organisms abound, and Vincent¹⁹ himself believes *S. bronchialis* and *S. vincenti* to be identical. Moreover, the specificity of *S. buccalis* and *S. dentium*, which can be universally

demonstrated in the oral cavity, is by no means decided. Mühlens,²⁰ in discussing this question, declares that German pathologists regard spirochætes in the sputum as being of little importance. These organisms, he says, are found in enormous numbers in inflammatory conditions of the mouth and pharynx, and, under suitable conditions, may spread to the lungs. He is therefore of the opinion that broncho-spirochætosis is not recognisable as a characteristic disease. Pons,²¹ basing his opinions on observations made in Saigon, has also come to the same conclusion. Dental caries, he finds, greatly favours the presence of spirochætes in the sputum. He was fortunate enough to secure an autopsy of a patient who had been expectorating spirochætes in blood-stained mucus, but no pleuro-bronchial lesions could be found to account for it. In the bronchial mucus itself there were no spirochætes, but as the higher portions of the respiratory tract were reached, they became more numerous. It appeared logical to conclude that the spirochætes in the sputum before death were identical with those occurring in the mouth, so that, in considering the morphology of these spirochætes, he is driven to the conclusion that it is practically impossible to differentiate *S. buccalis* from the so-called *S. bronchialis*.

Under these circumstances, it is surely somewhat venturesome to speak of bronchial spirochætosis complicating pulmonary tuberculosis as in cases quoted by Bloedorn and Houghton,²² and Korthof¹² and to a recent review by Delamare.²³ In the cases recorded by Pons, the probable sequence of events is that an invasion of the respiratory tract by spirochætes from the mouth takes place under conditions which facilitate their multiplication as in pulmonary tuberculosis; for, when the patient makes a good recovery from the latter, the spirochætes tend to disappear. The authenticity of this condition having been criticised upon unquestionably sound evidence, it would be advisable for the whole matter to be reconsidered, in light of recent facts, before accepting, without cavil, bronchial spirochætosis as a distinct clinical and pathological entity.

THE ÆTIOLGY OF ALOPECIA AREATA.

THE ætiology of alopecia areata has long been the subject of worry among its victims, who express disappointment amounting to indignation that neither prevention nor cure of this disfiguring malady is in their power. It is at any rate possible to comfort them by the assurance that though a family tendency to patchy baldness may exist, the majority of dermatologists see no reason to regard the condition as contagious. Sir Norman Walker, in the new edition of his book, which we review in another column, is one of few who still clings to the suspicion that alopecia areata is due to an external infection. But the evidence for this theory will hardly bear analysis. Haldin Davis and others have shown the explanation of at least some of the alleged epidemics in schools and institutions to be imitation of one or two genuine cases; the interest aroused by the earlier cases has led to other children "plucking" their hair, producing what may be called "alopecia artefacta"; others, as Sabouraud points out, have been epidemics of impetigo, the impetiginous areas on the scalp having become denuded of hair. The familial incidence of alopecia areata is much less common than of psoriasis; yet Sir Norman Walker does not suggest that the latter disease is contagious, but is inclined rather to make light of the hereditary factor in its ætiology. A study of the evolution and nosology of alopecia areata, and of the mode of formation and characteristics of the exclamation

¹ Schwarz, Y.: THE LANCET, 1924, ii., 1331-34.

² Hudson, B., and Others: THE LANCET, 1925, i., 156.

³ Castellani, A.: THE LANCET, 1906, i., 1384.

⁴ Macfie, J. W. S.: J. Trop. Med. and Hyg., 1915, xviii., 63-65.

⁵ Galli-Valerio, B.: Correspondenz-Blatt. f. Schweiz. Aerzte, 1917, xlvii., No. 6, 169-175.

⁶ Violle, H.: Bull. Soc. Path. Exot., 1918, xi., No. 1, 39-47.

⁷ Dalimier, R.: Presse Médicale, 1919, xxvii., No. 14, 124-125.

⁸ Dargallo, R.: Rev. Espanola de Med. y Cirugia, 1919, ii., No. 12, 323-325.

⁹ Farah, N.: THE LANCET, 1919, ii., 608-609.

¹⁰ Mendez, A. A.: Rev. Medica Cubana, 1919, xxx., 593.

¹¹ Robert, L.: C.R. Soc. Biol., 1921, lxxxv., No. 24, 230-232.

¹² Korthof, G.: Geneesk. Tijdschr. v. Nederl.-Indië, 1921, lxi., No. 1, 71-78.

¹³ Carini, A.: Bull. Soc. Path. Exot., 1920, xiii., 500-501.

¹⁴ Browne, C. L.: THE LANCET, 1920, i., 1164.

¹⁵ de Mello, F., and de Andrade, M.: Bull. Soc. Path. Exot., 1922, xv., No. 5, 284-285.

¹⁶ Risquez, J. R.: G. Méd. de Caracas, 1923, xxx., Nos. 13-18.

¹⁷ Faust, E. C.: Arch. Intern. Med., 1922, xxx., No. 3, 343-354.

¹⁸ Fantham, H. B.: Ann. Trop. Med. and Parasit., 1915, ix., No. 3, 391-412.

¹⁹ Vincent, E.: C.R. Soc. Biol., 1922, lxxxvi., 1002-1004.

²⁰ Mühlens, P.: Arch. f. Schiffs- u. Trop.-Hyg., xxiv., No. 5, 139-142.

²¹ Pons, R.: Bull. Soc. Path. Exot., 1924, xvii., No. 2, 170-179.

²² Bloedorn, W. A., and Houghton, J. E.: Jour. Amer. Med. Assoc., 1921, lxxvi., No. 23, 1559-1563.

²³ Delamare, M. G.: Le Progrès Médical, 1924, No. 4, 585-587.

tion-mark hair, leads inevitably to the incrimination of the sympathetic fibres supplying the hair-bulbs. A point of great significance is that in the formation of the exclamation-mark hair there is an alteration in the distribution of the pigment, which becomes collected into clumps at the distal end, while the proximal part is completely depigmented. This pigmentary change is exactly analogous to that which occurs in vitiligo, and the two diseases are frequently associated, one or both being common in Graves's disease, in which disturbance of the sympathetic is so predominant a factor. It is impossible to reconcile these facts with the theory of external infection. The exhaustive researches of Sabouraud, himself at one time a protagonist of this theory, as detailed in his latest work on diseases of the scalp, should surely have disposed of it.

THE ANTIQUITY OF MAN.

IT is strange to reflect that at the time of the foundation of THE LANCET it could never have occurred to its average reader to doubt that an act of special creation had introduced his first parent to this earth in a condition of human, if bucolic, completeness at a date, fixed at some 4000 years B.C. Yet now Sir Arthur Keith has given us two volumes of familiar discourse on the habits and features of man and his pre-human ancestors, to which we referred last week,¹ in which the reader is referred back to a period 200,000 years earlier, and told that there is still a question as to whether the time estimate is not still too conservative. And following hard on the re-issue of Sir Arthur Keith's book comes news from Africa of a new anthropological find promising to be one of the most significant in the history of geological excavation. The fossilised skull brought to light through the enthusiasm of Prof. Raymond Dart and his colleagues of the University of the Witwatersrand, Johannesburg, and described by him in last week's issue of *Nature*, is judged to be that of a child of six, from the fact that the first molar only, of the permanent dentition, is erupted. It is particularly interesting in that there has been preserved in the limestone matrix a more than usually complete picture of one cerebral hemisphere. A certain amount of caution has to be exercised in drawing conclusions from the bony formations of a skull so young as this. As is well known, the young of allied species tend to resemble each other more closely than do the adults, and the distinctive prominences and contours of the skull are not developed until later years. But there appears to be no such change in the general proportions and pattern of the brain, so that when we find in this child a brain actually larger than that of the adult chimpanzee, and presenting a rounded outline in striking contrast to the flattened parietal appearance of the ape brain, we cannot refuse to admit the claim of the individual to a proportional psychological development of the higher mental functions. The "parallel sulcus" balances the general expansion of the cerebrum by providing a distinctly pithecoïd feature. In the skull also a similar mixture of humanoid and anthropoid features is found. The brain development is reflected in the proportions between the brain case and the facial portion, which place the fossil about midway between the young gorilla and the modern human. The same intermediate character is seen in the position of the foramen magnum, from which the degree of uprightness of gait may be deduced. The "head balancing index" used by Prof. Dart to illustrate this point places the new specimen between the chimpanzee and the Rhodesian skull. The orbits and nose are distinctly human in their formation, as are the teeth. The jaw, however, is massive, particularly so considering the youth of the individual, although the fashioning of it is human, in the slenderness of the

ramus, the absence of a "simian shelf," and the relatively vertical direction of the anterior symphyseal outline. It has, in fact, attained a degree of development which brings it into line with Heidelberg man. To give this specimen a definite place in the evolutionary series would be premature at present; it will doubtless arouse as much expert discussion and controversy as its predecessors. But those whose pictorial imagination likes to hasten in advance of the slower methods of anthropometry will probably associate the name *Australopithecus africanus* with a race of creatures somewhat larger than chimpanzees, walking habitually upright, if with a rather stooping gait, living probably a solitary or limited family life (for the great link of speech had not yet been acquired), but able to profit by experience and to store memories with sufficient adequacy to make headway against the difficult environment of the African climate and dangerous veldt life; they could lay down by the use of eye, ear, and hand those new associations, new deductions, and new meanings which formed the germ of *Homo sapiens*.

Meanwhile the more cautious will turn, with even greater enthusiasm than before, to the new and revised edition of "The Antiquity of Man." The issue of this manual of up-to-date information is indeed timely, for only those acquainted with the wealth of knowledge so charmingly presented therein can appreciate and assess the value of the new skull. The general matter and manner of the book are well known. The author takes us out on a tour of the world, choosing the geographical method rather than the historical for the presentation of his material. Wherever we alight he beguiles us with easy conversation as to the surrounding country, the folk-lore, and the history of the area around us, until we are ready to be introduced, almost personally, to the dead and gone inhabitants of many ages past. We see them at work, at play; we consider their features, their ornaments, their works of art, their implements, and household possessions. And almost without our realising it we are instructed in the latest scientific knowledge and the most elaborate specialist opinions about them. Upon Sir Arthur Keith has descended the mantle of the prophet Ezekiel, who prophesied unto the dry bones so that they lived and stood upon their feet, an exceeding great army. Since the publication of the first edition, ten years ago, new material has come in from all parts of the world: Palæolithic Englishmen in the Mendips; early roundheads at Solutré; rugged Nordic types at Bonn; at Ehringsdorf, Neanderthal men intermediate between Heidelberg man and the French Neanderthals; the illuminating Ghar Dalam caves of Malta, and, finally, the extremely significant Talgai man of Queensland and the African series of discoveries culminating in *Homo rhodesiensis*, that pathetic Pleistocene sufferer from toothache and "rheumaticks." With all these Sir Arthur Keith deals, weaving them into the matter of his earlier edition with that combination of erudition and fascination so peculiarly his own. The first two chapters of the second volume are devoted to the Broken Hill skull, which is compared, whimsically enough, with that of Sir Thomas Browne, and is placed on a line of its own, separated off from the general human stem somewhere in the Pliocene. The later chapters deal with such subjects as Heads, Brains, and Teeth, as found in early man, and the final one discusses some general conclusions, which are well illustrated in the diagram that forms the frontispiece. The original evolutionary hypotheses were direct descendants of the popular scientific custom of arranging all known objects, from the angel to the stone, in order of their elaboration, and the early evolutionists did but give a shake to the "Echelles des êtres" and turn them into living stairways or escalators, each step still neatly placed in its order. Such conceptions have long since given way to the simile of the "tree of life," and that branch of the tree which deals with man has many

¹ The Antiquity of Man. Revised edition. By Sir Arthur Keith, M.D., F.R.S. London: Williams and Norgate, Ltd. 1925. Two volumes. With 266 illustrations. Pp. 753. 25s.

spreading side-branches. The only relics that Sir Arthur Keith places on the direct line of modern European ancestry are the Cro-Magnon, Combe Capelle, and Grimaldi men. The Talgai and Boskop specimens lead directly on to modern Negroid and Australoid types respectively, but all the other traces that research has revealed do but tell us of the many abortive efforts made by Nature to produce that strange phenomenon *Homo sapiens*. It will be interesting to see where *Australopithecus africanus* takes a place in the genealogical tree when a further edition of this popular classic is called for.

THE HÆMOPHILIC BLOOD.

It was pointed out by the late Prof. Baylis in his monumental "Principles of Physiology" that the current theories of the coagulation of the blood are merely a schematic representation of observed facts and that the actual existence of the numerous postulated "pro" and "anti" bodies is as unlikely as that of the amboceptors and haptophores of Ehrlich. The hæmophilic diathesis has always been a peculiarly happy hunting ground for the exponents of this particular class of theory, and few workers in the field have omitted to locate the cause of the failure of the clotting process in a deficiency of one or other of these hypothetical factors. The work of Pickering in this country seems to have proved the non-existence of "anti-thrombin" at any rate, and consequently to have endangered the safety of the whole fabric of the hypothesis, while the latest observations on the hæmophilic diathesis lend no support to the current conception. The authors of these most recent observations, Drs. Hans Opitz and Hedwig Zweig,¹ of Breslau, although obviously starting out with a marked bias in favour of the school of Morawitz and Howells, were forced to the conclusion that the hæmophilic diathesis does not depend on the absence of some one link in the coagulation process but is the expression of a profound alteration in the constitution of the blood. Using as the subjects of their research three well-recognised hæmophiles, these workers first tested the relative power of the constituents of normal and hæmophilic blood in bringing about the inception of the clotting process in whole blood of normal and hæmophilic origin. They found that the constituents—serum, red cells, hæmoglobin solution on platelets—from either hæmophilic or normal sources were equally active in bringing about clotting in normal blood, an observation which points to no lack either of kinase or prothrombin in hæmophilic blood. With hæmophilic whole blood they found the case somewhat altered; here the individual constituents of hæmophilic blood showed themselves somewhat less active than those of normal blood. From this they concluded that the actual cause of the comparative failure of coagulation in hæmophilia must lie in a slowing down of the process of formation of the fibrin ferment. Their observations, however, did not end here; extending them to include not only the hæmophilic patients but also their mothers they found that the blood of both presented three striking departures from the normal. In the first place, both showed an increased resistance to osmosis on the part of the red cells; in the second both showed a somewhat high calcium content; and in the third the serum from both was completely lacking in the trypanocidal power normally always present. Unfortunately, the observations were not extended to include the non-hæmophilic offspring, but as they stand they appear to indicate that the onset of hæmorrhage in hæmophiles is in the nature of an accident, dependent probably upon a deficiency in fibrin ferment, but occurring in individuals belonging to families characterised by the possession of an abnormal type of blood. This view would add the hæmorrhagic

diathesis to that group of diseases of which acholuric familial jaundice and the sickle-cell anæmia of negroes are the two best recognised examples.

THE CRITERIA OF BACILLARY SPECIES.

A CAREFUL and thorough examination of 89 strains of tubercle and acid-fast bacilli by Dr. G. S. Wilson, of Manchester, is published in the last number of the *Journal of Pathology and Bacteriology* (1925, vol. xxviii., p. 69). Culturally the customary five groups were recognised—human, bovine, avian, cold-blooded, and saprophytic acid-fast. Agglutination reactions show considerable overlapping, and it is not clear that a smegma or timothy grass bacillus could certainly be differentiated from a human tubercle bacillus by this means. Absorption of agglutinins gives clearer distinctions and delimits four groups. But the human and bovine strains remain indistinguishable by these serological tests, and there is no evidence at all of any subgroups within either species. The investigation is of great inherent value and of special interest as raising once again the question of what we mean by "species" among bacteria—a matter of moment to pathologist, epidemiologist, and general biologist. We have here a case where two sorts of bacilli are clearly distinguishable by their pathogenic effects: in crude summary the human bacillus causes phthisis in man while the bovine bacillus does not. The two are almost equally different by their growth on artificial media and by their pathogenicity to animals, though here the distinctions are perhaps quantitative rather than qualitative. But by the most delicate tests which we can apply their chemical constitution is more or less identical, and from a study of the great bulk of analogous examples we know that these tests are tests of the differences between "species" as commonly understood. Other examples of the same kind of thing are known. No one supposed that the cause of epizootic abortion of cattle had anything to do with the cause of Malta fever until the bacteriologist found that he could distinguish between organisms coming from the two sources only when he was pressed to bring into play his most elaborate armamentarium by the insistence of the epidemiological fact that the two diseases had apparently no connexion with or relation to one another. In his turn the clinician has been forced by the bacteriological evidence to look into human cases more closely and has found two or three examples of what certainly appear to be infection by *B. abortus*, but these exceptions only emphasise the pathogenic distinction between the two "species" of *Brucella*. Similarly, the practical difference between the organisms of plague and pseudo-tubercle is that the former is pathogenic to rats while the latter is not; culturally they are nearly or quite identical, and animals may be protected against plague with a pseudo-tubercle vaccine. Conversely, we have examples of bacilli which are serologically but not pathogenically distinct. The diphtheria bacillus has been dissected into a number of agglutination strains; the same antitoxin will neutralise their toxins and there is no evidence that they vary among themselves in their pathogenic relations to man. The types of pneumococci, which are beginning to seem less clearly distinct from one another than they were at first, are differentiated by agglutinin and precipitin reactions; one is evidently more important than the others in causing acute lobar pneumonia, but that and other characteristic lesions may be due to any of them. The agglutination groups of the gonococcus seem to have no reflection in clinical practice, nor have those of the meningococcus apart from the question of curative serum.

It is, of course, tempting to speculate as to what this may mean in terms of evolution. Parasitism is presumably a secondary character, and parasitism of warm-blooded animals is certainly a late acquisition; we should therefore be inclined to look to other characters as affording sound diagnostic criteria. On the other hand, the fact of parasitism and especially

¹ Jahrbuch f. Kinderheilkund. 167, den Dritten Folge, 57 Band, Heft 3, October, 1924.

the host which is parasitised may well be determined by chemical characters which are the basis of serological distinctions. And our practical men will certainly not be content with a classification which tends to ignore one of the features of a bacillary "species" which is most obvious to us. The evolutionary aspect leads us also to reflect that a thousand years with us is as but a day or two with organisms which can double their numbers in half an hour. We know, too, that current cultures may be dissected into races which are culturally, serologically, and pathogenically distinct, and with this going on under our eyes we should be the more ready to believe that it may happen and may have happened in a wider world than a Petri dish. The clinical counterparts of this seem less definite. But without going into detail the change of type in scarlet fever and the alastrim-smallpox facts are very suggestive; unfortunately, in neither case can we examine the unknown causative agent. At the extremes there are two schools of thought. The hundred per cent. bacteriologist looks upon an infectious disease as the specific result of an organism; to him the same organism means the same disease, and if the organisms are different, then their diseases must be different. To the out-and-out epidemiologist, on the other hand, a disease is a thing quite apart from its cause or supposed cause, and an epidemic has specific characters which can be defined without reference to bacteriology. The common-sense view is that the diagnostic differentiation of both diseases and bacteria may obviously be expected to improve in the future as it has constantly improved in the past, and that no one can lay down which are the best and most reliable characters on which to distinguish and classify bacteria any more than similar criteria for classifying animals and plants in general can be defined. Broadly speaking, and despite many complaints to the contrary, no one doubts very seriously that the customary "species" of the zoologists and botanists represent things which are in effect different from one another; one set of criteria are used in one place, another set in another group, and it is on a general summation of differences rather than by the diagnostic tests which are used for quick practical work that one "species" differs from another. What would be very helpful to the bacteriologist would be some line through which he could get a comparison of the validity of the criteria he uses with those favoured by the systematic biologist. As the bacteria have no obvious structure, the comparison must be made on the only available ground, that of serological distinction. We know roughly that zoological "species" are generally serologically different from one another, but there is room for much more detailed information, especially as to the affinities of known races and varieties. A comprehensive serological dissection of the cabbage in its multiform appearances in cultivation would be illuminating. Is curly kale related to brussels-sprouts as the gonococcus to the meningococcus, or as the types of pneumococci, or as the groups of diphtheria bacilli, or as human and bovine tubercle?

CONTROL OF THE GLOTTIC APERTURE.

RECENT experiments by Sir Charles Ballance¹ on anastomosis of various nerves to the recurrent laryngeal, in an attempt to restore function to a partially paralysed larynx, and the results attained by him and also by Dr. C. Frazier² and Chevalier Jackson, of Philadelphia, on the human subject suffering from abductor paralysis, have drawn particular attention to the region of the glottis. The physiological meaning of respiratory opening of this aperture has so far received but little study, and the solution of the problem has been immersed in shadow. A contribution to the subject was recently made by Dr. Siegmund Schumacher in the *Wiener Klinische*

Wochenschrift,³ where the author describes how elastic fibres in the crico-arytenoid joint cause the glottis to take up what is known as the cadaveric position on those occasions when the dilator and sphincteric muscles are out of action, or have been removed by dissection. The joint is compared in its mechanical aspect to those found in the vertebral column, the similarity being noticed in the fact that the spine springs back into its former position after it has been disturbed, because of elasticity of inter-vertebral discs and ligaments. The corresponding property of the arytenoid cartilages, by virtue of which a certain position is taken up, leads to the necessity for active muscular contraction when any other position except the cadaveric is to be assumed. Consequently, it is found that during health these cartilages, and therefore the vocal cords actuated by them, are drawn apart or brought together by the action of two sets of muscles—namely, the abductor and adductor groups. So it is seen why dyspnoea occurs in cases of double abductor paralysis; because when one group of muscles is out of action, tonic contraction of the opposing set causes undue movement in a certain direction. And when all the intrinsic laryngeal muscles are paralysed, the vocal cords assume a position determined by elasticity of the crico-arytenoid capsule, together with that of the conus elasticus, reinforced by the action of fat cells contained in the capsule; these cells recoil after compression due to any movement away from their resting position. It is also pointed out in the paper that the vocal cords are quite slack in the position of full inspiration, an observation which renews the doubt felt as to the truth of what is usually described as the mechanism of phonation—namely, by stretching of these structures. Dr. Schumacher, in brief, brings notice to a most important organ, and illustrates the importance of observation of detail, without immediate regard to the clinical aspects of the subject.

THE OUTSPOKEN AND THE INDECENT.

WE have received from a correspondent a protest against the lack of reticence which he finds to mark the modern novel. "A short time ago," he says, "a weekly literary journal gave a list of the 'best-sellers' among the novels of 1924, and, though these may not live more than a few years they are worthy of study as affording an insight into what pleases contemporary readers. Furthermore, the author of one of them must be claimed as specially expert in his craft." Our correspondent then gives two examples of the sort of thing which he finds objectionable. In the first a wife reports her probable pregnancy in the following words: "By the way, this is my second no go." The second example describes a man and a woman who have met for the first time and are talking about satirical writers, when he says to her: "They must always write about women rather in the spirit of unclean-minded undergraduates who are very upset at not having physically enjoyed their first woman as much as was to be expected." There is no doubt whatever about the nastiness of the second example, and we find it also not a very probable remark for anyone to make. But the first phrase, surely, might be employed between decent married friends. The writer of the letter is a well-known authority on mental disease, and he suggests that if complete lack of reticence is allowed to novelists, the publisher of scientific literature, dealing, for example, with psycho-analytical research, might be advised to escape liability for prosecution by calling his production a modern novel.

Like our correspondent, we regret the prurient indiscretions which mark a good many works of fiction; we are not referring to the selected "best-sellers," which are not mentioned in the letter by name and have not been identified by ourselves. But

¹ Results of Nerve Anastomosis, Brit. Med. Jour., August 30th, 1924.

² Treatment of Paralysis of Recurrent Laryngeal Nerve by Anastomosis, Annals of Surgery, Feb. 24th, 1924.

³ Siegmund Schumacher: Über den Bau und die mechanische Bedeutung des Bandapparates der Kehlkopfgeelenke, Wien. Klin. Woch., No. 39, 1924.

we should be loth to criticise adversely books, otherwise good, on the score of sporadic indecencies, and equally loth to believe that it is by these indecencies that a large circulation is commanded. Authors may be returning to the frankness of Shakespeare, which is a very different thing from the lewdness of the seventeenth and eighteenth centuries. Modern authors, at any rate, may feel that, if, to illustrate what a certain kind of man or a certain kind of woman would have said or done in certain circumstances, it is necessary to be coarse, then the coarseness must occur, the nineteenth century taboo of frankness being disregarded. We cannot believe that to write with persistent indecency would bring about pleasant results to a venal author and a complacent publisher with any regularity, such as is indicated by the term "best-seller," and there is an immoral reason for this view, in addition to better reasons. Indecency in writing or speaking depends upon unexpectedness for the amount of amusement which it causes—and therefore for the amount of charm which it must be allowed to possess for the imperfect humanity which constitutes "best-buyers." A habit of reticence is necessary for the full effect of coarseness, and to-day, at any rate, no one would read the works of Ned Ward for amusement. The objection from a literary point of view to indecent allusions and coarse language is valid when the offensiveness is deliberately introduced to prove the freedom from prejudice of the author, and does not occur because truth demands the garniture of dirt or blasphemy.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. R. K. White retires on ret'd. pay and is granted the rank of Lt.-Col.

V. P. Ellis to be temp. Lt. whilst empl'd. as a Dental Surg.

TERRITORIAL ARMY.

Maj. (Prov.) A. F. Hewat and Maj. (Prov.) A. J. Brown are confirmed in their rank.

Capt. T. W. S. Hills to be Maj.

2nd Lt. W. A. Ramsay (late R. Scots) to be Lt.

Charles C. P. Anning to be Lt.

Supernumerary for Service with the O.T.C.—Maj. P. H. Mitchiner to be Lt.-Col. and to command the Medical Unit of the University of London O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt. Capt. (Prov.) A. Massey, from the Active List, to be Lt.

ROYAL AIR FORCE.

Flight Lt. C. McC. Jones is transferred to the Reserve, Class D.2.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 24TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely—small-pox, 156; scarlet fever, 1757; diphtheria, 1077; enteric fever, 57; pneumonia, 1477; puerperal fever, 51; cerebro-spinal fever, 15; acute poliomyelitis, 6; encephalitis lethargica, 53; dysentery, 9; ophthalmia neonatorum, 99. There were no cases of cholera, plague, or typhus fever notified during the week.

The number of small-pox cases showed an increase of nine over the number for the preceding week. Twenty-two cases were notified from Derbyshire, 30 from Notts, and 69 from Yorks, N. Riding (Middlesbrough C.B., 65).

Deaths.—In the aggregate of great towns, including London, there were 7 deaths from enteric fever, none from small-pox, 15 from scarlet fever, 50 from diphtheria, 62 from measles, and 202 from influenza, as compared with 195, 142, 124, and 100 in the four preceding weeks. In London itself the deaths from diphtheria numbered 17 and from whooping-cough 43.

INDEX TO "THE LANCET," Vol. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CIX.—THE TREATMENT OF TWO CHRONIC SKIN DISEASES.

I.—CHRONIC ECZEMA.

ALMOST every skin affection may become chronic, but probably the two which occur most readily to our minds when we speak of a chronic skin disease are chronic eczema and chronic acne. The term chronic eczema may cover a large field, and it is proposed to take some common clinical types and consider the methods appropriate for their treatment.

Types of Chronic Eczema.

One of the most characteristic forms of chronic eczema is that met with in children from a few years of age upwards towards adult life. The common history of such a case is that the patient has suffered from eczema since infancy—at first the usual form of "infantile eczema," with mask like distribution on the face and perhaps patches of eczema also upon the limbs and trunk. The eczema, instead of clearing up under treatment or disappearing spontaneously, as it does sometimes at the age of about 2 years, has continued into later childhood, has become less pronounced upon the face and more extensive and persistent upon the limbs and trunk, and especially behind the knees and at the bends of the elbows, though seldom confined to these areas. There may be periods of weeks or of months when the eczema is comparatively though not completely well, alternating with periods when the eczematous areas become red and weeping and more intensely itchy, so that the child is seen to be constantly scratching them. In most cases the skin behind the knees and at the bends of the elbows and at other parts where there is eczema becomes infiltrated and thickened, or, in dermatological language, lichenified by constant scratching. Such children are often thin and have a worried expression from want of tranquillity and of sleep, and they not infrequently suffer from asthma. The pathogenesis of such cases need not be discussed here, but suffice it to say that it is seldom that they can be cured by dieting, by internal medication, or by measures taken to improve the general health. Such means may help to advance the cure, but they are generally of little avail without careful attention to local treatment.

Another common type of chronic eczema is that seen in adults which frequently begins as an occupational eczema upon the fingers and hands and sometimes also upon the forearms. Such occupational eczemas are of common occurrence in those who work with dyes, chemicals (such as photographic chemicals), acids, French polish, formalin, flour, sugar, packing materials, certain woods, strong alkaline soaps, and in dusty occupations generally. Frequently the eruption disappears if the patient discontinues his work for a time, but sometimes it continues with obstinacy for months or even for years, although the patient may have abandoned the occupation which induced it. Then, too, the eruption may appear upon other parts in the form of patches of eczema upon the arms and legs and sometimes upon the trunk—the clinical type known as "patchy eczema."

In persons who have none of these occupations this chronic eczema of the hands and the patchy eczema of the limbs and trunk may sometimes be seen, and it is often attributed to some internal cause; but usually on careful inquiry it will be found that the chronic eczema had its origin, perhaps months or years ago, so that the incident has been forgotten, in a dermatitis,

the result of some local irritant. Contact with a poisonous plant or weed, use of a strong soap, of a patent ointment, prolonged use of sulphur ointment, the application of tincture of iodine, or in various other ways—all these may form the starting-point of eczematous conditions.

Acute Localised Dermatitis the Origin of Chronic Eczema.

The important point is that the more closely we inquire into the origin of these chronic eczemas the more do we find that they have their origin in some more acute localised dermatitis. The dermatitis once established, the skin becomes hypersensitive to any form of local irritant, and this hypersensitiveness extends to other parts so that the eczema appears elsewhere. Here again, as in the chronic eczema of children, it is the scratching which is mainly responsible for the continuance of the eczema, though mere friction of the clothes, too frequent bathing, excessive use of soap and friction with the towel will serve to keep up the eczema. It may happen that a chronic eczema will sometimes get well during a change of diet or under other altered conditions of living, such as residence in a new locality. But other cases under similar changed conditions will not improve, and it seems impossible to lay down definite rules whereby cases of chronic eczema may be cured by dieting or other internal or general treatment.

Management of a Case.

For the majority of cases of chronic eczema the keynote to successful treatment is protection from local irritants and careful attention to local treatments. The first rule in the treatment of chronic eczemas is to avoid the intermittent contact with water, so that as far as possible the patient should wash the unaffected parts without getting into a bath. The affected areas must be continuously protected by some soothing application. One of the most generally useful is a modified Lassar's paste—i.e., Lassar's paste without salicylic acid—thus: R. *Zinci oxidi*, oz. $\frac{1}{2}$; *pulv. amyli*, oz. $\frac{1}{2}$; *vaseline*, oz. 1. The paste should be spread upon small pieces of butter-muslin or upon small sections of white open-weave bandage—lint is too thick and too heating—and the spread pieces applied like a plaster. Over this is placed the thinnest possible layer of wool and a bandage of light material. This dressing is changed twice in the 24 hours, and at each change the old paste is very gently wiped off with olive oil before applying a fresh piece of spread muslin. It is convenient to keep a number of pieces ready spread in a tin box so that they are at hand when the dressing is changed. For extensive eczemas, or where the eczema is in positions as the face, the buttocks, or the back, this method can be only conveniently employed if the patient is kept in bed; but for eczema on the limbs or hands it may be used while the patient is getting about. It is of importance that the treatment should not be relaxed until the affected areas are completely well, or scratching or other irritation will soon bring it back. When progress is slow, in spite of careful protection in this way, more rapid improvement may be brought about by the addition of lenigallol to the paste or by the use of White's tar ointment. The prescription for the lenigallol paste would be: *Lenigallol*, gr. 10–20; *zinci oxidi*, dr. 2; *pulv. amyli*, dr. 2; *vaseline*, oz. $\frac{1}{2}$. For the tar ointment: *Crude coal-tar*, dr. 1; *oxide of zinc*, dr. 1 (mix together and add starch powder, oz. 1, *vaseline*, oz. 1, previously mixed). Each of these should be employed in the same manner as the zinc and starch paste.

Obstinate Cases.—In some cases of obstinate eczema, especially in the infantile eczema, in chronic eczema in children, and in the patchy eczema in adults, rapid improvement may be obtained by the use of a tar paint, as follows: *Crude coal-tar*, oz. 1; *colloidion*, oz. 1; *acetone*, oz. 1. The tar paint is applied with a brush and allowed to dry on and the painting

repeated every two or three days. In some cases of chronic eczema between the more acute attacks it will be found useful to apply without any bandaging a zinc and starch paste, or a zinc ointment (dr. 1 of zinc oxide to oz. 1 of vaseline), with the addition to either of small quantities of one or other of the following drugs, or with a combination of two or more: *Oleum cadini*, min. 5 to oz. 1 of ointment or paste; *acid. salicyl.*, gr. 5; *acid. pyrogall.*, gr. 1–2; *chrysarobin*, gr. 1–5 to the ounce.

Still another local application of the protective type which suits some cases of chronic eczema is a zinc cream made, not in the usual way with olive oil, but with linseed oil, thus: *Zinci oxidi*, dr. $\frac{1}{2}$; *olei lini*, oz. 1; *aq. calcis*, oz. 1. This forms a flexible protective coating which is not greasy and need not be removed at each fresh application.

X Rays.

In spite of diligent endeavours to cure a chronic eczema by one or other of these measures we may fail to eradicate the disease and to prevent fresh outbreaks. The use of the term "chronic eczema" is in itself an indication of the difficulty experienced in curing these cases. But fortunately we have now another resource, the use of X rays. X ray treatment may be employed in all forms of eczema, and in chronic eczemas it is often invaluable. It is used with perfect safety provided the dosage is correct. In the treatment of eczema the best results are obtained with small doses, but even these must be carefully measured and, above all, carefully spaced in point of time, so that we do not get an overdose by an accumulation of small doses. The most generally useful dose for the treatment of eczema is one-third of a full dose, a full dose meaning the largest dose that may be given without subsequent damage to the skin. This corresponds with the depilation dose used in the treatment of ringworm of the scalp and with the B tint of the Sabouraud pastille. If fractions of the full dose are being given they are ordered as $\frac{1}{5}$ B Sabouraud or $\frac{1}{4}$ B, $\frac{1}{3}$ B, $\frac{1}{2}$ B, $\frac{2}{3}$ B, $\frac{4}{5}$ B, $\frac{5}{6}$ B, and 1 B for the full dose. The important rule is that a full dose must not be repeated in less than one month, and that in the course of one month a greater number of fractions than will produce one full dose should not be given. A $\frac{1}{5}$ B dose may with safety be repeated at intervals of seven days, a $\frac{1}{3}$ B dose at intervals of ten days, a $\frac{1}{2}$ B dose at intervals of two weeks, and these doses may be continued at these or longer intervals as long as required. If the intervals between the doses are diminished $\frac{1}{5}$ B doses should not be repeated more than five times, $\frac{1}{3}$ B more than three times, $\frac{1}{2}$ B more than twice, that is not after one full dose has been administered.

In treating a chronic eczema by X rays each of the affected areas may be given a dose of $\frac{1}{3}$ B. If this, after a few days or a week, effects great improvement, as it generally does, a further dose of $\frac{1}{3}$ B may be postponed for several weeks or longer. Where there is much infiltration and thickening the $\frac{1}{3}$ B dose may be repeated at intervals of ten days. In some cases it will be found that better results are obtained by giving a series of $\frac{1}{5}$ B doses at intervals of from one to three days until a maximum of five $\frac{1}{5}$ doses have been given. But then an interval of a month must be allowed before giving any more. It may happen in obstinate, though perhaps not very pronounced, chronic eczemas that the eruption will be cleared up by a single application of $\frac{1}{3}$ B. Among hospital patients X ray applications are of particular value in chronic occupational eczemas of the hands. It is even possible in many instances to cure the eczema while the patient is still following his occupation by means of properly spaced applications of small doses of X rays over considerable periods.

H. G. ADAMSON, M.D., F.R.C.P. Lond.,

Physician for Diseases of the Skin, St. Bartholomew's Hospital, London.

Special Articles.

ON THE INTER-RELATIONS OF ALASTRIM OR PARA-SMALLPOX, VARIOLA, AND VACCINIA FROM THE CLINICAL STANDPOINT.

By A. F. CAMERON, M.D., C.M. EDIN., D.P.H. CAMB.,
MEDICAL SUPERINTENDENT, RIVER HOSPITALS AND AMBULANCE
SERVICE FOR SMALL-POX AND FEVER, METROPOLITAN
ASYLUMS BOARD.

AN infectious disease has been prevalent in this country for several years of which the diagnosis still gives rise to dispute. The disease certainly belongs to the class of infections of which small-pox is the most important member, and the majority of observers will, I believe, acknowledge that the origin of the dispute is found in the facts that the disease in question is not only very obviously a close relation of small-pox (more closely related to small-pox than is varicella, for example), but also in many of its examples resembles small-pox so closely in clinical features that differentiation from small-pox at the bedside presents very great if not insuperable difficulty.

For these reasons opinion is divided. On the one hand, it is maintained that the disease in question has no features which are inconsistent with small-pox in many of its mild and discrete examples. On the other hand, there are observers who point to the low grade of severity of the disease, a feature which carries with it naturally a very low case mortality, or in some outbreaks a complete absence of fatality, and also to the persistence of this epidemic characteristic throughout lengthy periods of observation. These observers maintain that this feature, and particularly the established fact that it persists for long periods of observation, is sufficient in itself, and in spite of the clinical resemblance to small-pox, to mark off the disease in question from small-pox as formerly understood in this country. In consequence of this opinion they consider that it is now expedient, for the purpose of scientific accuracy, to adopt a special name for the disease which will indicate the relationship to small-pox as well as the divergence from that disease, and there are some who advocate a relaxation of the administrative measures now applied to the disease in question, in order to make the procedure less rigid than the procedure which follows the occurrence of small-pox.

It is necessary to state for the sake of clearness that there are some observers who are of opinion that the clinical features of the disease in question *can* be distinguished from those of small-pox, but it will be evident by reference to most of the many descriptions of the disease which have been published, that there is no single clinical feature which is common to all cases of the disease in question, and also is not found in many of the cases of acknowledged small-pox of mild and discrete type. By acknowledged small-pox is meant cases of that disease which are of mild and discrete type, and give rise to or occur in sequence of transmission from cases which are "classical" in their onset, in their course, and in their severity. It is also important to note that if attention is concentrated on the purely objective features of the disease in question—that is to say, on the features which are recognised by the medical attendant as the direct result of his personal inspection, to the exclusion of the subjective features of the attack, that is to say, the history of his illness in its onset and course as supplied by the patient and his friends—it will be found that the difficulty of differentiating the disease from mild and discrete small-pox is enhanced to a very remarkable degree.

It may therefore be stated that we are concerned with an epidemic disease which resembles acknowledged small-pox very closely, in fact so closely that

many of its examples cannot be separated from small-pox at the bedside; but as time goes on and generation after generation of cases come under observation, it is noted that all the cases have been and continue to be of a low grade of severity, and this epidemiological feature is considered by some observers to be inconsistent with former and present experience of the epidemic history of acknowledged small-pox.

Is it possible to explain the course of events in this country, and the peculiarity of the epidemic history of the disease in question on the assumption that the disease is small-pox and nothing else?

The Meaning and Estimation of Severity in Small-pox.

It is acknowledged that epidemics of small-pox, as of other infectious diseases, vary in severity. Variation in epidemic severity is brought about by variation in severity of attack, and means that the average severity of attack in one epidemic is greater or less than the average severity of attack in another. Severity of attack in infectious disease is determined by the interaction of several factors, of which the most important are the virulence, the toxicity, or the toxin-producing power of the infecting organism on the one hand, and on the other the degree of immunity of the individual attacked. Both factors are variable, and our knowledge of the conditions which produce variation is very imperfect. The influence of each factor on severity of attack cannot be estimated separately, but only in conjunction by the result of their interaction which is seen in the clinical phenomena of toxæmia. But since the influence of the one factor is positive and of the other negative in its effect, it is evident that the presence of toxæmia is an indication of virulence or toxicity in the infecting organism, and for practical purposes it may be assumed that severity in the clinical feature increases with increase in toxic power of the infecting agent.

Many years ago Ricketts gave his attention to the question of how the severity of an attack of small-pox may be most satisfactorily estimated for statistical purposes, and he set out the following classification which was published in the Annual Report of the Metropolitan Asylums Board for 1907 where it may be found. This classification is still in use in the metropolitan small-pox hospitals:—

1. Hæmorrhagic or toxic small-pox.
2. Small-pox confluent on the face in the papular or vesicular stage.
3. Small-pox confluent on the face at the time of maturation (sixth day of rash).
4. Discrete small-pox with more than 500 pocks on the face.
5. Discrete small-pox with more than 100, but not more than 500 pocks on the face.
6. Discrete small-pox with not more than 100 pocks on the face.

There is one defect in this classification which Ricketts recognised and stated. The defect is that there is no common denominator for all the classes. I believe that Ricketts recognised that toxic power—that is, virulence—is the most important factor in the production of severity, but rejected it as a basis for classification because it did not allow of sufficiently accurate estimation. Therefore, in his first class, which he called hæmorrhagic or toxic small-pox, in the greater part of his second class, and perhaps in a minority of his third class, severity and result of attack are associated with the primary fever of the disease—i.e., with the toxæmia of small-pox and not with the focal rash and its effects. These cases die, and they die as the direct result of the toxæmia, of which the main determining factor is the toxicity or the virulence of the infecting organism.

On the other hand, in the greater part of Ricketts' third class and in his fourth, fifth, and sixth classes, severity of attack is related to the severity of the focal rash and is determined by the amount of suppuration. Since the face is the chief absorptive area, it is determined by the amount of suppuration on the face, and this is estimated by a count of the number of

lesions on the face when outcrop is completed, because enumeration of the lesions is the best available means of determining the amount of suppuration. The upper limit of severity of these cases is "confluent small-pox," early confluent in Class 2 and later confluent in Class 3, and among the latter are found those cases in which the tendency to fatality initiated by the toxæmia of the disease is made certainly effective by the toxæmia of the process of maturation. In regard to prognosis, Ricketts recognised that a pre-existing immunity might make its presence felt at any stage of the attack with a consequent improvement in expectation of life for the patient.

There is no doubt that the best clinical basis of a classification of severity of attack is severity of toxæmia, and it seems to be unnecessary to reject this basis because a very accurate measurement of toxæmia cannot be made. The majority of observers will agree that the most important contributory cause of fatality resulting from infectious disease is the toxæmia of the disease, and that this clinical condition makes itself evident in the onset and gives evidence of its strength by the nature of the onset and the effect of the onset on the patient. Using toxæmia as a basis, cases of small-pox as seen in the "classical" outbreak, may be classified as follows:—

1. Severe toxic with death before the focal rash has erupted fully.
2. Severe toxic continuing without intermission followed by a confluent focal rash and death in the early stage of that rash.
3. Severe toxic with intermission followed by a confluent focal rash and death in the late stages of that rash or recovery after severe fever of maturation.
4. Moderate toxic with intermission followed by discrete focal rash and slight fever of maturation.
5. Mild toxic with intermission followed by very discrete focal rash and no fever of maturation.

It is to be noted that the presence of a degree of immunity may bring about the transference of cases which are apparently candidates for the second class to the third class or even to the fourth or fifth class. These transferences are commonplaces among any series of cases of acknowledged small-pox. It is also matter of experience that the more severe is the onset, the primary fever, the toxæmia, by whatever name the condition may be described, the more apt is the succeeding focal rash to be severe, and it may be accepted that fulminant small-pox—that is to say, the attack which exhibits in the severity of the pain, in the complete prostration of the patient, and in its widespread purpuric rash, the most evident signs of a severe toxæmia—would have produced, if death had not supervened, a focal rash which would have become completely confluent before vesiculation was fully established. It may also be accepted that the mild onset, the mild primary fever, the mild toxæmia is not followed by a severe focal rash. In such a case it may happen that the focal rash, by the number of its units in the very early stage, gives promise of considerable severity. But experience shows that this promise is not fulfilled on account perhaps of early resolution of a proportion of the units or by the later intervention of the effect of the presence of a degree of immunity against the disease.

Death from small-pox—that is to say, death due to the toxæmia of the disease—supervenes in the cases in Class 1 and in those in Class 2. Toxæmia is not the prime cause of fatality in the cases falling in Class 3 or in Classes 4 and 5. If the primary fever, or as I should prefer to say the signs of toxæmia, remit and more notably, of course, if they intermit, the expectation of life for the patient takes a steep upward trend, although he may succumb later in his illness to the overwhelming effects of a focal rash which has become confluent in the process of maturation. Death in this type of case is to be regarded as death from a sequela of the disease rather than death from the disease itself, as Ricketts has pointed out. It follows that the outbreak of small-pox from which the type of case belonging to Classes 1 and 2, and also

a proportion of the cases falling in Class 3, are removed, will have no case-mortality directly attributable to the disease, and that the case-mortality in such an outbreak will be low and mainly due to accidental individual conditions. It is the cases in these classes which show the clinical evidence of high toxicity of the infecting organism. There seems to be no reason to demand that this evidence of high toxicity should invariably be shown by the organism of small-pox. Long-continued mild infection is recognised to be a feature of other forms of infectious disease. Nor does there seem to be any reason to doubt that the removal of toxicity from the infecting agent may reach a point where fatality from the disease ceases.

The Relation of Vaccinia to Small-pox.

The great majority of observers are agreed that the disease in question and vaccinia are mutually protective. Vaccinia and acknowledged small-pox are also mutually protective. Therefore the disease in question and small-pox stand in identical immunological relationship with vaccinia.

Vaccinia is an inoculated disease of which the "matter" is derived from the pustules of acknowledged small-pox. It is unnecessary to enter fully into the methods of attenuation of the virus which are used in the manufacture of the anti-smallpox vaccine. It is sufficient to note that the result of the process is an undoubted attenuation of the virus, and that this attenuation, once it has been established, cannot be removed by any artificial means at present available. That is to say, the anti-smallpox vaccine cannot by any artificial means be sufficiently enhanced in virulence to enable it to give rise to an attack of inoculated small-pox. The occasional cases which are described as generalised vaccinia may be discounted in this argument on account of their very great rarity. Even in former days when arm-to-arm vaccination was the practice, it was found that repeated transmission tended towards further attenuation and not towards enhanced virulence. It is not outside the bounds of possibility that a similar attenuation in the virus of small-pox may occur by natural processes, that this natural attenuation may not reach the high degree attained by artificial means in the manufacture of anti-smallpox vaccine—that is to say, that natural attenuation may go only so far as a reduction in the power of the virus to produce a septicæmic infection and not so far as the complete removal of that power which is brought about in the laboratory; and as in the case of anti-smallpox vaccine, that the particular strain of virus which has become naturally attenuated may fail to recover virulence. A discussion of possible reasons for this failure seems to be too speculative to be of practical value.

This assumption is consistent with the experience that the epidemic power of small-pox apparently tends to wear itself out in an affected area, a recession which seems not to be accounted for sufficiently by the immunising effects of an increased use of vaccinia. The suggestion will also explain the observed contrast between the low case-mortality in the latter period of epidemic small-pox and the high case-mortality of the rising epidemic wave, which was noted in the London outbreak of 1901-02-03. The assumption has also the support of analogy in the case of the organism of diphtheria, an organism which apparently tends to a gradual loss of virulence and of which it is stated: "there is no evidence that a totally non-virulent strain can be made to show even a slight accession of virulence by any artificial means."¹

Therefore, (1) on account of the very close resemblance of the clinical features of the disease in question to those of mild and discrete small-pox; (2) from an analysis of the factors which contribute to the production of severity of attack in small-pox; (3) from the consideration of the immunological relations of the disease in question and of those of small-pox;

¹ Diphtheria. Medical Research Council. Chap. ix., p. 322.

and (4) from the analogy presented by the known properties and action of anti-smallpox vaccine; it seems reasonable to suggest that small-pox, produced by an attenuated virus, is sufficient to account for the peculiarity in the epidemic history of this disease and that there seems to be no need to postulate another disease of the small-pox type or of the nature of a hybrid between variola and varicella or even a sub-variety of small-pox, in order to explain the course of events in this country and the epidemiological features upon which so much emphasis has been laid by some observers.

Questions of administration are really outside the scope of this memorandum, but it is necessary to refer to them on account of the implication contained in the opinion on diagnosis which has been expressed by the observers previously referred to. The argument advanced by these observers seems to take the following line:—

Let it be granted that this disease is a very close relative of small-pox or even that it is a true small-pox produced by a strain of virus of degraded virulence, the facts remain that the incapacitating effect of the illness is very slight and the case-mortality very low, so low that on occasion it disappears completely. This mild disease has now existed in this country for several years with very little, if any, alteration in its features. But we are still employing the full weight of our heavy anti-smallpox artillery against this epidemic disease which is more nearly comparable to chicken-pox than to small-pox in the disturbance which it causes. Is it not now time, for the sake of the credit of medical science and also for the sake of a saving in public expenditure, to recognise officially the obvious difference between this epidemic disease and our old "classical" outbreak of small-pox? Is it not probable that the continued use of vaccinia in our attempts to prevent the spread of this disease will bring still further discredit on small-pox prophylaxis and render the administrative procedure which is necessary for the control of "classical" small-pox even more difficult of application than it is at present? because it has been found in several cases that vaccinia has a greater incapacitating effect than the disease against which we are using it.

From the point of view of clinical medicine which must remain the only safe basis of administrative procedure, after all has been said that can be said in favour of epidemiological distinctions, this argument is obviously unsound. From the point of view of efficient administration, no adequate reason is apparent for refraining from stating frankly that the disease in question is small-pox and nothing else, so far as our present professional knowledge goes. There is no discredit attached to an imperfect knowledge of medical science, but discredit is very apt to follow attempts to conceal our ignorance such as the invention of a new name for a condition with features so elusive that they very frequently conceal themselves completely. It is conceded that the use of anti-smallpox vaccine and the isolation of cases of the disease in question will prevent the spread of the disease just as they prevent the spread of acknowledged small-pox, and notwithstanding the severe result which may occasionally follow the inoculation of vaccinia, it must not be forgotten that vaccinia is not a transmissible disease. In suggesting a relaxation of procedure, no allowance is made for the admitted and grave possibility of the coexistence of a virulent strain of small-pox with this strain of degraded virulence, or for the possible importation during the prevalence of this mild disease, of a strain of high toxicity of which the first results to be observed may be cases of a very mild type. If it is assumed that a natural attenuation of virus will continue unimpaired under all conditions, the assumption is too dangerous for use as a basis of administrative action. We are ignorant of the conditions which brought about the attenuation and we are equally ignorant of the conditions which may reinforce virulence. There is

one important administrative question to which no answer seems to be forthcoming from any of the supporters of relaxation of procedure. What is the grade of severity or what is the upper limit of case-mortality which will justify a relaxation of our anti-smallpox procedure in dealing with this disease? What is the grade of severity or what is the figure of case-mortality beyond which relaxation should cease?

LEAGUE OF NATIONS HEALTH ORGANISATION:

A VISIT OF FOREIGN PUBLIC HEALTH OFFICIALS.

UNDER the auspices of the Health Organisation of the League of Nations a further visit to Great Britain of public health officials from different countries commenced on Monday last. This is the third occasion on which foreign officials have studied British public health services on the spot, and the following are the representatives of the various States attending the Conference:—

Denmark.—Dr. A. Metz, County M.O.H., Holbaek, Denmark.

Estonia.—Prof. K. Schlossmann, Director of Bacteriological Laboratories, University of Tartu (Dorpat).

France.—Dr. L. M. Pilleboue, M.O.H., Department de l'Herault, France. Dr. E. Robin, M.O.H., city of Nantes, France.

Germany.—Dr. Walter Kloninger, M.O.H., Adenau, District of Coblenz, Germany. Dr. Lenz, M.O.H., District Bartenstein, East Prussia, Germany.

Greece.—Dr. T. Katsoyannis, Director, Section of Infectious Diseases, Ministry of Health, Athens, Greece.

Holland.—Dr. M. D. Horst, M.O.H., city of Leyden, Holland.

Italy.—Dr. G. Hoffer, Port M.O.H., Venice, Italy.

Jugo-Slavia.—Dr. M. Jakovljevitich, District M.O.H., Djeveljija, Serbia.

Norway.—Dr. Ivar Tosti, Asst. M.O.H., city of Oslo, Norway.

Poland.—Dr. Jan Bogdanovicz, M.O. (M. and C.W.), Ministry of Labour, Warsaw, Poland.

Russia.—Dr. E. Braguine, M.O., Ministry of Health, Moscow, Russia.

United States of America.—Dr. S. L. Christian, U.S.A. Public Health Service.

Canada.—Dr. Wodehouse, Secretary, National Tuberculosis Association of Canada.

The party was received by the Society of Medical Officers of Health, words of welcome being spoken by Prof. H. R. Kenwood and Lieut.-Col. S. P. James, of the Ministry of Health. Formal presentations later took place at the Ministry of Health to Mr. Neville Chamberlain, after which Sir George Newman addressed the party on English public health administration. The representatives of foreign countries then divided into four groups for the study of public health administration and practice in urban and rural areas outside London, as follows:—

Group A.: Middlesex (Dr. John Tate) and Willesden (Dr. G. F. Buchan).—Dr. Pilleboue (France), Prof. Schlossmann (Estonia), Dr. Hoffer (Italy), Dr. Braguine (Russia), Dr. Wodehouse (Canada).

Group B.: Yorks W.R. (Dr. J. R. Kaye) and Leeds (Dr. J. J. Jervis).—Dr. Christian (U.S.A.), Dr. Metz (Denmark), Dr. Tosti (Norway), Dr. Kloninger (Germany), Dr. Bogdanovicz (Poland).

Group C.: Staffordshire (Dr. W. D. Carruthers) and Wolverhampton (Dr. R. H. H. Jolly).—Dr. M. D. Horst (Holland), Dr. Robin (France), Dr. Jakovljevitich (Jugo-Slavia), Dr. Lenz (Germany), Dr. Katsoyannis (Greece).

The whole party will reassemble in London on or about March 8th, for the study of Health Schemes and Institutions in the Metropolis. On March 24th they will leave England for the closing Conference to be held at Geneva on March 25th and three following days.

These interchanges have been rendered possible by the financial assistance of the Rockefeller Foundation.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

THE PROVISION OF MEDICAL BENEFIT.

*Evidence by Mr. Brock and Dr. Smith Whitaker
(continued).*

Formal Complaints.

(App. C. 40-49.) Each Insurance Committee is required to set up three standing subcommittees for the investigation of complaints. The Medical Service Subcommittee is the one which deals with complaints against doctors, the Pharmaceutical Service Subcommittee hears complaints against chemists, and the Joint Services Subcommittee deals with cases in which both doctors and chemists are involved. Each of these bodies is constituted on the same principles, and it is sufficient here to refer to the Medical Service Subcommittee. This has an equal number of members appointed by the representatives of insured persons and doctors respectively and a chairman appointed by the neutral members of the Committee. The procedure of this body is formal and its hearings are judicial in character. The Committee find facts and make recommendations and the Insurance Committee come to a decision on these facts. From their decision there is a right of appeal to the Minister.

(Q. 1014.) There are, of course, a good many cases which do not reach the stage of a formal complaint. These are settled at the offices of the Insurance Committee when it is merely a matter of clearing up a misunderstanding. The number of formal complaints investigated in England and Wales is roughly 1700. At a later stage in the evidence Mr. Brock gave the following particulars:—

(Q. 1307-9.) Out of a total of 1646 cases the doctor was acquitted, or the case was not substantiated, in 647, and there were 999 proved cases. Out of the 999, grant was withheld in 31½ per cent.; the doctor received a warning in 51½ per cent.; and in the remaining 17 per cent. he was required to refund to the insured person the amount that the insured person had spent in obtaining the services of another doctor.

About 40 per cent. of the complaints were, it will be seen, not justified, and of those cases (647 in number) in which the doctor was acquitted 100 were allegations of neglect, 250 of inadequate treatment, 105 of fee charging, 142 of irregular certification, and 50 of a miscellaneous nature. There is a tendency for the number of complaint cases to increase. As to this, the witness said that he did not think that this implied that the service is less satisfactory. (Q. 1018.) It really means that insured persons are much more alive to the rights which they enjoy under the Regulations; and also that for a time after the war committees naturally had to take a rather more lenient view because of the number of practitioners who were returning from military service and who suddenly found themselves accepting obligations the full extent of which they perhaps had very little opportunity of studying.

Monetary Penalties.

(App. C. 54.) The reference above to the withholding of grant means that the Minister has power to withhold part of a doctor's remuneration where the service provided has been unsatisfactory; he may do this with or without a recommendation from the Insurance Committee. Before any such sum is withheld, the doctor or chemist is afforded an opportunity of making representations orally or in writing to officers of the Ministry. The number of cases in

England in recent years in which monetary penalties have been imposed on practitioners is given below:—

Year.	No. of cases.	Amount withheld.
1920	18 ..	£583
1921	59 ..	£855
1922	115 ..	£2181
1923	132 ..	£3131

The cases themselves are classified as follows:—

Neglect in treatment (failure or refusal to visit, unsatisfactory treatment, &c.)	103
Charging fees	66
Irregularities in certification	53
Failure to keep records	39
Failure to make returns where cases are sent to referees	28
Various other classes	35

The amounts of grant withheld usually vary from £1 to £100. In five cases the amounts have been higher and in one of these £1000 was withheld.

The £1000 Case.

This case, which appears from the evidence to be quite an isolated case, occurred in 1923 and has attracted a good deal of comment in the general as well as the medical press. (Q. 1022.) It concerned a firm of two practitioners practising in a self-contained area. It was a fairly large village sufficiently far from the nearest town to make it difficult for any other doctors to practise in that district. Both these practitioners had been making a charge to their insured patients expressed as a charge for the bottle of medicine, but in fact, according to the local custom, it was a charge which also covered treatment. This had gone on for a considerable time. The Insurance Committee made representations for the removal of the practitioners from the panel. A Committee of Inquiry reported to the Minister, who, said the official witness—

while he took the view that the facts established would be quite sufficient to justify the removal of those two doctors from the Medical List, also felt that there were special circumstances that would warrant him in imposing a less grave penalty. I think he was principally influenced by the fact that if those two practitioners had been removed, there were no other doctors practising in the area who could have undertaken the care of their insured patients. . . . In ordinary circumstances where a breach of the doctor's contract is so grave as to justify a penalty of anything like that sum it has been generally felt that the proper way to deal with it is by removal from the list and not by the imposition of anything in the nature of a fine. It was only the very special local circumstances of this case which led the Minister to deal with it differently.

Learning by Experience.

(Q. 1202, 1203.) The witnesses were asked whether it was not necessary for doctors to know a great deal about the machinery of the Act. They replied that some doctors learn it and some do not. Those who do learn usually learn by experience as members of Panel Committees or by the experience they have had as defendants in cases in which there are complaints.

As to young doctors coming on the panel for the first time, it was thought that the best way of becoming acquainted with the Regulations would be for a man to go as an assistant to a general practitioner and get actual experience of practice. It was suggested by a member of the Commission that a short course of lectures on the machinery of the Act might be a useful preparation to panel practice, but the witnesses seemed to entertain doubts as to the value of this proposal.

Depreciating the Panel Service.

(Q. 1275.) In some cases insured persons deliberately ask to be treated as private patients.

Q. Can you suggest any reason why an insured person who is already paying a doctor should ask that same doctor to treat him or her as a private patient?—A. I think it is partly the result of the unfortunate speeches of some people rather prominent in the Friendly Society world who repeatedly depreciate the insurance medical service. That is bound to create an impression in the minds of some insured people that if they come as private patients they may in some way or other be better treated.

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8); The Provision of Medical Benefit (Feb. 7th, pp. 301-3). References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

(Q. 1234-7.) As to differences in waiting-room accommodation for insured and private patients, the witnesses said there was no evidence of such cases. There may be one place of waiting for the well-to-do and another for those who are not so well off, but not a distinction between insured as such and non-insured as such.

Removal from the Panel.

(App. C. 56.) The removal of a doctor from the panel is usually preceded by representations from the Insurance Committee that his continuance on the panel would be prejudicial to the efficiency of the Insurance service. The case is then investigated by an Inquiry Committee appointed by the Minister, consisting of a barrister or solicitor as chairman and two doctors, who hold a public inquiry and report to the Minister their findings of fact and inferences. The Minister then decides in the light of their report whether the name of the doctor is to be removed from the list or not. A doctor, it appears, may terminate his agreement by giving the prescribed notice at any time, but the action of the Insurance Committee in this respect is limited to securing by means of representations made to the Minister that an inquiry shall be held with a view to the removal of the practitioner from the list. (Q. 1021.) In England and Wales 32 doctors have been removed since the Acts came into operation and in addition eight have been allowed to resign to avoid removal, so that in effect 40 have been removed. (Q. 1029.) This does not include those persons who, having been removed from the Medical Register by the General Medical Council, have been automatically taken off the panel.

The following questions were asked as regards reinstatement:—

(Q. 1025, 1026.) What is the position of a doctor when he has been removed from the panel? Can he ever get back again?—A. Yes, it is open to him at any time to apply for restoration. Q. Must he apply formally?—A. He must apply formally, and before a decision is reached it is usual to consult the Insurance Committee and the Panel Committee of the district in which he previously practised. He would also be required to produce evidence as to his conduct in the meantime from medical men in the area in which he had been working.

With regard to criticism of the power of the Minister to remove doctors from the list, the witnesses said:—

(Q. 1033.) We have gone into that on several occasions in discussion with the Insurance Acts Committee of the British Medical Association, and the root of the matter, as they recognised frankly the last time we went into it with them, is the statutory provision.... The criticism, carefully analysed, has always turned out to be a criticism of the statutory provision which gave the Minister power to remove a man. It has been contended by some doctors that such a matter should be dealt with by the General Medical Council, or that there should be some machinery for referring the matter to the High Court. But we have always had to answer that that is a question of legislation.

Asked whether the service could be administered on the lines on which it has been established without such a controlling power, the witnesses said:—

(Q. 1034.) The only method of getting rid of a doctor who is not working satisfactorily is the power of the Minister to remove.... We have to recognise that the criterion of the Act in this respect is not like that of the Medical Act, removal on the ground of infamous conduct in a professional respect, or anything of the kind. The power of the Minister to remove depends on his being satisfied that the practitioner's conduct is prejudicial to the efficiency of the service, so that the power is essentially one for controlling the proper standard of the service. It is difficult to see how a power of that kind could be exercised satisfactorily except by someone responsible to Parliament, which, of course, would not apply to the General Medical Council or to the High Court.

The commonest causes for removal from the panel have been persistent or very gross negligence. Another cause has been drunkenness, and then there have been two or three cases in which a practitioner was quite intractable; he would not carry out any of the Regulations, some, perhaps, not important in

themselves, but without which the system could not be carried on. But the majority of cases have been for negligence in treatment.

(To be continued.)

INFECTIOUS DISEASES ABROAD.

Acute Poliomyelitis.—New Zealand is at present experiencing a sharp outbreak of this disease. The weekly notifications began to increase during December, 1924. The number of cases notified in the first week of January this year was 19, in the second week 30, in the third week 60, in the fourth week 58, and in the week ending Feb. 2nd 88. A report from Wellington, dated Jan. 16th, states that the Health Department has prohibited the attendance of all children under 16 years of age at schools, theatres, cinemas, and other public places throughout the North Island. In all other countries the few outbreaks which were reported during 1924 subsided before the end of the year. They included a very severe outbreak in Iceland with an incidence of about two cases per 1000 inhabitants and a case-fatality, in cases showing definite paralysis, of 37 per cent. Elsewhere the chief outbreaks reported during 1924 were, as usual, in Scandinavia, Great Britain, and the United States. The following statement, which gives the available notifications from certain countries during the last two years, shows that in most of them the disease was more prevalent in 1924 than in the previous year. No reported outbreak, however, was comparable in extent and severity with the epidemics of 1911, 1912, and 1916.

	Cases.	
	1923.	1924.
Sweden	313	685
Denmark	75	152*
Finland	47	51
France	175	216*
England and Wales ..	587	760
Switzerland	256	108
United States (27 States) ..	2458	3000†
Australia	137	227*

* To Nov. 30th.

† Approximate cases to Dec. 6th.

Influenza.—In the statistics available from various foreign countries and cities for the month of January this year there is no indication of a recrudescence of influenza on the continent of Europe corresponding to that which is now affecting certain areas in Great Britain. The deaths notified as being due to influenza during the first three weeks of January in Paris, Antwerp, Stockholm, Copenhagen, and Amsterdam were fewer than those notified during the same period of last year.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Scottish Courts and a Medical Report.

MANY people may think that a mountain has grown out of a molehill in the discussions held recently in the courts in Scotland with reference to a medical report upon an injured workman in connexion with a claim under the Workmen's Compensation Acts. Neither party was in doubt about the accident, nor about the original injuries, nor about the liability of the employers, all of which were admitted, and compensation was paid for two years on the basis of total incapacity. Then the employers—or those behind them—presented the view that the workman was all right again and fit for his ordinary duty, and as the workman denied this they claimed a reference to a medical referee. An essential step towards such reference is that the employers shall present a medical report from their own doctor, and until that is presented the reference to a medical referee will not be ordered, and so the compensation

must continue to be paid. The employers had all this fully in view, and therefore when they applied in the county court for a remit to the medical referee they tabled their own medical report. It is over this report that the fight has been waged, and in the Court of Appeal in Scotland, by a majority, the decision was given that what the employers' doctor wrote cannot be received as a medical report, and therefore the employers' application is thrown out. This judgment reverses the decisions of the registrar of the county court and of the county court judge, and, as has been said, there was a dissenting opinion in the Court of Appeal.

The report was in the following terms: "Having examined A.B. on 11th October, 1924, I certify him as fit for work, and the reason for my opinion is, had he begun light work when told to, he would now be fit for full work." Whatever may be said against this document it certainly has the cardinal virtue of brevity. Nothing could be more concise. Apparently, however, the doctor has fallen between two stools, and has come to grief on the dilemma of too great and too little compression. If it may be premised that in the opening clause of the report "work" means "full work," then, so taking it, what is said against the report in substance comes to this, that, on the one hand, the first clause certifies that the man is fit for full work, and, on the other hand, the remainder of the report certifies exactly the contrary, because—so the argument proceeds—it says that he *would* now be fit for full work *if* he had done something which he did not do, which appears to imply, or definitely to assert and certify, that the man is *not* fit for full work. But of course there is another view—namely, that the opening clause does not refer to full work, but to light work, which would lead to diminution of the compensation and not its total stoppage. But this middle view found no judicial support. On the contrary, the dissenting judge thought that, although the language was lacking in lucidity, "there is not the slightest doubt as to what the doctor really meant"—namely, that, whether the man is now able for full work, or for light work, or for no work, his condition, whatever it may be, is no longer due to the accident, but arises from his not undertaking light work at the time when he was told to do so. This is certainly a good deal to be read into, or out of, the report. There is much to be said for the dissenting judge's view that it is extremely to be regretted that such technical questions under the Workmen's Compensation Acts should be brought before the Supreme Courts. Meantime it may be useful to note, what, of course, everyone knows already, that "such a report should be clear and consistent; it should be its own interpreter."

Royal Medical Society of Edinburgh: Annual Dinner.

The annual dinner of the Society was held in the hall of the Royal College of Physicians of Edinburgh on Feb. 5th. Dr. T. Drummond Shiels, M.P., presided over a company numbering about 120. The guest of the evening was Mr. Alexander Miles, and among those present were: Lord Provost Sir William Sleigh, Prof. G. Lovell Gulland, President of the Royal College of Physicians; Sir Harold Stiles, President of the Royal College of Surgeons, Sir Robert Philip, the Hon. Lord Constable, the Very Rev. Prof. Paterson, D.D.; and Surgeon Commander P. L. Crosbie, R.N. Mr. Miles, proposing the toast of "The Royal Medical Society of Edinburgh," said that it was, and always had been, a students' society. It was well authenticated, he continued, that the Society was founded in August, 1734, about 190 years ago, and that it was the oldest medical society in the Kingdom. Describing the formation of the Society, Mr. Miles said that six students, after spending a social evening together in a tavern, agreed to meet once a fortnight in their respective lodgings, where it was arranged that a

dissertation in English or in Latin on some medical subject should be read by one of them and discussed by the others. This band of six was soon joined by one whom they were always proud to count among the founders of the society—no less than the celebrated William Cullen—and he, perhaps more than any man, served to make the foundations sure. They must keep in mind that at the time the society was founded medical opinion was in a state of flux. Medical practice had for long been based on the doctrines of speculative philosophers, of whom Boerhaave, of Leyden, was the chief apostle. But a school was arising, directed by Hoffmann, which sought to replace these abstract theories by knowledge based upon observed facts. Cullen was one of the leaders of this school, and there is no doubt he exerted a powerful influence upon his fellow-members, stimulating them to think and to observe for themselves, and to question on every point the voice of authority. It was well recognised, he said, by medical historians that it was mainly through the influence of the Edinburgh school that the doctrines of Hoffmann and the method of the experimental system came to dominate. The Society after three years having found its feet, the members resolved to form themselves into a definitely constituted body, and they drew up a constitution and adopted the name of the Medical Society in 1737. In 1778 it became incorporated under Royal Charter, and the Society now had one of the finest medical libraries in the country, containing well over 30,000 volumes.

The membership of the Society embraced the names of men who had made medical history in this country for nearly two centuries. Among the most distinguished members, in medicine, he mentioned Andrew Duncan, Richard Bright, Marshall Hall, Robert Christison, Douglas MacLagan, and Byrom Bramwell. In surgery there were the Bells, Robert Liston, William Fergusson, James Syme, and the greatest of all, Joseph Lister; and in obstetrics, James Young Simpson, A. R. Simpson, and Halliday Croom. A great many of their members had also become distinguished outside of medicine. There were Mark Akenside, the poet; Oliver Goldsmith; Mungo Park, the explorer; Sir Henry Holland, the traveller; Sir Gilbert Blane, who introduced lime-juice into the Navy; Sir Charles Hastings, the founder of the British Medical Association; Robert Finlay; Thomas Addis Emmet, the Irish patriot; and Charles Darwin.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Candidates for Dail Eireann.

WITHIN the next few weeks bye-elections will take place in no less than nine constituencies in the Irish Free State. In two of these the candidate for the Government Party will be a medical man. In Co. Cavan Dr. J. J. O'Reilly has been selected, and will be opposed by a Republican and a representative of the Farmers' Party. For the South City Division of Dublin, the Government candidate is Mr. Thomas Hennessy, F.R.C.S.I., who will be opposed by a Republican and a Labour candidate. The Government Party could not have selected a candidate more acceptable to the profession than Dr. Hennessy. He is thoroughly familiar with medical problems and with all questions affecting the health of the country. He has, moreover, a personality and character which have gained him the trust of everyone who has had dealings with him. The South City Division of Dublin has a large number of resident medical practitioners, and a strong medical committee is being formed to assist Dr. Hennessy's candidature. Medical voters will be asked to sink political differences for the moment so as to ensure the return of a representative medical man.

Public Health Administration.

In the Senate recently Mr. P. Kenny, a Senator who always shows an informed interest in health affairs, proposed an amendment to the Local Government Bill, to the effect that a public health council should be set up to advise the Minister, the constitution of the council to be: Eight persons representing boards of health, four representing councils of county boroughs, two representing persons insured under the National Health Insurance Acts, three medical practitioners, one dentist, one veterinary surgeon, two representatives of registered nurses, and two representatives of midwives. They should all be appointed by the Minister, who should be *ex officio* a member of the council. The amendment also provided for payment of travelling expenses, subsistence allowance, and reasonable compensation for loss of remunerative time. The amendment was supported by Mr. O'Farrell, a Labour Senator, who pointed out that in questions of sanitation, and measures for the prevention of disease, Ireland was much behind most progressive countries. Opposition came from the Minister on the ground that such a council would interfere with direct Ministerial responsibility to Parliament. On a division the amendment was defeated by 23 votes to 10. Mr. Kenny left himself open to criticism on the ground of the unwieldy constitution of his proposed council. A body supposed to represent expert sanitary opinion, on which nurses and midwives have a larger representation than medical practitioners, is not easy to defend. That some such council, however, if properly constituted, would be of service to the health of Ireland under present conditions can hardly be doubted.

Housing Conditions in Dublin.

Dr. Brian Crichton gave an address recently to the Dublin Rotary Club dealing with the effect of the housing conditions in Dublin on infant life and health. He pointed out that whereas 50 persons per acre was a normal distribution of a city population, in one ward in Dublin there were 130 per acre, and in another 117 per acre. The death-rate of children in Dublin was nearly double that of London. He mentioned also the difficulty of obtaining pure food for children, and stated that the penalties imposed for selling dirty or impure milk were quite inadequate. Little has been done in the past ten years to improve housing conditions in Dublin, and even ten years ago they constituted a grave danger to the public health. President Cosgrave made the announcement a few days ago that in Dublin in the past few years 940 houses had been erected, or were in course of erection, presumably by Government or with Government help. But this number, useful as it is, can hardly make up for those that have become uninhabitable by the lapse of time, and the general housing accommodation will be even worse than it was ten years ago. It is true that something is being done also by private initiative, and the Rev. D. H. Hall, a clergyman of a poor parish who has done much to promote housing for the poor, recently announced that he had been offered £250,000 at 2 per cent. for his housing scheme, provided certain conditions were fulfilled.

Medical Referees to the National Health Insurance Commission.

The medical referees appointed to act under the National Health Insurance Commission are Drs. J. J. A. Gannon, F.R.C.P.I., P. Magner, and J. A. Cusack. The Commission has issued to medical certifiers a brief pamphlet explaining the duties of the referees. Their services are at the disposal both of medical certifiers and of approved societies. A medical certifier who is in doubt as to the continued incapacity of an insured person whom he has hitherto certified as incapable of work, can make application for the opinion of a referee. The opinion of the latter will be communicated both to the certifier and to

the approved society. Similarly, an approved society in doubt as to the incapacity of a member who is in receipt of sickness or disablement benefit may refer the member for examination to a medical referee. It will also be open to approved societies to refer an insured person admittedly incapable of work who has been in receipt of sickness or disablement benefit for a prolonged period, and in regard to whom the society thinks it desirable that a second medical opinion should be obtained. The function of the referee is to be purely advisory, and neither the certifier nor the society will be bound by the opinion of the referee. The Free State has been apportioned into three districts, in regard to each of which a referee will function. Ordinarily, the insured person will attend for examination at a fixed centre, but in exceptional circumstances an insured person may be examined at his own home.

Royal College of Physicians of Ireland: Honorary Fellowship Conferred on Sir Humphry Rolleston.

On Feb. 7th Sir Humphry Rolleston, President of the Royal College of Physicians of London, was admitted to the Honorary Fellowship of the Royal College of Physicians of Ireland. The President, Sir William Thompson, was in the chair and handed the new Fellow his certificate. Sir Humphry Rolleston then gave an address on "Individual Links Between the Colleges of London and Ireland." He stated that in the 80 years from 1836 to 1916 no less than 28 Fellows of the London College had been admitted to the Fellowship of the Irish College. He referred to several physicians who had associations with both Colleges, among others, Sir William Petty, Sir Edward Barry, Anthony Pelham, and Thomas Brooke. A vote of thanks to Sir Humphry Rolleston was proposed by Dr. Walter Smith, Senior Fellow of the College, and seconded by Sir John Moore. In the evening Sir Humphry Rolleston was present at a Term Dinner of the College.

Fellowships in Sanitary Science.

When the Local Government Bill, at present before the Oireachtas, becomes law, it will be the duty of the county board of health in each county to appoint a medical officer of health. As up to the present there is almost no expert sanitary work done in Ireland, there will be a difficulty in finding trained and suitable candidates. It is satisfactory, therefore, to find that some help is to be given by the Rockefeller Foundation. An official statement just issued by the Department of Local Government and Public Health states that:—

The Department recognises the difficulty that will arise in finding suitable persons to fill the important position of medical officer of health in each county. A number of doctors possess diplomas in sanitary science, public health, and State medicine, but have no opportunity of obtaining experience in general public health administration. The Minister and staff discussed this difficulty with the representatives of the Rockefeller Foundation. Three travelling Fellowships have, therefore, been offered, and when the Bill becomes law opportunity will be given to all qualified persons to submit their names. A committee consisting of medical experts and others to select for fellowship the best qualified and most suitable persons from amongst the applicants will then be set up.

It is further stated that the Fellowships will entail a sojourn in the United States of about eight months. Besides full travelling expenses, the Foundation will pay matriculation, instruction, and other university fees, and a payment monthly is also provided for, while full opportunity for study will be provided at hospitals, laboratories, and specialised institutions. Preference will be given to applicants under 35 years of age. The Fellows must bind themselves to accept appointments as county medical officers of health on their return to Ireland. The assistance given thus by the Rockefeller Foundation will be valuable, but a guarantee of adequate remuneration for the county medical officer of health is necessary if good candidates are to be attracted.

Correspondence.

"Audi alteram partem."

SMALL-POX OR "PARA-SMALLPOX."

To the Editor of THE LANCET.

SIR,—Dr. R. P. Garrow's able and interesting article in THE LANCET of Jan. 31st raises an issue of the greatest practical importance. He contends (with Prof. Jorge) that the ultra-mild small-pox which has prevailed in this country during the last few years is not true small-pox but a separate and distinct disease closely allied to it. If this contention is right our whole administrative machinery for dealing with this disease, which is based on the belief that it is true small-pox, would need to be radically revised. To continue to take the elaborate and costly precautions which we are at present taking would be unnecessary, and, indeed, unjustifiable. It is therefore necessary to scrutinise Dr. Garrow's arguments closely.

At the outset it must be admitted that there is nothing inherently impossible in his proposition. The remarkable constancy with which the present strain of small-pox in this country (or of "alastrim" or "amaas" abroad) maintains its abnormally low virulence and continues to "breed true" lends colour to it. Mere diminution in virulence, however, is hardly sufficient in itself to justify us in postulating a new species of disease, though if such altered virulence prove to be permanent we may, I think, claim that we are at least dealing with a new variety. Dr. Garrow, however, contends that there are definite clinical differences between small-pox and "para-smallpox," which he describes in detail. Here, I think, he goes rather further than the facts justify. What he really does is to draw a picture of the milder example of his "para-smallpox" and compare it with the classical description of small-pox as given in text-books. Of course, the two pictures are very different. It is unfortunate that Dr. Garrow's experience of small-pox other than "para-smallpox" has been, as he himself admits, rather limited. Otherwise I think he would have realised that the text-book pictures of the disease are taken from well-marked and severe cases in order to emphasise the salient features, and hence tend to be overdrawn. Let me take some of Dr. Garrow's points of difference seriatim.

1. *Onset*.—This, he says, in "para-smallpox," is "gradual," whereas in classical small-pox, of course, it is sudden. Personally, I cannot agree that it is gradual, but as the term is purely relative, and there are no means of measuring it, it is not much good discussing it. Then he says that no case in his series gave the classical onset of small-pox with rigor, vomiting, lumbo-sacral pain, and rapid prostration. Yet he admits that some of his cases had shivering, nausea, vomiting, abdominal pain, and backache. Although not prostrated, the "para-smallpox" patient, he tells us, usually "lies down." I suggest that in "para-smallpox" the prodromal symptoms are not infrequently quite as severe as in undoubted small-pox. The following are taken from notes made by me personally amongst the first 14 cases I investigated at Gloucester.

CASE 4.—Aged 23. Very severe pain in back and head; vomiting; stayed in bed three days.

CASE 7.—Aged 19. Pains in back and head, "terribly sick." Eruption on sixth day.

CASE 8.—Aged 18. Pain in back; nausea, very feverish; stayed in bed three days. Eruption on fifth day.

CASE 10.—Aged 11. Very ill for one night. Delirious; vomiting. In bed for three days. Eruption extremely scanty—less than six spots altogether—appeared on seventh day.

CASE 12.—Aged 12. Headache, backache, vomiting, light-headed; in bed for two days. Eruption on third day.

CASE 14.—Aged 21. Slight backache; retching; in bed on and off for nearly a week. Eruption on eighth day (later notes, when seen in hospital). Eruption profuse, coherent on face, thick; discrete on arms; very large pustules.

2. *The Pause*.—The feature of "para-smallpox" on which Dr. Garrow lays most stress is that which he calls "the pause"—i.e., the interval between the cessation of the prodromal symptoms and the appearance of the eruption. I admit that the occurrence of this interval was a feature which struck me in the Gloucester cases, and it is a point which must be taken into consideration. This pause arises owing to the delay which occurs in the appearance of the eruption and the consequent drawing out of the prodromal period. This is shown by the figures given by Dr. Garrow. My own figures for Gloucester cases may be worth quoting also. I personally investigated 144 cases at Gloucester, but in 19 cases definite dates could not be obtained. In 15 cases no prodromal symptoms were noticed; in other words, the prodromal period was absent. Of the remaining 110 cases the eruption appeared as follows:—

Day of eruption..	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.
Number of cases..	—	11	20	49	22	21	5	2

In classical small-pox the prodromal stage is supposed only rarely to extend to five or more days. This, then, seems a definite point of distinction, *unless* it can be explained as a result of the reduced virulence.

3. *The Eruption*.—Dr. Garrow says the eruption is "not so shotty" as in classical small-pox. I wonder on what comparison Dr. Garrow bases this assertion? Nothing is so difficult to measure as the degree of shottiness. He also says that the lesions are "more rapid in their evolution through the various stages" and that the "scabs and crusts" of classical small-pox are replaced in para-smallpox by what he terms "amber beads." "Amber beads" is quite an intriguing term, certainly more attractive than "scabs and crusts," but I suggest that the modification he describes is not much more than the phenomenon referred to in classical small-pox as the process of "aborting." I would prefer to say that the eruption in "para-smallpox" tends to "abort" rather than to run its full course, but the phenomenon is not in any way specific.

4. *Secondary Fever*.—Dr. Garrow rightly states that the amount of secondary fever and constitutional disturbance in para-smallpox is usually very slight or entirely absent, though where the pustules are large and deeply seated in the skin (as they sometimes are) there is slight secondary fever. The question is, is the secondary fever less than we should expect in view of the scantiness of the eruption? I am inclined to agree that it is so. Also I have been impressed with the rarity of secondary septic infection of the skin in para-smallpox in cases where the eruption was profuse. But then, is this a specific difference or is it part of the phenomenon of lessened virulence?

5. *Other Features*.—Prodromal rashes are certainly very rare with the present strain of small-pox, but this again may be due to the lessened virulence. Eye complications are quite as bad as we should expect in view of the general benignity of "para-smallpox."

Conclusion.

In conclusion, it must be remembered that different epidemics of any disease will vary in certain minor particulars and sometimes in more important ones; also that many diseases have become modified by lapse of time or change of environment. Especially is this true of virulence and fatality. Small-pox, as it has existed in the provinces for the past few years, certainly presents a very different picture from what it did 30 years ago or even as it sometimes still does to-day. Moreover, these differences have been maintained and it has continued to breed true. The type therefore appears to have become fixed. The question is: Are we to regard it (a) as the same disease, or (b) as a separate disease, sui generis, distinguishable clinically, as Dr. Garrow contends, from small-pox on the one hand and from chicken-pox on the other?

Personally, I would reject both these views and seek a compromise. I think that Dr. Garrow goes too far. I do not regard it as a distinct disease, nor do I believe that it is possible to diagnose individual cases of the present ultra-mild small-pox from ordinary small-pox. I prefer to regard it as a sub-variety of small-pox, sufficiently distinct epidemiologically to justify some distinction in terminology.

I am not enamoured of the term "para-smallpox" because the analogy with paratyphoid is misleading. The term would, of course, have been quite justified if "para-smallpox" reacted to vaccinia differently from ordinary small-pox. Personally, I prefer the suggestion made recently in THE LANCET by Dr. R. W. Jameson, that we should use the terms variola "major" and "minor" in order to make the necessary distinction, and I could wish that the Ministry of Health would give official sanction to this, at the same time issuing a memorandum indicating the modifications in administrative procedure which they would approve in epidemics which were found to be only variola minor.

I am, Sir, yours faithfully,
Leicester, Feb. 4th, 1925. C. KILLICK MILLARD.

SMALL-POX AND ALASTRIM, VARIOLA MAJOR AND MINOR.

To the Editor of THE LANCET.

SIR,—Your correspondents for the most part seem to concentrate on the individual case to the exclusion of the general view of an epidemic as a whole, and so doing, lose the view of the wood because of the trees.

The small-pox epidemics of 1897 and 1923 at Gloucester were so different that a large section of the public there considered them distinct diseases. The council committee responsible for small-pox expenditure, though they were only fulfilling the behests of Government, lost their seats at the next election.

The official inability to distinguish between variola major and minor, both of which bred true, is a serious matter; for disregard of the present advice leads to nothing with variola minor, but should variola major later break out in the same place, it might well spread to a considerable extent before the community realised that this time medical advice was in accordance with the facts. Variola minor confers only an evanescent immunity to vaccination; by analogy the same may well be true as regards the protection it confers against variola major, while we know variola major confers a long period of immunity against itself, vaccination, and variola minor. The official view being that all small-pox is the same, what advice is to be officially tendered to persons who have had small-pox within five years if again exposed to infection? To me the protection conferred by vaccination lasting longer against variola minor than variola major is a point of some diagnostic value, and the Glasgow figures for variola major in 1921 and those of the C.M.O.'s annual report of 1923 are of some interest when compared.

Drs. Millard and Garrow both show that the majority attitude is no longer tenable, and I would like, Sir, to reiterate my view that an investigation of the whole subject is very necessary; also that as vaccination has not been officially investigated for 30 years it would be a great pity were a partial inquiry to be granted as the result of lay pressure, the profession remaining supine in the matter.

I am, Sir, yours faithfully,
ROBERT W. JAMESON.
West Wickham, Kent, Feb. 3rd, 1925.

EXTENSOR PLANTAR RESPONSE IN POISONING BY MORPHINE.

To the Editor of THE LANCET.

SIR,—Dr. G. M. Kendall's observation of a bilateral extensor response in a case of morphine poisoning (THE LANCET, Feb. 7th, p. 308) is not without precedent. Personally I recorded a similar

experience in 1914 (*Practitioner*, vol. xciii., p. 330), and another case is certified by Sir James Purves-Stewart (*Diagnosis of Nervous Diseases*, sixth edition, p. 97). In the paper quoted above my purpose was to show that coma per se, that is apart from organic disease of the central nervous system, may be an influence sufficient to determine an extensor response, and as such a response has now been recorded after quite a number of narcotic drugs and other soporific agents the argument advanced in my paper would appear to be strengthened. Such an explanation is surely much more probable than the hypothesis that each agent exercises some specific action on the nervous system. There are other experiences which go to support the same conclusion, though these can hardly be set forth within the compass of a brief letter.

As a general proposition it can, I think, be argued that any agency which disturbs the normal functional relation between the cerebral cortex and the motor cells of the spinal cord may be accompanied by a plantar extensor response, and among such agencies coma, however produced, obviously has a place. The practical outcome of such a doctrine is that, given a comatose patient with extensor responses, it is not necessary to conclude that such a combination inevitably means an organic brain lesion; it may mean narcotic poisoning.

I am, Sir, yours faithfully,
Feb. 9th, 1925. C. O. HAWTHORNE.

TREATMENT OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Mr. Rendle Short's interesting lectures on appendicitis (THE LANCET, Jan. 31st and Feb. 7th) afford several points for reflection and some also for criticism. On one matter in particular, the treatment of post-operative ileus, my own experience and some interest in the subject have led me to form opinions so different from his that I venture to express my views. Mr. Rendle Short is no half-hearted advocate of the administration of powerful purgatives and peristaltic stimulants in the treatment of ileus after operation for appendicular peritonitis, and no doubt there are many experienced surgeons who share this view.

If we consider the state of affairs inside the abdominal cavity during the first few days after operation for diffuse peritonitis, we will agree that ileus, in any marked degree, is due to inability of the lower small intestine to transmit its contents owing to acute inflammation of the bowel walls and also to fixation of intestinal coils by deposits of plastic lymph. Now we may treat this condition on the assumption that there is still some kick (pardon the phrase) in the intestinal walls if only a sufficiently powerful impetus be given to them to elicit a response; if the assumption is justified, and sometimes it is, then a bowel action follows, flatus is passed, and the patient will probably weather the storm. But what of the not inconsiderable number of cases in which this assumption proves false? It will be found in these that the condition has been hurried on into one of full-blown acute intestinal obstruction. I contend that it is a much better plan, safer and more likely to be followed by success, to treat the patient in the belief that the obstruction is due to transient causes and will clear up as the peritonitis subsides if we can tide him through this period; to promote this policy the intestines must be kept at rest till there is evidence of a return of function, and meanwhile the patient's vitality must be maintained. In practice, then, we should cease to administer any food or fluid by mouth (chewing of fresh fruit may be allowed) and instead institute continuous subcutaneous infusion of saline solution; empty and wash out the stomach by means of the stomach tube—the stomach will be found to contain intestinal contents often in great quantity, which emphasises the futility of relying on drinks by mouth for the patient's sustenance; administer small doses of

morphia and 12 to 24 hours later a simple enema will usually enable the patient to pass flatus and faecal material; the enema should be repeated in 12 hours' time.

There are few things more striking in surgical work than the rapid improvement in the patient's condition, appearance, and subjective sensations which follows this treatment. As I have pointed out elsewhere, post-operative ileus can be prevented to a great extent by taking certain precautions at the operation for appendicitis and by care in the immediate after-treatment. Purgation before operation for acute appendicitis has long been recognised as a grave mistake, and I believe it to be so after operation, at least in the severe cases with diffuse peritonitis.—I am, Sir, yours faithfully,

Manchester, Feb. 8th, 1925.

H. H. RAYNER.

AIR-EMBOLISM FOLLOWING URETHROSCOPY.

To the Editor of THE LANCET.

SIR,—Prof. Andrew Fullerton's letter is important as it draws attention to the fact that accidents during aero-urethroscopy are more frequent than have been recorded. Most will agree that simply on account of this urethroscopic examination should not be abandoned, but the question arises, Is aero-distension essential in every case? I have elsewhere stated (*Practitioner*, July, 1924) that it is advisable for diagnostic purposes first to examine the urethra without distension, for many pathological conditions are thus better observed. Hyperæmia, slight infiltration, excessive secretion, granular and patulous states of the mucous membrane vanish when the urethra is distended with air, so I personally reserve aero-dilations for obscure cases and for operative purposes. If this practice is followed no operator need fear air embolism.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 3rd, 1925.

M. W. BROWDY.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Doble's article on the above in your issue of Feb. 7th, I should like to state that it has been my routine practice for many years past to examine the urine of my private patients by a long series of tests including the reaction to litmus.

In by far the greater proportion of cases of acne and so-called "seborrhœic" dermatitis the reaction has been found to be either very mildly acid to litmus or amphoteric, though on rare occasions either a high acidity or a high alkalinity has been met. I have inquired of my biochemical friends as to the validity of the simple litmus test and have been informed that it is satisfactory, any error in the litmus test lying rather on the side of its indicating a higher degree of acidity than is actually present.

When Drs. Barber and Semon published their researches on the acidity of the urine associated with "seborrhœic" dermatitis during the war I endeavoured to control their work in this country, but was unable to obtain confirmatory results, as I believe was the case with others who attempted control work. I therefore came to the conclusion that what they had described was a state of things due to the special conditions in the field and was not to be found in ordinary civilian life. In Dr. Doble's case I am on firmer ground, as he is presumably dealing with a sample of the population similar to that which I have investigated, and here I am in a position to state definitely that the urine of most cases of acne and "seborrhœic" dermatitis as seen by me in large numbers is not notably high in acidity or alkalinity.—I am, Sir, yours faithfully,

Harley-street, W., Feb. 9th.

ARTHUR WHITFIELD.

BREAST DISEASE AND THE *DEMODEX FOLLICULORUM*.

To the Editor of THE LANCET.

SIR,—The article by Dr. Helen Chambers and Miss Millicent Somerset in THE LANCET of Jan. 24th under the above title, opens up a new idea for the workers in comparative medicine, and it may interest your readers to see by the accompanying photograph



Bull puppy severely affected with follicular mange.

(for which I am indebted to the late Prof. Mettam, of the Royal Veterinary College of Ireland) the widespread form which the demodex parasite often takes in the skin of the dog. The authors of the paper might have added the horse to their list of domesticated animals which can be infected, but it is in the dog that the veterinarian most commonly meets with this form of mange. It is by no means an uncommon affection and is well recognised by the canine practitioner, and, indeed, too, by many owners and breeders. In animals I have never read or heard of it as associated with cancer.

It is met with in all breeds and is more common in the young dog than the old one, the incidence of age in cancer being the reverse. Although I am not aware that especial attention has, up to the present, been paid to the point as to whether the demodex parasite can be microscopically demonstrated as common in (or around) the nipples, I know from experience that the mammæ of animals are not a usual spot for visible evidence of its lodgment. It may come on any other part of the body, and it is especially troublesome to treat around the lips and eyelids, particularly in breeds (such as the bull-dog, bloodhound, or spaniel) whose skin in those regions is loose and pendulous.

To assert decisively that it is incurable, even in the dog, is scarcely quite correct; although in most instances the trouble and length of time which it takes influences the owner to decide upon the painless destruction of the patient. Some four or five months as a minimum is usually asked for, and a variety of external preparations are used, one of the most effectual being a weak solution of chloride of zinc, applied daily after squeezing out the contents of every pustule which may be visible.

I am, Sir, yours faithfully,

FREDERICK HOBDAV, F.R.C.V.S.

Section of Comparative Medicine, Royal Society of Medicine, Wimpole-street, W.,
Feb. 4th, 1925.

REX v. BATEMAN.

To the Editor of THE LANCET.

SIR,—You are no doubt aware that this appeal came on for hearing to-day at the High Court, when the same was allowed and the conviction quashed. Judgment however was reserved, but will be given in due course. Dr. Bateman was of course discharged.

Our client wishes us to thank you for the great financial and moral support which you have given him, and which has enabled him to bring this appeal to such a successful conclusion. It is extremely doubtful whether we could have brought sufficient weight to support the appeal, without the interest which you have taken throughout the proceedings, and in support of the medical profession generally. We ourselves desire to join in our client's gratitude.

We are, Sir, yours faithfully,
AMERY-PARKES & Co.

66 and 68, Whitcomb-street, Coventry-street,
London, W.C. 2, Feb. 10th, 1925.

Obituary.

SIR GEORGE ANDERSON CRITCHETT, BART., K.C.V.O.,

SURGEON-OCULIST TO THE KING; CONSULTING OPHTHALMIC
SURGEON TO ST. MARY'S HOSPITAL.

WE regret to announce the death of Sir George Anderson Critchett, which occurred at a nursing home on Monday last in the eightieth year of his age, after an operation. He was a hereditary ophthalmologist, for not only could he look back on a career of over 50 years as an ophthalmic surgeon himself, but as successor to a distinguished father, he was a link with the founders of modern ophthalmology. William Bowman, Jonathan Hutchinson, George Lawson, and George Critchett were the great names in the ophthalmic world in the 'sixties and 'seventies of last century, and George Anderson Critchett, the son of the last, was born in the atmosphere of ophthalmology and was approaching manhood at the time when the discovery of the ophthalmoscope produced a renaissance in the study of diseases of the eye. "La réputation d'un père est un lourd fardeau pour le fils." But in the case of Anderson Critchett, great though his father had made the name, he undoubtedly added to its repute, and it is safe to say that few British ophthalmic surgeons were better known in the world.

Born in London in 1845, Anderson Critchett was educated at Harrow, where he gained the prize for English literature, and Caius College, Cambridge, where he captained the College cricket eleven and made many friends, but did not proceed to a medical degree. On leaving Cambridge as a Bachelor of Arts in 1867, he entered the Middlesex Hospital and qualified M.R.C.S. in 1872, later proceeding to the F.R.C.S. Edin. There was a period in his career, however, when it seemed doubtful whether medicine or music would claim him. He possessed a fine baritone voice, a love for the drama, and social qualities which acted together to draw him away from the profession of medicine, but affection for his father and a desire to be of help to him prevailed. He decided to follow in his father's footsteps and accordingly filled junior ophthalmic appointments until he secured election first to the Royal Free Hospital as ophthalmic surgeon and then to St. Mary's Hospital as lecturer on ophthalmic surgery. There followed upon this good start a life of steady professional success. He was appointed ophthalmic surgeon to St. Mary's Hospital in 1881 and rapidly became known both as operator and learned man, and from the beginning his reputation was as high on the continent as in England. It is of interest to note that his first published paper on "Inoculation in Ophthalmic

Practice" was published in a French journal, *Annales d'Oculistique*, in 1877. It was his work at St. Mary's Hospital that finally established his reputation and incidentally built up one of the biggest eye clinics at any of the general hospitals in London, and he was the first to recognise how much he was aided in his work at St. Mary's by the late Henry Juler and how loyally they worked together when a few years later Juler was co-opted as his colleague. His career from now onwards is a simple record of increasing honours accorded to him. He was appointed surgeon-oculist in ordinary to the late King Edward in 1901, in which year he was knighted, being advanced to a baronetcy in 1908.

The public positions held by Sir Anderson Critchett were very numerous. He was at different times President of the Ophthalmological Society, President of the Council of British Ophthalmologists, President of the Ophthalmological Section of the International Congress of Medicine, and President of the International Ophthalmological Congress, in this way repeating an honour which had been bestowed upon his father a generation before. He had been President of the Section of Ophthalmology in the Royal Society of Medicine, and his conduct in the presidential chair on so many occasions never failed to win respect. His polished speaking was especially happy on ceremonial occasions, while his contributions when he intervened in debate were founded on vast clinical experience.

Critchett was also a member of the Société Française d'Ophthalmologie, and certain of his papers were published in the Transactions of that society and simultaneously in THE LANCET. He contributed, as has been said, to the *Annales d'Oculistique* and, of course, to the Transactions of the Ophthalmological Society. From beginning to end his writings were of a practical character. The first paper published in our columns was instigated by the arrival of cocaine. Before the introduction of cocaine, in England at any rate, the majority of ophthalmic surgeons administered an anæsthetic during the operation for extraction of cataract, but Anderson Critchett pointed out that the absence of pain secured by the new agent, though of the greatest possible value, had certain drawbacks, and described his own technique for iridectomy, using the ring-finger to elevate the upper lid, as "Nature's speculum." Thirty years later, in his address to the Seventeenth International Congress of Medicine as President of the Section of Ophthalmology, he described the value of the X rays as an aid to the location of foreign bodies in the eye and its adnexa, and amongst similar new adjuncts to diagnosis mentioned the delicate manometers assisting the surgeon to estimate the tension of the eye. Of other contributions to the technical side of his specialty we may mention his method of employing the cautery in the operation for conical cornea and his advocacy of treating certain cases of lamellar cataract by making an artificial pupil, but he generally preferred to practise well-tried methods rather than to devise new ones. He was never a prolific writer, and to the regret of many of his pupils, much of his teaching, which would have been of great value, is lost for want of recording. For he was a great clinician and unrivalled as an operator. To see Critchett removing a cataract in the heyday of his skill was to see the perfection of operative technique. Never a hurried or purposeless movement was made, and if any untoward complication had to be met, it was faced with the same steady placidity as if it had been foreseen from the first. He had to a very high degree the most valuable capacity of rousing in his patients an implicit feeling of confidence and the equally valuable capacity of creating a feeling of friendship in his colleagues.

During the war he served as ophthalmological surgeon to King Edward VII. Hospital and to King George's Hospital, and in 1919 received the K.C.V.O. His last professional honour reached him as recently as 1924, when he was chosen Master of the Oxford Ophthalmological Congress. Apart from the distinctions which he received from two kings, Critchett

held every honour that it was possible for his colleagues to confer on him. Such a record by itself shows the esteem in which he was held by those best able to judge of his work, an esteem which could only have been earned by the genuineness of character which gave rise to it. To few men has it been given to have such a happy full life; happy in his work, happy in his friendships, and happy beyond expression in his family life, he reached the end of his long term of years without ever growing old.

Sir Anderson Critchett married a daughter of the late C. J. Dunphie, of Rathdowney, Queen's Co., by whom he had two daughters and one son, George Montague, who succeeds him in the title.

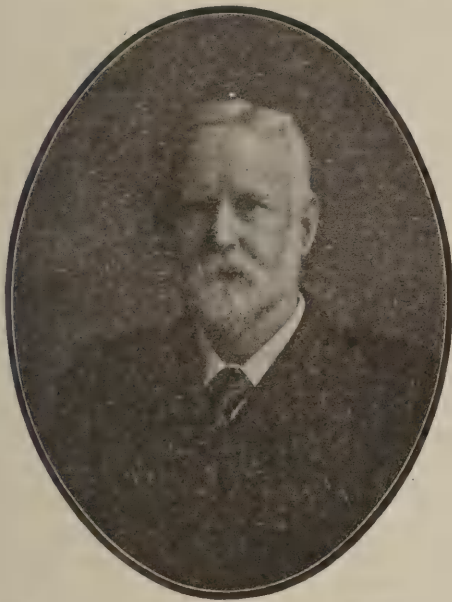
THE LATE DR. JOHN FRASER.

In appreciation of the late Dr. John Fraser, Medical Commissioner of the Scottish Board of Control, whose death we announced recently, we have received the following notice from Prof. George M. Robertson, to whom also we are indebted for the portrait of Dr. Fraser. Prof. Robertson writes:—

"News of the death of Dr. John Fraser in the eightieth year of his age, as the result of a fall when alighting from a tramcar, has been received with sorrow over the whole of Scotland, where in his capacity of Deputy Commissioner between the years

difficulty than he in having his recommendations put into effect. These were priceless gifts to one in his position, who was engaged during his term as Commissioner in levelling up the methods of administration and of nursing in the mental hospitals of Scotland. He was interested in the hospitalisation of asylums, in improved methods of nursing both by day and by night, in the nursing of male patients by women, in the abolition of restraint and seclusion, and in the precaution against fire. His genuine sympathy for the patients, his knowledge of their conditions of life, and his kindly manner of treating them, won their affection and confidence. No one appealed to him in vain. He had words of comfort for all which smoothed over their difficulties. He was regarded by them as a real friend."

Dr. Fraser was born in Thornhill, Dumfriesshire, and studied medicine in Edinburgh, where he had a distinguished career as a student, gaining nine medals and graduating with first-class honours in 1870. After holding resident appointments in the Edinburgh Royal Infirmary, he was appointed assistant medical officer to the Fife and Kinross District Asylum at Springfield, Fife. A few years later he was promoted medical superintendent, succeeding Sir John Batty Tuke in this post. Dr. Fraser married a sister of Sir John Batty Tuke, who predeceased him, and he is survived by three sons and two daughters. One of the former is Dr. J. S. Fraser, aural surgeon, Edinburgh.



1877 and 1895 he visited boarded-out patients in every parish. He knew the country so well that he said he could not be placed in any part of it that was unfamiliar to him. In addition, he was on friendly terms with most of the inspectors of poor and medical officers of these parishes. In 1895 he was promoted Commissioner, and retired owing to the age-limit in 1910. Dr. Fraser was an honorary member of the Medico-Psychological Association, and on his retirement from office he was presented with his portrait painted by Mr. Fiddes Watt, R.S.A. Since his retirement he has been much interested in charitable organisations, and especially in the work of the Society for the Prevention of Cruelty to Children. He has led a useful and a good life, which has been characterised by untiring energy and singleness of aim in his work. Above all he has been distinguished by his friendliness, his kindness, and his deep interest in all those persons with whom he came into contact in the discharge of his duties, whether these were officials or patients. His relations with the former were so good and his honesty of purpose so transparent that no official had less

Medical News.

UNIVERSITY OF LONDON: LECTURES AND DEMONSTRATIONS IN MEDICAL HYDROLOGY.—The third annual course at the University of London has been arranged by the Committee for the Study of Medical Hydrology in Great Britain, and will take place from April 27th to May 2nd next, concluding with visits and demonstrations at Buxton and Matlock. Introductory discourses will be given by Dr. John C. Thresh on the Types of Water which Occur in Nature; on Hydro-geology, by Mr. H. Dewey, of H.M. Geological Survey; and on the Capillary Circulation in the Skin by Prof. Barcroft. Dr. Fortescue Fox will deal with the Properties and Actions of Medicinal Waters, the Actions and Uses of Baths, and the Use of Heat in the Treatment of Disease. Applied Hydrology forms the subject of three lectures; by Dr. J. B. Burt on Disorders of Digestion; by Dr. Vincent Coates on Arthritis; and by Dr. Rupert Collins on Neurasthenia. These lectures will be delivered at the University of London, South Kensington. Demonstrations on the Bacteriological, Physiological, and Chemical Analysis of Waters will be given in the Counties' Public Health Laboratories; and by Dr. Leonard Hill at the National Institute for Medical Research on the Effects of Open Air and Sunshine upon the Body. At Buxton there will be brief lectures and demonstrations, both on methods of treatment and of research, given at the bath establishments and at the Mineral Waters Hospital, by local medical men. Full particulars may be obtained from the Hon. Secretary, Hydrology Committee, University Extension Board, University of London, S.W. 7.

The *Introductory Medical Course* for students who have matriculated in the University of London will begin at University College on Monday, March 2nd. Intending students should apply at once and should attend at the College on Monday, March 2nd, at 11 A.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On March 2nd a comprehensive three weeks' course in Medicine, Surgery, and Gynaecology will be conducted at the Royal Waterloo Hospital. There will also be demonstrations given by the staff in the wards and out-patients' department. Beginning on March 9th is a four weeks' course in Ophthalmology at the Central London Ophthalmic Hospital. The course is an afternoon one and deals with the more important diseases of the eye. An Operative Surgery class will be held by arrangement. The Chelsea Hospital for Women is arranging a special three weeks' course from March 16th, and the work will embrace the various Gynaecological Affections, and also operations and demonstrations by members of the staff. The Hospital for Diseases of the Chest (Brompton) begins a fortnight's course on March 16th. The course consists of demonstrations, lectures, operations, &c., in all the

departments associated with chest diseases. The Royal Northern Hospital in conjunction with the Royal Chest Hospital is arranging an intensive course in Medicine, Surgery, and the Special Departments from March 23rd to April 4th. Copies of the syllabuses of the above-named courses, together with the Fellowship Bulletin, may be had on application to the Secretary at 1, Wimpole-street, W. 1.

HULL AND A UNIVERSITY COLLEGE.—The Right Hon. T. R. Ferens, of Hull, a P.C. and a former M.P. for East Hull (1905-1918), has written to the Lord Mayor stating that he has set aside £250,000 as a nucleus for founding a University College for Hull. Amongst his other gifts to Hull were £10,000 for the purchase of a site for a new technical college and £60,000 for the erection of a new art gallery.

EPSOM COLLEGE WAR MEMORIAL.—The Bishop of Winchester, the Visitor of the College, will consecrate the nave of the chapel at 3 P.M. on Saturday, Feb. 21st. The total cost of rebuilding the chapel, which work was begun in July, 1923, will be about £11,500, and so far the Council have received contributions amounting to about £9000. Contributors to the War Memorial Fund who wish to be present at the ceremony are requested to apply for a card of admission to the Bursar, Major Walter L. Giffard, The College, Epsom, Surrey.

CHADWICK PUBLIC LECTURES.—On Monday, March 9th, at 8 P.M., in the Inner Temple Hall, Lord Newton will give an address on the Necessity for Legislation with regard to Smoke Abatement. Sir William J. Collins will be in the chair. In May Dr. E. Brumpt, Professor in the Faculty of Medicine at the University of Paris, will give two lectures (in English): (1) How to Conduct an Anti-Malarial Campaign, and (2) the Prophylaxis of Sleeping Sickness. Admission to all Chadwick public lectures is free. Further information may be obtained of the Secretary, Mrs. Aubrey Richardson, O.B.E., at the offices of the Trust, 13, Great George-street, Westminster, S.W. 1.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A special post-graduate course covering the work of all the departments of the Prince of Wales's General Hospital, Tottenham, N., begins at 10.30 A.M. on Monday, Feb. 16th, with a demonstration of the graphic method of studying heart disease. It will be continued every day throughout the ensuing fortnight, each week, however, being complete in itself. In the mornings there are to be demonstrations of modern clinical methods, in the afternoons demonstrations of groups of selected cases and clinics in the various departments of the hospital. At 4.30 P.M. each day there will be a special clinical lecture. The opening lecture will be given by Mr. James Sherren on Appendicitis, and all the lectures at this hour will be free to members of the Fellowship of Medicine as well as to members of the College, while the opening lecture will be free to members of the profession. The succeeding lectures of the first week will be on the Home Treatment of Diabetes, by Dr. F. G. Crookshank; on Cancer of the Colon, by Mr. H. W. Carson; on Spinal Anaesthesia, by Dr. C. F. Hadfield; and a lantern lecture, by Mr. J. Howell Evans on Cysts and Cystic Conditions of the Neck. On Saturday, at 11 A.M., Dr. F. Thomson will give at the North-Eastern Fever Hospital, St. Ann's-road, Tottenham, a demonstration of cases illustrating the Early Diagnosis of the Infectious Fevers. Luncheon will be obtainable in the neighbourhood of the hospital, and at 4 P.M. each day tea will be provided. Application for admission to the course should be made to the Secretary of the Fellowship of Medicine (1, Wimpole-street, W. 1) or to the Dean of the College.

LIVERPOOL OPEN-AIR HOSPITAL FOR CHILDREN.—The Countess of Derby on Feb. 5th opened the new administration wing of this hospital situated at Leasowe, near Liverpool. The Liverpool open-air hospital for children suffering from surgical tuberculosis provides accommodation for 260 children, the majority of whom are sent into the hospital crippled. The average duration of treatment is from 18 months to two years. At the ceremony on Feb. 5th the hon. treasurer was able to claim that the working cost of the hospital of £2 per bed per week was the lowest for similar institutions in the Ministry of Health's returns, while the chairman of the medical board announced a percentage of 78.4 of the children discharged during the previous year with the disease quiescent. The new wing has cost some £16,500 to build, of which about £10,000 is still to find. The hospital is run under the aegis of the Liverpool Child Welfare Association, and a feature of "Leasowe" is the admirable after-care system by which all discharged patients are followed up, home conditions reported on, help given, and relapses dealt with at an early date.

Dr. James Hopwood Jeans, F.R.S., secretary of the Royal Society, and Sir William Henry Ellis, G.B.E., have been appointed to be members of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

GIFT OF SANATORIUM TO DURHAM.—Subject to the approval of the Ministry of Health, the Durham County Council have accepted an offer from the Marquis of Londonderry of Seahall Hall, to be used as a sanatorium for the treatment of tuberculous cases in the county. After suitable alternations the hall would afford accommodation for about 80 patients.

PROBLEM OF THE CRIPPLE.—Mr. M. Fitzmaurice-Kelly addressed the Brighton and Hove Rotary Club on Feb. 4th on the subject of the Problem of the Cripple. Taking the county of Sussex as a whole, Mr. Fitzmaurice-Kelly declared there were some 1500 cripples, and he claimed that if the cases were taken in hand in earliest childhood and treated with the skill which medical and surgical science had now devised, the very great majority of them were curable. He spoke of the system of treatment which had originated in Shropshire and was now being copied in various parts of the country, Wiltshire and Somersetshire, and expressed the opinion that the time was ripe for Sussex to make a move. He suggested that a hospital of 100 beds would meet the county's needs and would probably cost £60,000 or £70,000 to establish, and its running expenses would be about £12,000 to £15,000 a year. He did not think this was beyond the means of the county, but meanwhile he urged the immediate setting up of local clinics in various centres.

MANCHESTER'S £10,000,000 WATER-SUPPLY.—The Waterworks Committee of the Manchester Corporation have recommended the City Council to proceed at once with the Haweswater reservoir scheme for increasing the city's water-supply, which will cost about £10,000,000, and described as the biggest of its kind in the country. It was stipulated when Parliament sanctioned the scheme in 1919 that it should be completed by 1934. The scheme involves the construction of a giant aqueduct nearly 80 miles in length from Haweswater to Manchester, of which 28 miles will be underground. In carrying out the scheme, the lake will require to be raised about 90 feet, its length of two and a quarter miles increased to four miles, and widened by about a quarter of a mile, and its surface increased from 350 to 1000 acres. The raising of the water level by means of a dam will mean the submergence of the hamlet of Mardale, an hotel, several farms, and a parish church. The church it is proposed to remove and erect elsewhere. It is computed that the scheme will give Manchester an additional potential daily supply of 70,000,000 gallons and will ensure the city's water-supply for the next 50 or 60 years. Manchester at present receives 52,000,000 gallons of water a day, and it is calculated officially that at the present rate of increase of demand the existing resources will be exhausted in eight or nine years. The Thirlmere scheme was sanctioned in 1879, and the fourth pipe therefrom was only recently completed. The Thirlmere scheme cost the city £7,000,000.

SUSSEX PROVIDENT SCHEME.—Great progress was made during 1924 by the Sussex Provident Scheme. By the scheme provision is made against the more serious illness requiring hospital treatment or the services of a specialist, to which the National Health Insurance scheme does not apply, and people with incomes up to £350 a year can, by joining into groups or associations, or by registering direct, insure against the most serious possibilities that illness or accident may hold out over the average human being. The scheme saw its inception in 1920, and although it was at first viewed with a certain amount of suspicion there were just over 7000 subscribers to it at the end of 1923, and at the end of 1924 the figure was only a few under 10,000. With the dependents, the total number who stand to benefit is well over 25,000. During 1924 the following amounts, totalling £5520, were paid to the hospitals named for services rendered to subscribers to the scheme:—

Royal Sussex County Hospital, £2806; Royal Alexandra Hospital for Sick Children, £823; New Sussex Hospital, £538; Brighton, Hove and Preston Dispensary, £309; Haywards Heath Hospital, £248; Sussex Maternity and Women's Hospital, £207; Sussex Eye Hospital, £170; Brighton and Hove Provident Dental Hospital, £120; Sussex Throat and Ear Hospital, £76; Uckfield Cottage Hospital, £19; Royal East Sussex Hospital, Hastings, £2; Stephen Ralli Memorial Laboratory, £27; Consultations, £9; Queen's Nurses, £9; refunded for treatment to subscribers at non-co-operating hospitals, £157.

These figures suggest that the anticipations of the founder, Dr. J. F. Gordon Dill, are being fully realised, for they encourage the hope that the scheme is providing a solution for some of the financial problems of the voluntary hospitals.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 16th.

MEETING OF THE SOCIETY : at 5.30 P.M.

Special Discussion on

Non-specific Disturbances of Health due to Vitamin Deficiency.

Speakers :

Dr. Leonard Williams, Colonel R. McCarrison, Dr. William Cramer, Dr. G. M. Findlay, and others.
(The Meeting may be adjourned at 7 P.M., and resumed at 8.30 P.M.)

Tuesday, Feb. 17th.

PATHOLOGY : at 8.30 P.M.

D. Thomson : Researches on *B. pneumosintes*.

G. M. Findlay : Acceleration of the Carcinogenetic Action of Tar by Radiant Energy.

A. N. Goyle : The Virulence and Toxigenicity for Mice of "Normal" and "Rough" Forms of *B. enteritidis* Gaertner.

Wednesday, Feb. 18th.

HISTORY OF MEDICINE : at 5 P.M.

Paper :

Mr. G. E. Gask : The Medical Staff of Edward III.

Exhibitions :

Mr. W. Reeve Wallace and Dr. N. G. Horner : A Paduan Diploma of 1628.

Dr. Arthur T. Davies : A Diploma of Montpellier.

Thursday, Feb. 19th.

DERMATOLOGY : at 5 P.M. (Cases at 4 P.M.)

Cases :

Mr. Haldin Davis : Late Post-X Ray Pigmentation.

Dr. H. Semon : (1) Widespread Cicatrising Streptothrix Infection. (2) Lichen Planus of Mouth and Lips.

Dr. H. MacCormac : Mycosis Fungoides (15 Years' Duration).

Dr. MacCormac and Dr. Cockayne : Lupus Pernio.

Dr. Dowling : Pseudopellade following Lichen Planus (and two other cases).

Paper :

Dr. Aldo Castellani : Observations on Some Skin Diseases Common in Central America (illustrated with lantern slides, microscopical sections, &c.).

Friday, Feb. 20th.

ELECTRO-THERAPEUTICS : at 8.30 P.M.

Papers :

Dr. Norman MacDonald : The Influence of Spinal Manipulation and Adjustment on Certain Types of Cases.

Dr. R. M. Beath : Dysostosis Cleidocranialis Hereditaria.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 16th.—9 P.M., Sir Bernard Spilsbury : Wounds and Other Injuries (First Lettsomian Lecture).

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Feb. 19th.—8.15 P.M., Clinical Meeting at St. Mary's Hospital.

ROYAL SOCIETY OF TROPICAL MEDICINE AND

HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Feb. 19th.—8.15 P.M., Prof. B. Blacklock will read a paper on Schistosomiasis and Goitre in Sierra Leone (illustrated by lantern slides). Preceded at 7.45 by a demonstration on the Pathology of Experimental Leishmaniasis in the Hamster, by Dr. Henry Meloney, of Peking.

CHelsea CLINICAL SOCIETY.

TUESDAY, Feb. 17th.—8.30 P.M. (at the Club Room, St. George's Hospital, entrance in Knightsbridge), Sir Thomas Parkinson and Mr. A. Ralph Thompson will open a discussion on Some Diseases Common to the Climacteric (both sexes).

TUBERCULOSIS SOCIETY, 1, Upper Montague-street, Russell-square.

FRIDAY, Feb. 20th.—8 P.M., Dr. Clive Riviere : Lantern Talk on Pneumothorax.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 16th.—5 P.M., Mr. C. P. G. Wakeley : The Aetiology, Pathology, and Treatment of Ectopic and Imperfect Descents of the Testes.

WEDNESDAY.—5 P.M., Dr. G. S. Williamson : The Anatomy and Physiology of the Thyroid Apparatus.

FRIDAY.—5 P.M., Conclusion of Dr. G. S. Williamson's lecture.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 16th. to SATURDAY, Feb. 21st.—WEST LECTURE HALL, Royal Society of Medicine. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. Friday, Feb. 20th, 5.30 P.M., Sir James Dundas-Grant on Some Points in the Diagnosis and Treatment of Tuberculosis and Cancer of the Larynx.—NORTH-EASTERN POST-GRADUATE COLLEGE (Prince of Wales's Hospital, Tottenham). Intensive Course in Medicine, Surgery, and the Special Departments. With the exception of Saturday, work will begin at 10.30 A.M., continue until 5.30 P.M., and will include Demonstrations, Medical and Surgical Clinics, Operations and opportunity for study in the Special Departments—COMBINED COURSE IN DISEASES OF CHILDREN, Paddington Green, Victoria Hospital, and the Children's Clinic. Two sessions daily.—LONDON LOCK HOSPITAL, 91, Dean-st., W. Comprehensive Course, clinical work daily, and lectures.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Demonstrations daily in the various departments. Pathological demonstrations arranged for, and Tuesday and Thursday special lectures. Tickets for this particular course from the Fellowship.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, 2 P.M. Clinical demonstration by Dr. G. C. Low and Dr. Manson-Bahr.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 16th.—4.30 P.M., Mr. J. Sherren, C.B.E. :

Appendicitis.

TUESDAY.—4.30 P.M., Dr. F. G. Crookshank : Home Treatment of Diabetes.

WEDNESDAY.—4.30 P.M., Mr. H. W. Carson : Cancer of the Colon.

THURSDAY.—4.30 P.M., Dr. C. F. Hadfield : Spinal Anæsthesia.

FRIDAY.—4.30 P.M., Mr. J. Howell Evans : Cysts and Cystic Conditions of the Neck (lantern).

SATURDAY.—11 A.M., Dr. Frederic Thomson (at the North-Eastern Fever Hospital) : The Early Diagnosis of the Infectious Fevers.

Daily.—Intensive Course : 10.30 A.M. to 12.45 P.M., Demonstrations of Clinical Methods ; 2 to 3 P.M., Demonstration of Groups of Selected Cases ; 3 to 4 P.M., Clinics in General and Special Departments ; 4.30 P.M. Clinical Lectures.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE : FEB.—MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Feb. 16th.—2 P.M. Out-patient Clinic : Dr. Hinds Howell. 3.30 P.M., Subacute Combined Degeneration : Dr. Riddoch.

TUESDAY, Feb. 17th.—2 P.M., Out-patient Clinic : Dr. Adie. 3.30 P.M., Symptomatology of Cerebral Tumours : Dr. Grainger Stewart.

THURSDAY, Feb. 19th.—2 P.M., Out-patient Clinic : Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the VIIIth Nerve (in O.P. Department) : Mr. Just.

FRIDAY, Feb. 20th.—2 P.M., Out-patient Clinic : Dr. Gordon Holmes. 3.30 P.M., Recovery from Streptococcal Meningitis Complicating Otitis Media : Mr. Sydney Scott.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Feb. 19th.—12 noon, The Cerebro-spinal Fluid, Physiology and Pathology : Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Feb. 16th.—12 noon, Afferent Paths and Physiology of Sensation : Dr. Hinds Howell.

The Fee for this Course will be £2 2s.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, Feb. 18th.—3.30 P.M., The Optic Nerve : Mr. Leslie Paton.

Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M. or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE, West Smithfield, E.C.

MONDAY Feb. 16th.—5 P.M. (and on Tuesday, Wednesday, and Thursday at the same hour). Sir William I. de C. Wheeler : Some Practical Considerations and Experiences in the Conservative Treatment of Fractures of the Pelvis and the Lower Extremity.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, Feb. 16th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Bishop Harman: Eye Dept.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrill: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—11 A.M., Sir Henry Simson: Gynaecological Wards. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.

THURSDAY, Feb. 19th.—5 P.M., Mr. T. B. Davies: Clinical Aspects of Abortion.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 19th.—4 P.M., Mr. Higgins: Intussusception.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Feb. 17th.—5 P.M., Dr. Wilfrid Fox: Cutaneous Syphilis.

THURSDAY.—5 P.M., Dr. Wilfrid Fox's lecture concluded.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES, (At 3.30 P.M.)

MONDAY, Feb. 16th.—(At the Samaritan Hospital.) Dr. Burns: Significance of Uterine Hæmorrhage in Gynaecological Diagnosis.

TUESDAY.—(At the Maternity Hospital.) Dr. Leith Murray: Cæsaréan Section.

THURSDAY.—(At St. George's Skin Hospital.) Dr. Barendt: Skin Cases.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).

FRIDAY, Feb. 20th.—4.30 P.M., Dr. F. H. Lacey: Antenatal Management.

ANCOATS HOSPITAL, MANCHESTER.

THURSDAY, Feb. 19th.—4.30 P.M., Mr. Diggle: Diseases of the Oesophagus.

ROYAL INSTITUTION OF GREAT BRITAIN, 21, Albemarle-street, W.

FRIDAY, Feb. 20th.—9 P.M., Prof. T. H. Pear: Acquiring Muscular Skill.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Feb. 17th.—4 P.M., Dr. Elliot and Dr. Skene: Albuminuria in Diseases other than those Primarily of the Kidney. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.

WEDNESDAY, Feb. 18th.—6 P.M., Prof. R. H. A. Plimmer: Diseases Caused by Badly Chosen Diets.

Appointments.

Willesden General Hospital, Harlesden-road, N.W.: FAULKNER, H. A., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Anaesthetist: HARVEY, F. MELVILLE, M.R.C.S., L.R.C.P. Lond., a Member of the Honorary Medical Staff.

Certifying Surgeons under the Factory and Workshop Acts: ARNOTT, T. F., M.B., Ch.B. Glasg. (Bovey Tracy); KIRKMAN, A. H. B., F.R.C.S. Edin., L.R.C.P. Lond., M.R.C.S. (Staplehurst).

Vacancies.

For further information refer to the advertisement columns.

Birmingham and Midland Eye Hospital.—H.S. £110.

Birmingham City Sanatorium.—Asst. Tub. O. and Asst. M.O. £450.

Blackpool, Victoria Hospital.—Asst. H.S. £120.

Brighton, New Sussex Hospital.—H.S. £50.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £150.

Bristol General Hospital.—House Appts. All at rate of £80.

Bristol Royal Infirmary.—Obstet. and Cas. H.S.'s. Each £100. H.P.'s and H.S.'s. Each £80. Also Dent. H.S. £116.

Bury and District Joint Hospital Board.—Res. Asst. Med. Supt. £400.

Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Res. Clin. Asst. 50 guineas for six months.

Chelsea Hospital for Women, Arthur-street, S.W.—Reg. £50.

Darlington Education Committee.—Asst. Sch. M.O. £600.

Dorset Mental Hospital, Herrison, near Dorchester.—Third Asst. M.O. £300.

Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250.

Hampstead, New End Hospital.—Sen. and Jun. Res. Asst. M.O.'s, at rate of £250 and £150 respectively.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300.

Ipswich, East Suffolk and Ipswich Hospital.—Election of Visiting Staff.

Kettering and District General Hospital, Northampton.—R.M.O. Leeds University, Dept. of Pathology and Bacteriology.—Lecturer in Bacteriology. £500.

Lincoln City and County Borough.—M.O.H. £900.

Madras and Southern Mahratta Railway Co., Ltd.—Dist. M.O. Rs.1550 per mensem.

Manchester City.—Asst. Tub. O. £620 19s. 9d.

Manchester, Monsall Hospital for Infectious Diseases.—First Asst. M.O. £600. Also Jun. Med. Asst. £350.

Manchester, Royal Manchester Children's Hospital.—Asst. M.O. at rate of £150.

Manchester, St. Mary's Hospitals.—Res. Obstet. O. and Res. Surg. O. Each £200.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. P. in charge of Electrical and Massage Depts.

Nottingham General Hospital.—Pathologist. £350 and private fees allowed.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.S. at rate of £100.

Royal Chest Hospital, City-road, E.C.—Phys. Also M.O. in charge of Tuberculosis Dispensary. £750.

Royal Northern Hospital, Holloway, N.—Res. M.O. £200. Also Asst. Surg. O. £150.

St. Marylebone Hospital, W.—Visiting Consulting Dental S. £50.

St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P. and Hon. Ophth. S.

St. Thomas's Hospital.—Res. Asst. Surg.

Western Ophthalmic Hospital, Marylebone, N.W.—Sen. and Jun. H.S.'s at rate of £150 and £100 respectively. Also Hon. Dental S.

West Ham County Borough.—Asst. Sch. M.O.'s. £600.

West London Hospital, Hammersmith-road, W.—Hon. Surg. Reg. £100.

Windsor, King Edward VII. Hospital.—Secy.

Wolverhampton and Staffordshire Hospital.—H.S. at rate of £150.

York City Council.—M.O.H. and Sch. M.O. £1000.

The Chief Inspector of Factories, Home Office, London, S.W. announces the following vacant appointments: Buntingford, Herts; Tenterden, Kent; Misterton, Notts.

Births, Marriages, and Deaths.

BIRTHS.

DOUGLAS.—On Feb. 4th, at a nursing home, Reading, the wife of Dr. A. McDonald Douglas, The Grange, Silchester, of a son.

JOLL.—On Feb. 6th, at a nursing home, the wife of Cecil A. Joll, M.S. Lond., F.R.C.S. Eng., of Harley-street, of a son.

LISCOMBE.—On Dec. 29th, 1924, at Syriam, Burma, the wife of R. H. Liscombe, M.B., B.S., of a son.

PLATTS.—On Feb. 3rd, the wife of Dr. S. Goodman Platts, Clifton Lawn, York, of a son.

SKENE.—On Jan. 31st, at Sotby Rectory, Lincolnshire, the wife of the Rev. C. M. B. Skene (Dr. Charlotte Grace Skene, M.B., B.S.), of a son.

MARRIAGES.

DODD—LODGE.—On Feb. 3rd, at the Chapel of the Charterhouse, Dr. Fredck. H. Dodd, of Devonshire-place, W., to Kathleen Elizabeth, youngest daughter of Alfred Lodge, Esq., of Banbury-road, Oxford.

LAWRENCE—ZIMMERMAN.—On Feb. 5th, by licence, at Poplar, London, George S. Lawrence, M.B., to Deenah L. Zimmerman, only daughter of Mr. and Mrs. Zimmerman, Nottingham.

M'QUADE—BURKE.—On Jan. 28th, at the Parish Church, Chertsey, Surrey, Cecil Emrys M'Quade, M.B. Dub., F.R.C.S.E., of Harcourts, Chertsey, to Rosalind, youngest daughter of Mr. and Mrs. Edmund Burke, Cowley House, Chertsey.

RICHARDSON—BIRKHEAD.—On Feb. 3rd, at St. John's, Boscombe, very quietly, Walter Silverwood Richardson, M.D., F.R.C.S. Edin., of Melbury, Boscombe, Bournemouth, to Maud Alice Birkhead, of Aston Grays, Bournemouth.

DEATHS.

BROWN.—On Feb. 2nd, at Glentworth-street, Limerick, Brig.-Surgeon Lieut.-Colonel Henry Thomas Brown, M.D., late Army Medical Staff, aged 81 years.

CHEESMAN.—On Feb. 6th, at Church Lane House, Lymington, Hants, George Edward Alexander Cheesman, L.R.C.P., L.S.A., &c., aged 71.

COLLINS.—On Feb. 3rd, at St. Andrew's, Lyme Regis, Brigade-Surgeon Francis Collins, M.D., late 5th Northumberland Fusiliers, in his 93rd year.

CRICHTON.—On Feb. 6th, at Brompton, Egbert Aubrey Lennox Chichlow, M.R.C.S., L.R.C.P., of Trinidad, aged 30.

CRITCHETT.—On Feb. 9th, at a nursing home, following an operation, Sir Anderson Critchett, Bart., K.C.V.O., F.R.C.S., Surgeon-Oculist to the King, of Harley-street, W.

ROWS.—On Jan. 28th, at 65, Rectory-lane, Prestwich, Richard Gundry Rows, C.B.E., D.Sc., M.D., Pathologist to the County Mental Hospital, Prestwich, younger son of R. G. Rows, The Willows, Helston.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

COLONIAL HEALTH REPORTS.

TURKS AND CAICOS ISLANDS.

THE population of these islands at Dec. 31st, 1923, was estimated at 5697. During the months of March and April the Turks Islands were visited by a rather severe epidemic of dysentery. Some of the cases had all the symptoms of cholera. At that time cholera was epidemic both in Haiti and Santo Domingo, and no doubt it was imported here through intercourse with those places. There were ten cases of the pulmonary type of tuberculosis during the year—about the average number. Malaria is always present to some extent. There were three cases of syphilis under treatment. Pellagra has been prevalent during the last few years. Although the islands are within the tropics the climate is not unhealthy. The severe heat in the hot months is tempered by the constant sea breezes. The temperature ranges from 60° F. minimum to 93° F. maximum, and the rainfall in 1923 was 25.10 inches. The islands are administered as a dependency of Jamaica.

Fiji.

According to the census of 1921 the population was 157,266, comprising 84,475 native Fijians, 60,634 Indians, 3878 Europeans, and some Polynesians and others. The general health of the natives during 1923 was satisfactory. The birth-rate for the period was 32.24 per 1000 and the death-rate 22.53 per 1000. Apart from a widespread epidemic of a mild type of influenza, from which only a few deaths resulted, no serious epidemic of infectious diseases occurred. A few small groups of cases of typhoid were reported, but in no case did the disease become epidemic. The decrease in the number of dysentery cases was maintained, and this once prevalent disease is now of comparatively rare occurrence. Over 4000 injections of salvarsan or neokharsivan were administered, and have effected a considerable reduction in the number of cases of tertiary yaws and kindred diseases. The campaign conducted under the auspices of the Rockefeller Foundation for the eradication of ankylostomiasis or hookworm was continued with vigour; 40,000 individuals, of which number one-half were Fijians, received treatment. There is no doubt that the wholesale treatment of the natives for this prevalent disease effects an improvement in the physical conditions of the race. The native medical practitioners, who exercise constant supervision over the health of the natives in the country districts, treated 25,000 cases of major and minor ailments during the year. Fiji is exceptionally healthy for a tropical country. It is protected against most of the infectious fevers by its distance from a continent. The absence of the anopheles mosquito prevents the occurrence of malaria. Plague, yellow fever, small-pox, or cholera have never gained admittance. Neither scarlet fever nor diphtheria appears to flourish, and first attacks of appendicitis hardly ever occur. Intravenous injection continues to give good results in leprosy, and several more cases have qualified for discharge from the asylum. Education through native medical practitioners and other means is removing from the native mind the belief in the desirability of infection of children with yaws. The salvarsan group of drugs is much sought after and, if funds allow, it is now practicable to consider the eradication of a disease almost as deadly in its after-effects as syphilis is elsewhere. The climate is generally unsatisfactory for those suffering from tuberculosis or asthma. The moist heat has an enervating effect on the nervous system. The total rainfall recorded at Suva during the year was 109.38 inches. The mean shade temperatures at Suva for the year were 70.4° F. minimum and 81.0° F. maximum.

GIBRALTAR.

The Hon. C. W. J. Orr, C.M.G., Colonial Secretary, in his report for 1923 states that the estimated total civil population of the colony at the close of the year was 17,346, of whom 16,042 are fixed residents. These figures represent the population between sunset and sunrise; to calculate the daily population it is necessary to add some 8000 aliens and 1500 British subjects resident in the neighbouring Spanish town of La Linea, who come into Gibraltar daily. The number of births during the year was 365, of which 176 were boys and 189 girls. The birth-rate per 1000 was 22.57. The births refer to the fixed population only, as, under the Aliens Order in Council, no alien may give birth in the colony; 294 deaths were registered—148 males and 146 females—and the crude death-rate was 16.95 per 1000. Infantile mortality was 109.5 per 1000 and deaths from pulmonary tuberculosis 1.2 per 1000. The number of deaths from cancer was 18, an increase of three on the number

for the previous year. The general health and sanitary conditions of Gibraltar throughout the year were excellent, and, with the exception of an outbreak of scarlet fever of a mild nature, there was no disease in epidemic form. The sanitary work of the colony is carried out by the City Council, who have also charge of roads, lighting and hygienic measures in dwellings, and the provision of water-supply.

BRITISH GUIANA.

Mr. O. Webber, Acting Assistant Colonial Secretary, in a report on the affairs of the Colony for the year 1923, states that the estimated population on Dec. 31st was 299,199 (151,960 males and 147,239 females). The birth-rates and death-rates per 1000 of the estimated population of each of the several races representing the community were as follows:—

	Birth-rate.	Death-rate.
Europeans other than Portuguese	11.3	11.9
Portuguese	24.8	30.4
East Indians	31.2	31.5
Chinese	33.0	22.9
Aborigines	31.0	29.4
Blacks	28.8	27.2
Mixed races	37.1	19.8

Of the births registered 4279, or 47 per cent., were legitimate, and 4830, or 53 per cent., illegitimate. The number of deaths of children under 1 year of age was 1609, or 177 per 1000 births.

The climate, although warm, is distinctly cooler than that of other British colonies in tropical latitudes, and Europeans and northern races enjoy consistently good health. The mean temperature throughout the year was 80.1° F., the mean maximum being 85.2° and the mean minimum 75.1°. The rainfall was 80.63 inches. The Colony, it is interesting to note, is the only British possession on the South American continent.

TRINIDAD AND TOBAGO.

In the report for 1923, prepared by Mr. T. A. V. Best, Colonial Secretary, it is stated that the estimated population of the two islands on Dec. 31st was 378,184. The white population is chiefly composed of English, French, Spanish, and Portuguese. The large majority of the inhabitants are natives of the West Indies of African descent, the balance being made up of East Indians, estimated at 122,362, and a small number of Chinese. The birth-rate was 34.70 per 1000 and the death-rate 20.89 per 1000. The number of deaths of children under 1 year was 1695. The death-rates per 1000 from the principal diseases were diarrhoea and enteritis, 1.39; malaria, 2.06; tuberculosis, 1.30; dysentery, 0.52; enteric fever, 0.38; ankylostomiasis, 0.67.

The year was a very healthy one, the birth-rate being high and the death-rate and infantile mortality reaching a low record for the colony. Venereal clinics on modern lines continue to be well attended at the out-patients' departments of the colonial hospitals, Port of Spain and San Fernando. On the recommendation of the Central Board of Health, drainage schemes for the control of malaria are being continued in the country districts. The intensive treatment of hookworm disease was continued by the Rockefeller International Board of Health. The Central Board of Health coöperated by enforcing the establishment of latrines in advance of the treatment in the areas about to be operated in. The following hospital accommodation is provided: Colonial Hospital, Port of Spain, 340 beds; San Fernando Hospital, 123 beds; the Government District Hospitals in Tobago, and at Arima, St. Joseph, Tacarigua, Couva, Princes Town, and Cedros, 248 beds. There are also small temporary hospitals at Sangre Grande, Mayara, and Toco. The climate of Trinidad is tropical and may be divided into two seasons, a dry one from January to the middle of May, with an average rainfall of 2 to 3 inches per month, and a wet season from June to December with an average of 8 inches per month. The coolest months of the year are December to April. The average temperature during the day is 84° and during the night 74° F. The average rainfall in 1923, from records taken at 119 stations, was 70.24 inches. Hurricanes are unknown. The climate is healthy and by no means hurtful to Europeans, provided reasonable precautions are taken.

WHO WAS JACQUES?

To the Editor of THE LANCET.

SIR,—A question was asked under this heading in THE LANCET of Jan. 3rd, p. 60. I have ascertained that Messrs. Jacques, Coles, and Fanshaw were not in business for themselves, but were all employees of the existing firm of Messrs. William Warne and Co., Ltd., 29, Gresham-street, London, E.C. I am, Sir, yours faithfully,

Feb. 3rd, 1925. W. A. DE B. MACLAREN,
Editor, *The India Rubber Journal*.

MOULDS AND LAUNDERING.

THE problem of how to give woollen underwear a longer lease of life can hardly be looked upon as a line of research likely to prove immediately profitable to the manufacturer; but Mr. John A. Bolton, of the Chilprufe Mills, Leicester, whose investigations were recently commented upon in THE LANCET, takes the wider view that equally with him who makes two blades of wheat to spring where before grew only one, he who can make one woollen vest live the life of two is a benefactor to humanity. Mr. Bolton has recently summed up the result of his researches to date in a small brochure which, in spite of a somewhat flamboyant style, makes very interesting reading. The author has been able to demonstrate that even after the most careful laundering large quantities of foreign matter can be extracted from woollen garments. This foreign matter consists of a basis of calcium and magnesium soaps, together with moulds, bacteria, and odds and ends of all descriptions. It is to the moulds that the chief interest attaches; the author gives suggestive photographs showing the manner in which the wool fibres are split and destroyed by these fungi, and there can be little doubt that the phenomenon of "felting" of woollen garments and their subsequent decay is due to their activity. The calcium and magnesium soaps which harbour the moulds are formed in the process of laundering, partly from these elements excreted in the sweat and urine and partly from calcium and magnesium in solution in the water used. Being insoluble, they remain behind even after thorough rinsing. Their presence is apparently inevitable when ordinary soap is used. To find some economic substitute for soap which will not form these insoluble bodies is now the goal of Mr. Bolton's researches.

THE SPAS OF FRANCE.

WE have received a pictorial guide to the Spas of France, which has been edited by a medical committee of the Offices Français du Tourisme, whose English address is 56, Haymarket, London, S.W. 1. The guide contains an account of more than 80 French medical watering-places, together with clinical indications of the use of the water and general information of a practical character for the benefit of practitioners in advising their patients. The preface claims certain advantages for French spas and is particularly addressed to medical men, who will appreciate the classification of the various thermal stations as set out in the guide, the completeness of equipment and material organisation being used, more or less, as a gauge to the space allotted to detailed description. There is no doubt that there are health resorts, as in other countries, where at present the installation is imperfect; they may possess natural advantages, but are without complete installations or facilities for visitors. France is rich in mineral-water springs, and their variety in type provides a wide range of therapeutic applications, facts which have created in the French nation what may be called the spa habit. In addition to the more generally known stations there are numerous small ones scattered about the country which are used by the French people with great advantage to themselves, but which do not meet the needs of the foreign sojourner, unless he is prepared for the limitations. Then any of these may become the ideal place for recuperation. We recommend this compendium of agreeable health notes to our readers, believing that they may often find in it the precise sort of information they need for their patients.

HOME WORK FOR CHILDREN.

THE Medical Officers of Schools Association issued some time ago a questionnaire on home work dealing with (1) the number of hours of work; (2) time devoted to games; (3) whether home work was diminished—e.g., on medical grounds; (4) whether home work was excessive; (5) the presence of definite evidence of fatigue; and (6) holiday tasks. Replies were received from a small number of schools grouped under the following headings:—Boys' and Girls' Public Schools, Boys' and Girls' Secondary Schools, and a few Mixed Schools. The replies were analysed, but it has not been found possible to arrive at any conclusions of real value from them. Some of the hours per week appeared extraordinarily long, but fatigue was stated not to exist in some of the schools with the longer time-tables. Again, the classes of the schools were hardly comparable. There is bound to be evidence of individual fatigue both from work and games in any large school, but, so far as the evidence elicited from these replies goes, there did not appear any ground for supposing that it was present to any extent in the four classes of schools under consideration. The Council of the Medical Officers of Schools Association have decided, however, that a fuller and more detailed questionnaire would be required in order to obtain the necessary data. With this object in view they have appointed a small subcommittee to draw up and issue another questionnaire.

"YESTERDAYS."

AN unpretentious and intimately written little volume with this title, which possesses certain points of medical interest, has reached us from Messrs. Fleming, Revell and Co., of New York. The book is an autobiography of Mrs. Louise Seaman Bainbridge, the daughter of one of the first women to qualify in medicine in the United States and the mother of a well-known American surgeon. Mrs. Bainbridge records that her own mother was the wife of a large boot manufacturer in Cleveland, Ohio, and took a prominent part in establishing the first medical college in that State to which women were admitted, and at which she herself later graduated and finally became its president. Mrs. Bainbridge herself, as "Sister Ohio," was nurse in the Federal army during the American Civil War, when there were no trained nurses in the country, and has personal recollections of a meeting with President Lincoln. After the war she travelled widely with her husband and her young son, and has been able to recollect vividly and set down clearly events and scenes in many lands, notably in the Far East and China. The chief part of the work is a record of family life, but the descriptions interspersed give a general interest to a little book dealing genially with bygone days.

DONATIONS AND BEQUESTS.

As showing what a well-organised and systematic effort can do in aid of a local hospital by a committee almost entirely composed of working men and women representative of the various cotton mills in the district, £1321 was raised last year in aid of the Middleton and Districts Hospitals (Lancs), the basis of contribution being a penny per week by each worker in the local mills and workshops, who voluntarily submit to this sum being deducted from their wages. With other subscriptions the total amount collected was £1590.—The "Power of the Penny," otherwise the "Penny a Week" Workers' Fund on behalf of the Kent County Ophthalmic Hospital at Maidstone, amounted to £9000. The subscribers number nearly 50,000 and the total contributions during five years to this fund came to £39,000, or more than nine million pennies.—Legacies and donations amounting to over £4000 during the last month have been received by the Manchester Royal Infirmary, including legacies of £1000 from Mr. John J. Litton, £500 each from the late Mr. Karl Seige and the late Mrs. Elizabeth Smith, and £481 from the late Mr. William Parker; from the Radcliffe Central Committee £417, and from the Hospital Sunday Fund of Haslingden, East Lancashire and Heywood £369.—Mr. George Hill Dunscombe, of Chester-square, London, in the event of the failure of certain trusts, bequeathed £5000 to the Royal Infirmary, Edinburgh; £5000 to the Queen's Hospital for Children, Hackney-road; £2000 to the Edinburgh Longmore Hospital for Incurables; £2000 to the Edinburgh Hospital for Sick Children; and £10,000 to St. Bartholomew's Hospital.—Mr. Alfred Evans, colliery proprietor, Paulton, Somerset, among other bequests, left £5000 each to Dr. Barnardo's Homes and Muller's Orphanage, Clifton, Bristol; £2000 each to the Bristol Eye Hospital, the Bristol Royal Infirmary, the Bristol General Hospital, the Alton Cripples Home, and St. Dunstan's Institute for the Blind; £1000 each to Paulton Cottage Hospital, Chorley's Homes, Canonbury, London, and to Bath United Hospital.—Miss Edith Martha Hales, Hove, left £58,796. After the fulfilment of a number of personal bequests, she gave the residue of her property, which will ultimately exceed £40,000, to the General Lying-in Hospital, York-road, Lambeth, the Society for the Prevention of Cruelty to Animals, and the Cancer Hospital, Fulham-road.—Miss Mary Eleanor Robinson, of Holmfild, Aigburth, Liverpool, left £500 each to the Royal Southern Hospital and the Home for Female Incurables, Liverpool.—Mr. David Moseley, J.P., of Buglawton Hall, Congleton, indiarubber manufacturer, Manchester, left £1000 to the Hospital for Skin Diseases, Manchester.—Mr. Adam George Rankine, J.P., of Hoylake, left £500 to the Liverpool Maternity Hospital and Ladies' Charity, £250 each to the Sheltering Home for Destitute Children, the Hoylake Day Nursery, and the Hoylake and West Kirby Cottage Hospital.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	..	..	£2	2	0
	Six Months	..	..	1	1	0
	Three Months	..	..	0	10	6
ABROAD	One Year	..	..	2	10	0
	Six Months	..	..	1	5	0
	Three Months	..	..	0	12	6

For complete scale of advertisement charges apply to the Manager.

THE
Hunterian Oration

ENTITLED

JOHN HUNTER AS A MAN.

*Delivered before the Royal College of Surgeons of
England on Feb. 14th, 1925,*

BY SIR D'ARCY POWER, K.B.E., F.R.C.S. ENG.

HUNTER AS A PIONEER.

MR. PRESIDENT, LADIES AND GENTLEMEN,—Brought up, as I have been at St. Bartholomew's Hospital, in the straitest sect of the Hunterian School, I might fairly claim some knowledge of the pioneer in surgery, the anniversary of whose birthday we are assembled to celebrate to-day. Sir William Savory, my revered master, learnt from Sir William Lawrence, and he from John Abernethy, who himself sat at the feet of John Hunter and was ever afterwards his eulogist. But much as I had heard of John Hunter a reperusal of his works has shown me how little I really knew about the originality of the man, of his limitations, or of the handicaps under which he worked. It is on these subjects that I shall speak to you to-day, and my wish to do so is the greater because the principles of surgery which he laid down have fallen somewhat into the background, being overshadowed by advances in chemistry, physics, and physiology, by the advent of bacteriology, and by the work of Lister.

I want you to think first of John Hunter as a pioneer in the philosophy of surgery, not as a skilled operator. Like all pioneers, he lived and worked alone, for none of his contemporaries could think as he thought or see what he saw. Like Vesalius and Harvey, he had to educate a new generation to foster his ideas and expound his thoughts.

Limitations.—The limitations of John Hunter are obvious. He was hampered by a defective education. He had an almost mediæval respect for words as words. He could not express himself clearly either in writing or by word of mouth when he dealt with the more difficult problems of surgery which he knew existed though he was unable to solve them for want of the ancillary sciences. He was a gross teleologist. His metaphors were often strained and sometimes wholly false. He was confessedly ignorant of the work of his surgical colleagues and foreign contemporaries, and, as I shall show presently, he suffered from frequent and severe attacks of illness which would have incapacitated anyone possessed of a less dauntless spirit. But when we have said this we have said all there is to say against him as a man.

Handicaps.—Now consider his handicaps. There was no chemistry in his day, no physics, no acquaintance with minute anatomy, for the microscope was not yet in common use, no knowledge of animal cells, hardly even a theory of fermentation to account for disease, because humoral pathology and the doctrine of climatic conditions still held sway.

Joseph Black discovered "fixed air" or carbon dioxide in 1754; Priestley prepared "dephlogisticated air" in 1774. Three years later Lavoisier called it "respirable air" or "oxygen," and taught the true nature of the interchange of gases in the lungs. Hunter by this time had done much of his work on respiration. The want of a well-calibrated thermometer vitiated many of his experiments on animal heat. He was obliged, therefore, to stumble along and explore the fields of surgical knowledge as best he could, for he was half a century before his time. He would have gotten the true explanation of many of his facts had he been born in 1778 instead of in 1728. With all these limitations and handicaps he often arrived very nearly at the truth, and his writings are full of the most astounding presages of knowledge to come,

presages which have been fulfilled for the most part by the advance of science, although some still await their accomplishment.

Animal Heat.

Hunter's methods and the advances he made are nowhere seen to better advantage than in his experiments and observations on animals in regard to their production of heat. Just a century earlier his great predecessor, William Harvey, who equalled him in originality of thought and excelled him in logical exposition, had dealt with the subject of animal heat in the seventy-first essay of his treatise "*De Generatione Animalium*." John Mayow had solved the problem at Oxford in 1674, but he died young and the "*Tractatus Quinque*" fell stillborn from the press. He left no successor; his discoveries had to be made afresh and applied by others more than a hundred years later. Albert Haller, who did so much to advance physiology in general, was not particularly interested in the subject of animal heat, so there had been no material change of thought about it in the century which separated Harvey from Hunter. It is fair, therefore, to compare the two monographs, bearing in mind that Harvey was already well-stricken in years when he wrote on "*calidum innatum*," whilst Hunter—aged 38—was in the prime of life when he performed his experiments, although they were not elaborated and published until 20 years afterwards.

Harvey is trammelled throughout by his knowledge of history; his treatise is filled with quotations from Aristotle, yet he arrives at the very practical conclusion that the heat of the blood in animals during life is neither fire nor derived from fire as the ancients thought. It is a principle inherent in the blood, but he then loses himself in speculating whether or not the blood is the Soul or Life itself.

Hunter starts in a very different manner. The lapse of 100 years had given him an instrument of precision—the mercury thermometer invented by Fahrenheit in 1720—whilst the work of Black had afforded some insight into the composition of the atmosphere and the interchange of gases. But the science of physics had not advanced sufficiently to enable Hunter to appreciate the relationship of heat to cold. He speaks of animals which "seem to possess a power of generating cold," whilst to him, as in the time of Harvey, heat was still a principle. How new an instrument the thermometer was is shown by a letter to Jenner on July 6th, 1777, in which Hunter says:—

"The thermometer is very useful when understood. You will observe the scratch upon the glass stalk, perhaps about 2 inches from the globe, which is the freezing point. Put 0 or nought which is upon the ivory scale 2 degrees below the scratch, the 0 becomes the thirtieth degree and the scratch being 2 degrees above it stands at the freezing point; then from that count upwards; or, if the cold is below 30 then put 1 or 2 at the scratch and count down; every No. is 10 degrees. What the devil becomes of your eels in the Winter? but try them in the Summer and see what you can make of them."

Jenner does not seem to have been very fortunate in his management of the thermometer. A few years later Hunter writes chaffingly to him: "You are very sly although you think I cannot see it. You very modestly ask for a thermometer. I will send you one, but take care that those damned clumsy fingers do not break it also." Nevertheless, even with such inadequate instruments Hunter set out to determine experimentally the cause of animal heat not only in different vertebrata and invertebrata, but also in the vegetable kingdom. He came to the conclusion that "animal heat is owing to some decomposition going on in the body in pretty regular progression, though it is not the process of fermentation." He thus gave for the first time the correct answer to a problem which had baffled philosophers from the earliest days. He then adds the very important statement: "I expect the blood has an ultimate standard heat in itself when in health and that nothing can increase that heat but some universal constitutional affection." Ignorance of the functions of the nervous system prevented him

from studying the mechanism of heat regulation in animals, though he distinguished clearly between the homoiothermic and the poikilothermic—the warm and the cold-blooded—for he says “the expression should rather be animals of a permanent heat in all atmospheres and animals of a heat variable with every atmosphere.” A strange perversity led him to spoil his result, for he limits the place of heat production to “some part of the body, perhaps the stomach,” and by ill fortune it did not occur to him to measure the fever in disease.

The Causes of Disease.

The shifts to which John Hunter was put to explain the general principles of disease in his ignorance of micro-organisms are both interesting and ingenious. He was in the position which we occupied until lately in regard to tubercle and syphilis and where we still stand about cancer. He knew the clinical facts but could not interpret them, for he had no knowledge of the part played by micro-organisms.

How near he got to the truth is shown by his definition of disease when he says: “The most simple idea I can form of an animal being capable of disease is that every animal is endued with a *power of action* and a *susceptibility of impression*, which *impression* forms a *disposition*, which *disposition* may produce *action*, which *action* becomes the immediate *sign* of the disease; all of which will be according to the nature of the impression and of the part impressed.” This seems at first sight to be a mere cloud of words hiding nothing. Interpret it by latter-day knowledge and it shows how far Hunter had advanced in surgical pathology. What he calls the *power of action* we now speak of as the *predisposition* to disease or the *diathesis*; the *susceptibility of impression* is the *infective organism*; the *disposition* is the *exciting cause*, and the *action* is the *manifestation of the disease by signs and symptoms*. Take tuberculous arthritis as an example. The tuberculous diathesis (*power of action*) allowed the tubercle bacillus (*the susceptibility of impression*) to settle in the joint in consequence of a sprain (*the disposition*), and the joint then became hot and swollen (*the action*).

He says, indeed: “A true specific disease is one that probably cannot arise but from one cause and which probably always belongs to morbid poisons.” He gives as an example “Scrofula, which is one of those diseases that is supposed to be hereditary, but it is only a readiness to fall into the peculiar action when properly irritated that is hereditary, and when such a cause does not exist we find no scrofula.”

Surely *nil nisi clavis deest*, the key alone is wanting, and the key was not forged until Pasteur and Lister—the master locksmiths—came to maturity more than 70 years after the death of John Hunter. He was even a little in advance of the earliest Listerian teaching, for he showed by experiment that “air simply has no power to excite inflammation.” He returns over and over again to the problem of the causation of disease when he is considering the causes of inflammation. Thus he says: “It is the *cause* producing inflammation which is the disease and not the inflammation itself, for all inflammations that can be called diseases have specific causes.” And he is driven at last to confess that “inflammation may arise from a vast variety of causes with which we are at present unacquainted, nay, which we do not even suspect.”

THE HUNTERIAN SCHOOL.

If Hunter was born half a century too soon to allow of his genius giving the best results, the span of his life coincided with the time needed to establish a school of scientific surgery in this country. No great surgeons existed in England from the death of Richard Wiseman in 1676 until William Cheselden began to make his reputation by teaching anatomy privately in 1711. The industry of Mr. G. C. Peachey has shown that Hunter was not the first to hold private classes, as a demand had already grown up for more advanced teaching than was provided by the formal lectures at the United Company of Barbers and Surgeons—lectures which had once been of the greatest service

to surgery but which in process of time had become obsolete. Cheselden, Nourse, Chovet, Sharp, and Pott had lectured to large classes before Hunter, but they dealt only with their own experience and with surgery in its clinical aspects. It was left to John Hunter to invent surgical pathology. His teaching only appealed to a few, and his lectures were sometimes attended so scantily as to give point to the story of his ordering the skeleton to be brought into his lecture-theatre that he might address the audience with the usual prelude “Gentlemen.”

How then did the school spread from such small beginnings? His few pupils became the leaders of the next generation of surgeons. Sir William Blizard of the London Hospital; Henry Cline of St. Thomas's; Astley Cooper at Guy's; John Abernethy at St. Bartholomew's; Anthony Carlisle at the Westminster; William Hey at Leeds; Philip Syngue Physic and his nephew John Syngue Dorsey in Pennsylvania received the Hunterian teaching with enthusiasm. These great surgeons transmitted their knowledge in turn to Sir Benjamin Brodie, Sir William Lawrence, Joseph Henry Green, John Collins Warren, and Valentine Mott, who in their generation became teachers at the great schools of medicine in England and in America. The teaching of John Hunter was thus disseminated amongst the rank and file of the profession, whilst the doctrines he enunciated were so novel, so ingenious, and seemingly so heterodox as to become the subject of acrimonious discussion. Attention was thus drawn to them and they quickly found their way into a text-book so widely read as Benjamin Bell's “System of Surgery,” and they thus became public knowledge both at home and abroad during the lifetime of their author.

But something more is needed to account for the rapid diffusion of Hunter's teaching. It is to be found in the spirit of devoted affection which he inspired in his pupils and in all with whom he was brought into personal contact. Those, who like myself have been pupils of Huxley, of Rolleston, and of Ray Lankester, can easily enter into their feelings of hero-worship. Adams says of him: “He was almost adored by the rising generation of medical men who seemed to quote him as the Schools, at one time, did Aristotle.”

Rough, coarse, and prone to anger as he was in later life, he had the personal magnetism inherent in every great teacher, whether of religion, philosophy, science, or even quackery—a magnetism which attracts kindred spirits, rarely amongst contemporaries, generally in a younger generation. Thus it was with John Hunter. To his pupils he was “the Dear Man” with whom they were in constant communication either by letter or by word of mouth and to whom they looked for guidance and instruction in the experimental methods he had taught them to use in scientific surgery.

THE HUNTERIAN TRADITION.

The Hunterian tradition passed down the next century in two great streams, theory and practice, uniting sometimes but for the most part flowing separately, because it was only now and again that a single mind could embrace the whole. Both streams took their source in a sound knowledge of human anatomy gained by daily dissection. The streams parted early. Blizard, Astley Cooper, Hey, Physic, Gibson, and Dorsey became great operating surgeons and advanced the teaching of Hunter along the lines of arterial surgery, the anatomy and treatment of hernia, and the pathology of fractures and dislocations. John Abernethy, on the other hand, developed the physiological side of surgery and investigated the causes of disease and its non-operative treatment, for he took but little pleasure in the manipulative part of his profession.

Sir Benjamin Brodie was great enough in the second generation to combine the science with the art of surgery—the theory with the practice. He was equally good as a morbid anatomist and as a clinical surgeon, whilst his general knowledge of science enabled

him to fill with distinction the important position of President of the Royal Society. Joseph Henry Green, the Hunterian orator in 1840, alone followed Hunter on the metaphysical side and delved so deeply into philosophy that he soon lost himself in speculation and did but little to advance the practice of surgery.

Sir James Paget in the third generation developed surgical pathology on truly Hunterian lines: whilst Sir William Savory was more interested in the teaching and dissemination of the surgical principles laid down by John Hunter, though he was a skilful operator, and dearly loved to tie an artery or extirpate a tumour so placed as to demand all his knowledge of anatomy.

You, Sir, like myself and many others of the fourth generation hold firmly to the teaching of John Hunter. We recognise with thankfulness the great work which he accomplished, but we realise it was the work of a pioneer and that the fields he pointed out are being explored by methods and by instruments of which he had no conception. The museum, Sir, has always been your especial care, but you have not neglected the equally important subject of teaching both by example and precept. You have shown, too, so enlightened an interest in the habits and customs of the beasts of the field and the fowls of the air as would have drawn you very near to the heart of John Hunter had you been privileged to sit at his feet. To you also he would most certainly have been the "dear man."

THE MENTALITY OF JOHN HUNTER.

The attitude of John Hunter to Nature and the human body always had something of the poetic in it, and was akin to the feeling expressed by Longfellow when he wrote of Agassiz:

"And Nature, the dear old Nurse,
Took the child upon her knee
Saying, "Here is a story book
Thy Father has written for thee."

Hunter looked upon Nature as a conscious personality. He says: "Everything in Nature involves two consequences, the one beneficial, the other hurtful. But if we understood thoroughly all the remote causes we should probably see its utility in every case." He speaks of muscles as "being conscious of their actions and almost endowed with reason." "Nature," he says, "acts purposively in the repair of dead bone," and "the clot adheres to the side of an aneurysm from a consciousness on the part of the artery of the weakness of its wall." He says in like manner that "Nature lays claim to and removes what she pleases," and he speaks of two surfaces lying in contact with each other and "agreeing mutually not to inflame." He also maintains that the first and immediate cause of the absorption of tissues is "a consciousness in the parts to be absorbed of their unfitness or impossibility of remaining under such circumstances, the action excited by the irritation being incompatible with the natural actions in existence in the parts whatever these are: wherefore they become ready for removal or accept of it with ease."

The blood, too, is for him so living a tissue that the clot "has the power of becoming vascularised in itself," and when blisters and setons have been used as derivatives to draw off the humours he "is unable to ascertain fully how they act, that is, how far the real disease is invited and accepts the invitation."

A MARTYR TO SCIENCE.

I wish now to draw your attention to a new aspect of John Hunter's life. It has always been assumed that the statement was the truth, the whole truth, and nothing but the truth, which was made by Sir Everard Home in 1794—the year after his brother-in-law's death—that "the symptoms of Mr. Hunter's complaint for the last 20 years of his life may be considered as those of angina pectoris and form one of the most complete histories of that disease upon record."

Reading the account of his illness in the light of modern knowledge it seems to me that John Hunter

died of syphilitic disease of his arterial system, and that, in addition to the angina pectoris due to this cause, he suffered for many years from cerebral syphilis. Both conditions were due to the action of the spirochaetes with which he deliberately inoculated himself in May, 1767. He may be looked upon, therefore, as one of the great martyrs to science. Personally, I do not think he was justified in this martyrdom, for the consequences of his experiment were visited upon his children as well as upon himself, whilst all surgery suffered by the shortening of that life which was advancing its bounds in every direction.

On a Friday in May, 1767, Hunter inoculated himself with pus from a patient suffering from gonorrhoea to determine whether the poison of gonorrhoea was identical with that producing syphilis. Surely that Friday must have been May 22nd, a well-recognised "Egyptian day," or *Dies Maledicti*, when it was most unfortunate to embark upon any new undertaking. The prepuce and glans were scarified and it was noticed that the incisions itched on the second day—May 24th. The prepuce was inflamed on May 26th, and on June 2nd a small ulcer appeared and was cauterised. A slough separated on June 6th and the sore was cauterised a second time. The glans itched on June 7th, and on the following day a second slough detached itself from the prepuce whilst the sore on the glans ulcerated and was cauterised. Sloughs separated from the glans and prepuce on June 12th, and the ulcers healed leaving scars. The lymphatic glands in the right groin enlarged during the week ending June 13th, but they did not suppurate.

The rapidity with which the two seats of inoculation ulcerated and the appearance of a bubo suggest that the pus contained Ducey's bacillus causing two soft sores. Spirochaetes were also present because the gland in the groin began to enlarge again after a time, and in July the right tonsil ulcerated. Copper-coloured spots appeared on the skin in September and the tonsil ulcerated a second time. The administration of mercury soon healed the ulcer but it returned a third and a fourth time. The rash on the skin appeared on three separate occasions, and mercury was then "taken in a sufficient quantity and for a proper time." Hunter says, "to complete the cure. The time the experiments took up, from the first insertion to the complete cure, was about three years." How complete the cure was will be shown! It is certain, therefore, that Hunter also inoculated himself with the *Spirochaeta pallida* and that his mercurial course was insufficient. The gonococcus having been inoculated upon skin surfaces did not multiply.

He married Miss Anne Home on July 22nd, 1771. There is nothing to show that she became infected, as it was then understood. John Banks Hunter was born in June, 1772, and lived until 1838: Mary Anne, born in December, 1773, only lived two months. James, born in November, 1774, died in February, 1775. Agnes, the youngest child, born in 1776, lived until 1838. It may be remarked that neither of the two surviving children left offspring and neither was above the average in mental attainments.

Except for an attack of pneumonia in 1759 and occasional poisoned wounds, from which every anatomist suffers from time to time, Hunter considered himself a healthy man until the spring of 1769, when he had some toxic disturbance which, in accordance with the fashion of the time, was diagnosed as "a fit of the gout." It returned in the three following springs but not the fourth. Its place was taken in the spring of this year (1773) by his first attack of serious illness. The record reads: "In the spring of 1773, having met with something which very forcibly affected his mind, he was attacked at 10 o'clock in the forenoon with a pain in the stomach about the pylorus. The sensation was limited to those parts and became so violent that he tried change of position to procure ease. He sat down, then walked, laid himself down on the carpet, then upon chairs, but could find no relief. He took a spoonful of tincture of rhubarb with 30 drops of laudanum without the smallest benefit.

While he was walking about the room he cast his eyes on the looking-glass and observed his countenance to be pale and his lips white, giving the appearance of a dead man. This alarmed him and led him to feel for his pulse, but he found none in either arm. The pain still continued and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced the voluntary act of breathing by working his lungs by the power of the will. In this state he continued for three-quarters of an hour, during which time frequent attempts were made to feel the pulse but in vain; however, at last the pain lessened and the pulse returned, although at first but faintly, and involuntary breathing began to take place. In two hours he was perfectly recovered."

This attack of epigastric angina occurred six years after the inoculation with syphilis. It may have been caused by toxic changes in the smaller blood-vessels supplying the vagal nuclei, or it may have been the first indication of syphilitic inflammation at the root of the aorta. I am inclined to think that it was due to cerebral changes rather than to inflammation in the large arteries, for it would hardly have passed off so rapidly without leaving any marked ill-effects. It is noteworthy, too, that from this time until his death, 20 years later, Hunter drank little, if any, wine. Not, we may be sure, because he liked abstinence, but because, as he says, it went to his head.

Four years later—in 1777—and again in the spring, he was seized with a severe and dangerous illness again in consequence of anxiety of mind, as he had been obliged to pay a large sum of money for a friend for whom he had gone security and which circumstances made extremely inconvenient.

"At 2 o'clock in the forenoon he ate some cold chicken and ham and drank a little weak punch; immediately after this he went eight miles in a post-chaise. While he was on the journey he had the feeling of having drunk too much but passed the remainder of the day tolerably well; at 12 o'clock at night his stomach was a little disordered, for which he took some caraways and went to bed. He had no sooner lain down than he felt as if suspended in the air and soon after the room appeared to go round; the quickness of this motion seemed to increase, and at last it was very rapid. It continued for some time, then became slower and slower until the whole was at rest. This was succeeded by vomiting which was encouraged and gave him a good night's rest.

Next day he was tolerably well but fatigued. The morning after, thinking himself quite recovered, he went out before breakfast, drank some tea and ate some bread-and-butter which he was not accustomed to do. At 11 o'clock he felt his stomach in much the same state as before; in about half an hour the sensation of the room appearing to turn recommenced and continued for some time but not with such violence as in the last attack. He became sick and vomited. The sensation of himself and everything else going round went off, but that of being suspended in the air continued with giddiness. He could now hardly move his head from the horizontal position, and about 2 o'clock was brought home in his carriage, the motion of which was very disagreeable, giving him the sensation of going down or sinking.

"After he went to bed the giddiness and the idea of being

suspended in the air increased, and the least motion of the head upon the pillow appeared to be so great that he hardly durst attempt it: if he but moved his head half round it appeared to be moving to some distance with great velocity; the idea he had of his own size was that of being only 2 feet long, and when he drew up his foot or pushed it down it appeared to him to be moving a vast way. His sensations became extremely acute. He could not bear the least light, so that although the window blinds were drawn a curtain and a blanket were obliged to be hung up against it, the fire to have a screen before it, and the bed curtains to be drawn. He kept his eyes closed, yet if a lighted candle came across the room he could not bear it. His hearing also was painfully acute, but not so much increased as his sight. The smell and taste were also acute, everything he put into his mouth being much higher flavoured than common by which means he relished what he ate.

"He remained in this state for about

ten days; by this time he was rather better, that is, he could move his head more freely. All his ideas of his present state became natural at the end of ten days, the strange deception concerning his own size was in part corrected, and the idea of suspension in the air became less. But for some time after the fire appeared of a deep purple red. When he got so well as to be able to stand without being giddy he was unable to walk without support, for his own feelings did not give him information respecting his centre of gravity, so that he was unable to balance his body and prevent himself from falling. He gradually recovered from this state, and as soon as he was able went to Bath at the end of August, stayed there until the middle of November, and drank the waters which were thought to be of service to him. He returned to town much better and in a few weeks got quite well."

Here, again, the symptoms point to cerebral rather than to cardiac disturbance, to syphilitic inflammation of the smaller cerebral arteries, perhaps in the nature



[Copyright, Wellcome Historical Medical Museum.]

FIG. 1.—John Hunter at his house in Leicester-square just after his return from Belle Isle. The sign above the door is the golden calf, and probably the artist intended the two asses to be symbolical of the patients who were going to consult him.

of a syphilitic periarteritis. There was vertigo but neither tinnitus nor deafness, so that the auditory symptoms were due to stimulation of the vestibular nerve rather than to changes in the labyrinth. The photophobia was of retinal origin and was due to hyperæsthesia, such as led to exaltation in the senses of smell and taste. The lesions were multiple, and although the results lasted for some time, as in the case of the purple red fire, yet they were compensated in the end.

Hunter's brain adapted itself fairly well to the altered conditions for the next eight years, although his arterial system was undergoing progressive degeneration, and his friends noticed with concern that he was ageing rapidly. At the beginning of April, 1785—

"He was attacked with a spasmodic complaint which at first sight appeared slight but afterwards became very violent and terminated in a fit of the gout in the ball of the great toe. Like the previous attacks it was brought on by anxiety of mind. The first symptom was a sensation of the muscles of the nose being in motion, but whether they really were or not he was never able to determine. This sensation returned at intervals for about a fortnight, attended with unpleasant feelings in the left side of the face, lower jaw, and throat, which seemed to extend into the head on that side and down the left arm as low as the ball of the thumb, where it terminated all at once. These sensations were not constant but returned at irregular intervals. They soon became more violent, attacking the head, face, and both sides of the lower jaw, giving the idea that the face was swelled, particularly the cheeks, and sometimes they slightly affected the right arm. After they had continued a fortnight they extended to the sternum, producing the same disagreeable sensations there and giving the feeling of the sternum being drawn backwards towards the spine as well as that of oppression of breathing, although the act of breathing was attended with no real difficulty. The heart seemed to miss a stroke at these times, and when feeling the pulse the artery was very much contracted, often hardly to be felt, and every now and then the pulse was entirely stopped. He was afterwards attacked with pain in the back about that part where the œsophagus passes through the diaphragm, the sensation being that of something scalding hot passing down the œsophagus. He was next seized with pain in the heart itself, and last of all with a sensation in the left side nearly in the seat of the great end of the stomach attended with considerable eructations of wind. All these symptoms, those in the stomach and nose only excepted, were in addition to the first, for every attack began with the first symptom. The complaint appeared to be in the vascular system, for the larger arteries were sensibly contracted and sore to the touch, as far as they could be touched, principally in the left arm.

"These symptoms increased in violence at every return, and the attack, which was most violent, came on one morning

about the end of April and lasted about two hours. It began as the others had done, but having continued about an hour the pain became excruciating at the apex of the heart. The throat was so sore as not to allow the attempt to swallow anything, and the left arm could not bear to be touched, the least pressure upon it giving pain. The sensation at the apex of the heart was that of burning or scorching, which by its violence quite exhausted him, and he sank into a swoon or doze which lasted about ten minutes, after which he started up without the least recollection of what had passed or of his preceding illness. He then fell asleep for half an hour and awoke with a confusion in his head which went off in a few days."

These attacks were of a more complicated nature than the previous ones. They were due in the main to syphilitic changes taking place in the heart and

aorta, and were thus anginal in character, but in part they may have been due to alterations in the cerebral circulation. He went to Tunbridge in the August of this year, 1785, but finding no improvement there he travelled to Bath in September, and in December he was again in London, where he performed his first operation for the cure of aneurysm by ligaturing the artery in its continuity.

The attacks of angina continued, though they did not increase in severity throughout the year 1786, until he became so accustomed to them that they formed a part of his daily life. He was unable, in consequence, to take much exercise and passed his time in superintending the printing and publication of the "Observations on the Animal Economy" and the "Treatise on the Venereal Disease," which were issued from his own press in Castle-street, Leicester-square. In



[Copyright, Wellcome Historical Medical Museum.
FIG. 2.—John Hunter showing his new house in Leicester-square, the suggestion being that he is touting for patients in addressing Martin van Butchell.

the following year, 1787, Sir Joshua Reynolds painted the striking portrait which has made his appearance so familiar to all of us.

He wrote to Jenner in May, 1788, saying that a severe indisposition for three weeks had prevented him from writing, although "when two guineas tempt me I cannot resist." It is noteworthy that the first attack of these complaints was produced by an affection of the mind and every future attack of any consequence arose from the same cause, and although bodily exercise or distension of the stomach brought on slighter attacks it still required the mind to be affected to render them severe, and as his mind was irritated by trifles these produced the most violent effects on the disease. His coachman being late or a servant not attending to his orders brought on the spasms, while a real misfortune produced no effect.

About the beginning of December, 1789, he was attacked with a total loss of memory when he was spending the evening with a friend.

"He did not know in what part of the town he was, nor even the name of the street when told it, nor where his own house was. He had no conception of any place existing beyond the room he was in and yet was perfectly conscious of his loss of memory. He was sensible of impressions of all kinds from the senses and therefore looked out of the window, although rather dark, to see if he could recognise the situation of the house.

"This loss of memory gradually went off and in less than half an hour he was recovered. About a fortnight afterwards, as he was visiting his patients in the forenoon, he noticed occasionally a little giddiness in his head and by 3 o'clock it was attended by an inclination to vomit. The giddiness became severe, but went off again about 7 or 8 o'clock; about 9 or 10 o'clock it returned with more severity and when going to bed about 11 o'clock he had entirely lost his centre of gravity, although he could move his limbs as the will directed. Light became offensive and everything had a kind of yellow cast: sounds became more acute than usual; objects had lost their true direction: a perpendicular, for instance, seemed to him to lean to the left, making as near as he could conjecture an angle with the horizon of 50 or 60 degrees. Objects were also smaller than the natural recollection of them: his idea of his own size was that of being only 4 feet high: objects also appeared to be at an unusual distance as if seen through a concave glass. Motion of his head was extremely disagreeable; he therefore moved

1777, more than 12 years before, and perhaps not far away from the areas originally involved, although there is no doubt that the disease in the large arteries had made considerable progress. I am not a neurologist, but so far as a surgeon can guess the lesions may have been situated in the immediate neighbourhood of the basal ganglia or even still nearer the cerebral cortex. I do not think they were in the cortex itself, nor do the spinal cord or the peripheral nerves seem to have been affected. The subjective sensation in the nose and the pain in the great toe might help to localise them more accurately.

The illusions as to size and shape may, perhaps, be accounted for by changes occurring in those "silent areas" of the brain which it is so difficult to explore experimentally. It is certain that a generation which knew nothing of the individual functions of the brain, and which attributed every form of toxic absorption to "gout," explained the pain in John Hunter's toe as being caused by that disease, just as in later years we have been contented to say that he suffered from angina pectoris without looking farther for the cause. The permanency of the defect in vision and the impairment of memory also point to widely spread

changes in the brain which were almost certainly vascular for, as will be seen presently, no gross lesion was found after death. The sleeplessness and the increasing irritability must be attributed rather to changes taking place in his larger arteries than to lesions in the brain.

He never went to bed at this time without having an attack which was brought on by the act of undressing. They came on in the middle of the night, and the least exertion and conversation after dinner was attended by them. He felt obliged, therefore, to confine himself within a certain sphere of action and to avoid dining in large companies. Even operations in surgery, if attended with any nicety, now produced the same effects.

In the autumn of 1790 and in the spring and autumn of 1791 he had more severe attacks than

during the earlier periods of the year, but of not more than a few hours' duration. In the beginning of October, 1792, one was so violent that Everard Home, who was present, thought he would have died in it.

"The end came on Oct. 16th, 1793, when in his usual state of health, he went to St. George's Hospital, and meeting with some things which irritated his mind and not being perfectly master of the circumstances he withheld his sentiments, in which state of restraint he went into the next room and turning round to Dr. Robinson, one of the physicians of the hospital, he gave a deep groan and dropped down dead."

The post-mortem examination showed a small heart in a thickened pericardium. The coronary arteries



[Copyright, Wellcome Historical Medical Museum.]

FIG. 3.—Hunter's buffalo carriage in which he used to drive down Piccadilly from Earl's Court to Leicester-square. The drawing suggests that he would get fuller advertisement if he rode on a dromedary accompanied by a black servant.

it with great caution, although coughing and sneezing did not affect it. The disposition to sleep was a good deal gone, an hour or two in the 24 being as much as could be obtained. These symptoms were much the same for a week and began to diminish gradually, so that in a fortnight he was able to sit up and in three weeks went for an airing in his carriage. He felt a pain in the joint of his great toe which inflamed gently but soon left it.

"His recovery from this indisposition was less perfect than from any of the others. He never entirely lost the oblique vision, his memory was in some respects evidently impaired, and the spasms became more constant."

These attacks were probably due to cerebral changes similar to those which caused the first symptoms in

were bony tubes which were with difficulty divided by the knife, when their transverse sections did not collapse but remained open. The mitral valves were partially and irregularly calcified and the aortic valves had lost their natural pliancy. The aorta, a little beyond the semilunar valves, had its cavity larger than usual, putting on the appearance of an incipient aneurysm. The inner coat of the vessel had entirely lost its natural polish and was studded with opaque white spots raised higher than the general surface. The cranium and dura mater were in a natural state but the pia mater was congested. The internal structure of the brain was carefully examined, and the different parts both of the cerebrum and of the cerebellum were found in the most natural and healthy state. The internal carotid arteries were ossified and the vertebral arteries lying along the medulla oblongata had also become bony, whilst the basilar artery had opaque white spots very generally along its coats.

THE CAUSE OF HUNTER'S DEATH.

A review of these facts about the illness and death of John Hunter show that he died with widespread disease of his arterial system—the largest as well as the smallest arteries being involved. He may have inherited some family weakness of the vascular system, for his brother William had died ten years before at exactly the same age of 65 after suffering the vague symptoms associated with arterial degeneration. The post-mortem examination of John Hunter's brain showed no gross lesions—such as a gumma—which were not likely to be overlooked by the trained anatomists who carried it out. The cerebral symptoms from which he began to suffer two years after he had inoculated himself with syphilis, and which continued intermittently until the time of his death 20 years later, were, therefore, due to lesions of a microscopic character. They were caused by cerebral syphilis of the interstitial variety, that is to say, they were due to the action of toxins produced by the *Spirochaeta pallida* in the lymphatic sheaths of the smaller blood-vessels. These changes in the outer coat of the arterioles interfered with their vasa vasorum and so with the nutrition of the middle coat, thus leading to thrombosis or even complete obliteration of the little vessels as a consequence of the endarteritis. Such a sequence of events recurred several times and were more frequent and severe as he grew older and the arteriosclerosis became more pronounced. We can only be thankful that the stress of the disease fell upon the deeper parts of the brain, and that his intellectual faculties were so little impaired that he could give sound judgment in consultation, invent new methods of operating, and retain those powers of collecting which enabled him to form his magnificent museum.

It never seems to have occurred to Hunter to associate any part of his ill-health with the inoculation experiment of 1767; indeed, he says expressly: "It would appear that some parts of the body are much less susceptible of the lues venerea than others; and,

not only so, but many parts as far as we know are not susceptible of it at all. For we have not yet had every part of the body affected; we have not seen the brain affected." How great, therefore, would have been his joy if his cerebral cortex could have looked down upon the great basal ganglia of his brain and recognised that



[Copyright, Wellcome Historical Medical Museum.]

FIG. 4.—Hunter's body being removed from St. George's Hospital in Mrs. Hunter's sedan chair with his chariot following behind. Note the two magpies, one on and one over the carriage, "one for sorrow, two for joy."

parts of them were suffering from the effects of the venom which he had himself introduced into his system so many years before. We look upon him as a martyr to science; he would rather have considered that the fresh knowledge was worth the penalty he paid to gain it. It is marvellous to us that he could accomplish so much, crippled as he was mentally and physically.

HUNTER BEING DEAD YET SPEAKETH.

Whilst praising John Hunter and his pupils for what has been done in the past, it is the duty of the orator to point to the influence of his teaching on the present generation of surgeons and to call attention to any outstanding work which may have been executed since the last oration was delivered in his honour. His spirit still lives and exerts its influence upon those of the younger generation of surgeons who are endowed with a portion of his originality of thought and action stimulating them to attack and advance along old lines which many had long since abandoned as useless.

THE HEART SUBDUED TO THE HAND OF THE SURGEON.

Sir Lauder Brunton, in the year 1902, suggested the possibility of treating mitral stenosis by surgical methods. He had already performed some preliminary experiments in the dead-house and upon animals, but ill-health and the generally expressed feeling which is always against any new operation involving great risk to life prevented him from carrying his design into execution upon the human subject. Nothing further was done in this country, although it had long been known to physiologists that the healthy mammalian heart could be handled with impunity, whilst

surgeons had repeatedly sutured cardiac wounds. At any rate, nothing *was* done, and it was left to Prof. Elliott C. Cutler, of the Western Reserve University at Cleveland, with the help of Dr. S. A. Levine and Dr. Claude S. Beck, to subdue the diseased human heart to the hand of the surgeon. Lately, whilst visiting the United States, I had the good fortune to make the acquaintance of Prof. Cutler and to see him operate on a dog. As the original idea was put forward by Sir Lauder Brunton, the lineal successor of Harvey at St. Bartholomew's Hospital, we must regret that it did not bear fruit there. But no one who knows Prof. Cutler, young, generous, enthusiastic, painstaking, and scientific, will grudge him the laurels he has won by his brilliant and successful operation, and all wish him godspeed in what we hope will be a long and prosperous career.

NECROLOGY.

The terms of the trust, Sir, demand of me the melancholy duty that I should draw your attention for a few moments to the losses which British surgery has sustained since the last oration was delivered. Death has been busy in our ranks during the last two years. Very noticeable is the gap left by the departure of Sir William Macewen whilst still in the full exercise of his mental and physical powers. A surgeon of such originality that he is worthy to be placed amongst the greatest of his own century. A pioneer in the surgery of the brain, in the surgery of the lung, and in the study of the infective inflammations of bone. His name seems likely to be handed down to future generations by that operation for the cure of knock-knee which should become less and less frequent as rickets becomes more rare under the influence of a better hygiene during childhood.

The name of Sir Frederick Treves will live long in the history of England. To us he appeared as a good anatomist, a fine abdominal surgeon, a fluent writer of interesting books, and a travelled gentleman. By his prompt action in an unparalleled crisis he showed himself master of the greatest attribute of a surgeon—the ability to take upon himself infinite responsibility mindful of the Hippocratic maxim that time is urgent, experience deceitful, and judgment difficult.

Mr. W. H. A. Jacobson, "the gentle cynic," and the author of the first satisfactory text-book on operative surgery in the English language, abandoned his profession at the height of his reputation, taking with him the sympathy of all his colleagues and friends.

What shall be said of Mr. S. G. Shattock—the humble-minded disciple of John Hunter, whose name he venerated and whose methods he copied, striving faithfully and zealously to advance and improve the knowledge of morbid anatomy in which, like his Master, he excelled beyond his fellows? Very few are permitted to gain the confidence, the esteem, and the affection of a whole profession. Shattock did so because he was truly the helper and adviser of all who sought him.

Three of our colleagues on the Council of this College have left us since you, Sir, delivered the last oration in 1923—Sir William Thorburn, Sir Charles Ryall, and Mr. W. Harrison Cripps.

Sir William Thorburn after an arduous and useful life at Manchester, where he did much to advance the surgery of the spine, saddened by domestic affliction, the direct outcome of the war, had just settled in London and was looking forward to a period of leisure when death seized him.

Sir Charles Ryall we miss because he was as genial as he was trustworthy in all matters committed to his charge, and to him the Cancer Hospital owes much.

Mr. Harrison Cripps possessed talents which—when combined as they were in him—are rare amongst us, first-rate business capacity, great powers of administration, and high surgical skill. He spoke but rarely at our meetings, yet his opinions always carried weight and his views usually prevailed.

Nor must I omit to mention those who worthily maintained the position of surgery in the provinces and whose loss we deplore: Mr. G. P. Newbold ;

Mr. R. A. Bickersteth, of virtuous father virtuous son ; and Mr. George Heaton, the first two of Liverpool, the last of Birmingham. All pupils of my own.

CONCLUSION.

My task, Sir, is ended, and in bringing it to a conclusion I would ask you to remember that if Hunter with the knowledge and means at his command seems to us to-day to walk haltingly or even often to have gone astray, shall not we seem to have done the same to those who read our story a hundred years hence? It is one of the lessons of history that each age steps on the shoulders of the ages that have gone before and that the value of each generation is in great part a debt to its forerunners.

The oration finished with the exhibition of a series of lantern slides, four of which are here reproduced, made from water-colour sketches for Jesse Foot who wrote a scurrilous life of John Hunter. They show Hunter as he appeared to his contemporaries, and not as he was idealised by Sir Joshua Reynolds in his well-known portrait. Sir D'Arcy Power stated that he was indebted to his friend, Mr. C. J. S. Thompson, for permission to show the drawings which are contained in a volume in the possession of the Wellcome Historical Museum.

THE DIAGNOSIS OF UNILATERAL PHRENIC NERVE PARALYSIS.

AN IMPORTANT POINT IN MEDIASTINAL
LOCALISATION.

BY SIR CHARLTON BRISCOE, BART., M.D.,
F.R.C.P. LOND.,

PHYSICIAN TO KING'S COLLEGE HOSPITAL.

THE diaphragm belongs by origin to the muscles of the neck, but in the process of the evolution of the body it has shifted its position to a lower plane while still retaining its original nerve-supply. The shift has thus entailed the development of a phrenic nerve trunk on each side, which in proportion to its length is liable to become involved in lesions of neighbouring organs.

From the frequency with which these neighbours are affected by disease we might expect unilateral phrenic paralysis to be a not uncommon event, a view which seems confirmed by the fact that 15 of the 30 cases on which this paper is based have been observed in the last 12 months. Yet, in general, the clinical diagnosis is one not often made, and the literature on the subject is scanty and unsatisfying, facts which suggest the existence of inherent difficulties such as have led to the condition being overlooked. Indeed, these difficulties are very real. One is obvious and ever present. We have not to deal with a simple muscle exerting a straightforward easily ascertained action upon fixed points, but with a double sheet of complex fibres hidden deep in the body, the actions of which are far from simple, and only to be recognised by effects which are not only for the most part indirectly produced, but are always complicated by the interfering action of other muscles. Other difficulties will appear in the course of this paper.

Literature.

The text-books in general state that when the whole diaphragm is paralysed there ensues overaction of the intercostals and of the accessory muscles of respiration, together with inspiratory recession of the epigastrium. When one half only is affected there may be limited propulsion of the epigastrium on the affected side. Oppenheim¹ states that Litten's sign may be absent and the respiratory sounds faint, and concludes that unilateral paralysis is difficult to detect. Nesbit² diagnosed a case as paralysis of the left phrenic nerve. At first there were over expansion and increased resonance of the left side of the chest. Later, dullness appeared over the root of the left lung in front. The case was one, however, of gradual

obstruction of the bronchi, and the post-mortem report lacks mention of involvement of the phrenic nerve. Monographs on mediastinal tumours contain but little mention of phrenic paralysis, and give no description at all of the resultant physical signs. Morrison Davies³ has recommended division of the phrenic nerve on one side for persistent infections of the corresponding lower lobe because it controls the expansion of this area. He does not, however, describe the physical signs which result from the operation. Schroeder and Green⁴ have produced the most important monograph on the subject. They describe a case in which the left phrenic nerve was torn during the removal of a tumour from the neck. After some temporary discomfort and increased rate of respiration the man was able to resume work at the end of three weeks. Nothing is said about the physical signs which resulted from the torn nerve, save that some dullness developed at the lower part of the left chest. These authors then made experiments on dogs, cutting one or both nerves. Their research was chiefly concerned with degeneration of the diaphragm. They gave a long survey of the literature of phrenic nerve lesions, records of which were inconclusive: they concluded that in man and most mammals a fringe of diaphragm is supplied by some of the lower intercostal nerves, but that this supply is not effective as a substitute for the innervation by the phrenics. Their most important conclusion was that division of one phrenic nerve is not necessarily fatal.

In the Arris and Gale lecture, 1919, on Collapse of the Lungs,⁵ I described some experiments carried out on rabbits. In these the animal was killed, generally under prolonged anaesthesia, at varying periods after section of the phrenic nerve on one side. Under these circumstances areas of deflation were found in both lungs, but were more marked on the homo-lateral side. The parts affected were (1) the apices of both lower lobes, (2) the adjacent parts of the upper lobes, (3) the free margins of the lower and to a less extent of the upper lobes. Section of the right nerve produced a greater effect than section of the left. The collapse was more marked at the end of three days than at later periods.

Clinical Material.

The material on which this communication is based consists of a series of 30 cases, 21 of which came to post mortem; 15 have been seen in the last 12 months. In six there was a history of syphilis. In these no complicating condition could be found in the neck, mediastinum, or abdomen, and four of them have recovered. A seventh was a case of aneurysm, confirmed post mortem. In three cases the condition was due to primary glandular enlargement. Two came to post mortem. In 12 patients there was a primary growth in the neighbourhood of the root of the lung. Ten were verified post mortem, the thymus being the probable starting-point of the growth in two. The other two died after leaving hospital. In seven other instances the condition was due to malignant deposits secondary to primary growth elsewhere. All came to post mortem. In the remaining case, a boy who recovered, the lesion was probably due to tuberculous mediastinal glands.

Anatomy of the Phrenic Nerves.

The phrenic nerve derives its fibres from the anterior primary divisions of the spinal nerves, mainly and constantly from the fourth, and variably from the third and fifth cervical. It has a fairly constant communication with the nerve to the subclavius (C5, C6), from which nerve further fibres may be derived. It descends usually in front of, but sometimes embedded in, the substance of the anterior scalene muscle and thence, passing downwards between the subclavian artery behind and the subclavian vein in front, gains the mediastinum, where it is closely related to the subclavian artery. So far the course and relations of the right and left phrenic nerves are similar. In this the first part of its course I have found the nerve involved and constricted by

lymph glands in seven cases, four of which were on the left side.

In the mediastinum the relations differ on the two sides of the body. On the right side the nerve comes into close relationship with the innominate vein and superior vena cava, and follows the latter until the reflection of the pericardium is encountered. In the upper part of its intrathoracic course the nerve lies about one-third of an inch in front of the right lung. The right vagus is not a near relation. On the left side the phrenic enters the mediastinum in front of the left subclavian artery, and, passing downwards in front of the arch of the aorta, gains the pericardium. In this part of its course the nerve is in close relationship to the left innominate vein for about half an inch, and to the aorta for about 2 inches. The left vagus, prior to giving off the recurrent laryngeal nerve, crosses posteriorly to, and then lies half an inch to the inner side of, the phrenic. Between the arch of the aorta and the pericardium the root of the lung is in an immediate posterior relation to the nerve. The remains of the thymus are also near the nerve and anterior to it. The main mass of mediastinal lymph glands lies behind the arch of the aorta and internal to the phrenic nerves. In this part of its course I have found the right phrenic nerve implicated in four instances, and the left nerve in six. The superior vena cava on the right and the vagus on the left are liable to be involved at the same time.

On the pericardium the nerves are embedded in a fibrous sheath on the outer surface of the pericardium between it and the pleura. The left nerve is on a plane somewhat anterior to that of the right. Near the diaphragm they frequently branch into posterior and antero-lateral branches, and the latter subdivide to supply the anterior and lateral parts of the diaphragm arising from the eleventh and anterior parts of the ribs. In this region each nerve was found to be involved in two cases. The lesion generally arises from an implanted secondary neoplastic growth, or from the invasion by such growth of an adhesion extending from the lower and anterior part of the mediastinal surface of the upper middle or lower lobes. In several cases the nerve has been affected at more than one point.

Diagnostic Criteria.

During the progress of investigation a certain group of clinical signs, to be described in a subsequent paragraph, came to be regarded as pointing to unilateral phrenic paralysis. The diagnosis was not considered established unless these signs were confirmed by: (a) post-mortem evidence of a point of pressure on the nerve combined with macro- and microscopic change in the diaphragm; or (b) X ray evidence of defective movement of one side of the diaphragm at a time when the presence of any complicating factor, such as pleural effusion, could be excluded. Of 20 cases which showed this limitation of movement on X ray examination, 13 were subsequently confirmed post mortem.

Concerning X Ray Examinations.—Verification of the diagnosis by X ray or post-mortem examination appears simple, but there are points of difficulty in connexion with each, and these are of such importance that they must be dealt with in detail. Most patients with phrenic paralysis are too ill for prolonged examination, and cannot tolerate the supine posture for any length of observation. The X ray investigator does not make a sufficiently detailed examination of the diaphragm unless especially requested to do so. Even when his attention is focused on this point the outline of the diaphragm may be far from clear. On deflation the lung becomes somewhat opaque to X rays, both in and out of the body, and this obscures the view and may give rise to a false report of the presence of fluid.

The typical appearance is well described by Woodburn Morison.⁶ The diagnostic feature is the "reversed movement" of the paralysed half of the diaphragm, which not only does not descend, but may even ascend, while the sound half is contracting.

Morison draws attention to the fact that this is best seen during quiet breathing.

The appearance of a "high diaphragm," often considered typical, is not by any means always present, and slight elevation, when it does occur, can readily pass for a normal difference in height. If the patient be requested to take a deep breath the abnormal movement may be obscured, either by the excessive contraction of the sound side dragging down the paralysed side, or possibly by nervous impulses of greater intensity breaking through the nerve block. Or, again, since the conscious deep respiration following the request will be of thoracic type, neither half of the diaphragm may be depressed. Reports such as "some restriction of movement," "scarcely any movement," "slight movement" have been given for cases in which the clinical diagnosis was clear during life and confirmed post mortem.

In several of my cases another sign of considerable interest has been observed—namely, late inspiratory displacement of the mediastinum to the unaffected side. A further difficulty arises when the lung or diaphragm on the paralysed side is adherent to the chest wall. In this event definite diagnosis by X ray is impossible.

Concerning Post-mortem Examination.

One difficulty exists in the fact that but few of these cases die without the presence of some complication such as pleurisy, with or without effusion, bronchial obstruction, &c. In my series of 21 post-mortems only five subjects were free from some such complicating lesion. Another difficulty is the relative absence of clearly demonstrable changes in the phrenic nerve below the level of the lesion. This subject is fully dealt with later.

As the first step in the post-mortem, it is absolutely essential to obstruct the trachea, in order to prevent the usual deflation of the lungs when the thorax is opened. The trachea should be exposed in the neck and an opening made into it just large enough for the insertion of a cork. A cork is introduced, pushed just below the opening, and a stout ligature firmly tied round the trachea against the cork. The sternum and cartilages can now be removed by cutting through the diaphragm below the costal margin, lifting up the lower ribs, and cutting each costal cartilage under inspection, up to and including the second. The clavicles should then be divided at the junction of the middle and outer thirds and the inner portion removed, the first ribs cleared above carefully and divided by the saw opposite the section through the clavicle, and the whole sternum removed with the neck muscles attached. This leaves an easy and clear dissection of the phrenics.

A survey should then be made of the general position of the organs. The striking feature is the retraction of the upper lobes of the lungs in the middle line, the upper mediastinum and pericardium being left widely exposed. The tip of the lower lobe will be found in the vertical or coronal plane of the phrenic nerve, and will not be visible till the thoracic wall is pulled outwards. This lung retraction is more pronounced on the side of the paralysed nerve. The upper lobes are inflated and pale, and tend to encroach on the area occupied normally by the lower lobes. This is particularly marked in the paravertebral grooves where the upper lobes may extend as low as the fifth or sixth ribs. The lung on the affected side is smaller than its fellow. The position of the liver is frequently of interest. With right phrenic paralysis the lower border will be horizontal at right angles to the long axis of the body. With left-side paralysis the angle between the lower border and the median vertical plane will be more acute than normal. It may be reduced to some 30°. This displacement is due to the excessive and unbalanced action of the non-paralysed side, the liver being fixed to the diaphragm at the opening of the inferior vena cava. On examining the lungs after removal, the lower lobes are relatively shrunken and show areas of deflation,

marked in the paravertebral grooves, and complete at the free margins; the upper lobes, except near the intralobar fissure where the condition may resemble that in the adjacent lower lobes, look natural or more pale than normal, and are fully distended. On the whole the lungs are smaller than normal, with inflated upper lobes and partially unexpanded lower lobes.

In the diaphragm the following changes may be seen on the affected side. The colour may be normal or appear more brown and less purple than usual. The vessels may be dilated. The connective tissue fat is usually diminished in amount, this being best observed from the peritoneal surface. To the touch the muscle feels thin, and the pleura and peritoneum are found to strip too easily. When closely inspected the muscle sheet presents a plicated appearance, the individual bundles of muscle-fibres being unduly differentiated because they are more separate than normal. Differences in height have not been observed, but the length from attachment to insertion of corresponding portions of muscle on the two sides is not altered. In three patients the rather unusual condition was found of pleural fluid pressing the diaphragm down to such an extent as to make the lower surface convex. In each case this occurred on the paralysed side only.

In all cases microscopical sections of corresponding areas of muscle from the two sides were examined. Muscle from the paralysed side shows "clumping" of individual muscle-fibres, so that, instead of each being separated from its neighbour, they occur in close apposition in groups numbering up to 20. This explains the appearance of plication seen by the naked eye. The muscle striation may be defective and the number of nuclei increased. Fatty degeneration has not been observed. These changes are probably due to disuse and, up to six months' duration, do not seem to vary much in different specimens. In one specimen, probably of three years' duration, much increase of fibrous tissue had taken place, but many muscle-fibres could still be recognised. In three cases marked by progressive bronchial obstruction, in which terminal dyspnoea had been extreme, the muscle-fibres on the unaffected side were broken into squares and parallelograms, calling to mind the condition of fragmentation seen in heart muscle.

In respect of muscle changes secondary to nerve lesions Platt and Bristow⁷ state that (a) disuse atrophy is the direct result of the severance of axis-cylinders (denervation), and (b) trophic changes are dependent always on the existence of some form of irritation acting on vaso-motor and sensory axons which still retain their integrity.

The anatomical lesion affecting the nerve may be of three kinds: (1) The nerve may be completely surrounded by growth which in some instances even invades its sheath. In two of my cases the nerve tore easily in the growth. (2) It may be compressed between two enlarged glands and show an obvious constriction mark when they are separated. (3) It may be constricted or pressed out in the form of a ribbon by inflammatory fibrous tissue. Below the point of involvement the nerve trunk in some instances appeared quite normal. In others, though normal in colour, it was attenuated, while in others again it was swollen and of creamy or light yellow colour. In all cases the phrenic nerves of both sides have been sectioned and stained in the ordinary way, and in a considerable proportion the special methods for demonstrating nerve degeneration have been applied, but without revealing any startling changes. Staining by Marchi's method shows nothing abnormal except slight changes in the myelin sheath only at the point of constriction; by Weigert Pal, nothing definite; by Cajal—for nerve fibrils—nothing precise. In a transverse section stained by Van Gieson there may be seen shrinking of the nerve from the sheath, irregularity in outline of nerve fibres, defect of staining of the axis-cylinders, and some increase of nuclei of the endoneurium, but all these changes are slight and debatable, especially in view of the "artefacts"

which may result from post-mortem changes and handling.

Pressure Effects.

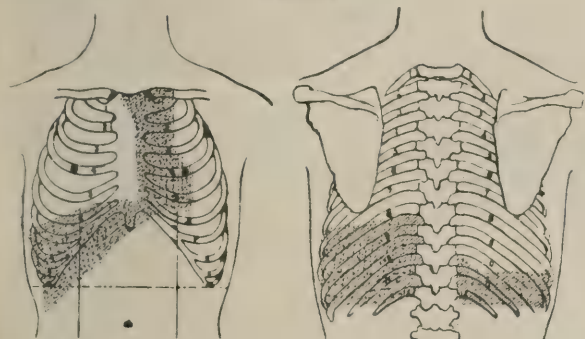
The absence of more definite pathological lesions in the nerves might appear to throw doubt on the evidence on which my thesis is based. However, there seems to be little doubt that pressure upon a nerve may cause complete paralysis without producing histological changes such as we can, at present, recognise. In two of my cases of this series the lesions involving the phrenic nerve also involved the vagus central to the origin of the recurrent laryngeal nerve. That the left vocal cords of these patients were paralysed admits of no doubt. Post mortem the laryngeal muscles and recurrent laryngeal nerves showed exactly the same slight changes as the diaphragm and phrenic nerves. Dr. Wilfred Harris allows me to state that in a case of median nerve

The whole question of the effects produced by pressure on nerves still remains to be worked out. There is, however, ample justification for assuming (a) that pressure sufficient to paralyse a nerve may readily occur in the body; (b) that such pressure need cause but little objective change in the nerve; (c) that degenerative changes are not demonstrable in the muscle at an early date; and (d) that nerve-block may be partial.¹²

Physical Signs of Phrenic Paralysis.

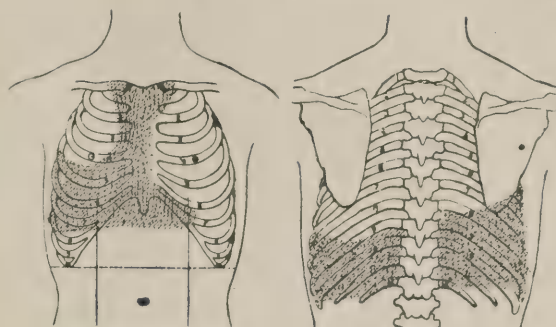
The physical signs will be dealt with in the order of importance. The examination should be made with the patient sitting and the back inclined at an angle of 45°, the head resting on a pillow. He should not be allowed to talk. A skin pencil should be used to mark the extent of resonance. When examining the back he should draw the knees up and rest the elbows on the knees and chin on the palms. The whole examination

FIG. 1.



Paralysis of left phrenic.

FIG. 2.



Paralysis of right phrenic.

paralysis due to a fibrous band full movement followed within 24 hours of the operation which relieved the pressure. Similarly, though for a time the paralysis may be marked, the rapid recovery which may be seen in crutch palsy or Saturday night paralysis negatives the idea that loss of function is necessarily accompanied by structural changes which can be demonstrated. Buzzard and Greenfield,⁸ discussing long-continued pressure, write, "In the earlier stages the condition is one of loss of function without destruction of axis-cylinders." Oppenheim,⁹ quoting Dejerine and Bernhardt, states that organic changes at the point of moderate pressure are slight and limited to the myelin. If, however, compression is severe or prolonged changes may extend to the whole distal section of the nerve. They note, however, that the rapidity with which recovery takes place when a nerve is freed from compression by callus or bone shows that these organic changes are not always present. The prevalent teaching, in fact, indicates that the relative absence of histological nerve change post mortem does not invalidate a diagnosis of paralysis during life. With regard to the degree of pressure necessary to prevent the conduction of a stimulus, very different results have been given by Ducceschi,¹⁰ Meak and Leaper.¹¹

In some experiments performed in 1908 I found that three minims of 5 per cent. carbolic acid or 10 per cent. formalin injected into the pleural cavity, or applied to the phrenic in the neck of a rabbit, paralysed the diaphragm of that side, inhibiting the normal respiratory impulse. Electrical stimulation of the phrenic nerve in the neck above the block evoked contraction of the diaphragm, which again did not contract when the electrical stimulation ceased. Other motor nerves behaved similarly. These observations suggest that nerve-block may be partial, and that slight degrees of pressure which can obstruct weak impulses may prove ineffective against the passage of impulses from stronger stimuli.

should be gone through with quiet, natural respiration before any deeper breathing is requested. The signs described are detected in this stage—deep breathing may reveal very little abnormal.

1. *Manubrial Lack of Resonance.*—This will be found to be increased. The normal pleura is attached along a line extending from the central point of the junction of the manubrium and gladiolus to a point behind the sterno-clavicular articulation. The lack of resonance extends outwards in planes roughly parallel to this line; the lower end advances somewhat more than the upper, so that when the junction of the inner and middle thirds of the clavicle is not resonant the inner border of the resonance is vertical and parallel to the middle line of the sternum, meeting the deep cardiac dullness. When the left phrenic is paralysed the left side only is defective. When the right is affected, both sides are liable to be deficient in resonance. Such "dullness" is often ascribed to enlarged mediastinal glands which may not be found at the post-mortem. Regarded as lack of resonance, caused by retraction of the lung border, the findings are more intelligible. When examined after a deep breath the areas of lack of resonance will diminish to extend again when quiet breathing is resumed.

The structures which, when abnormal, can by pressure prevent the expanded lung filling the pleura, are the thymus, aorta and deep mediastinal glands, pleural adhesions, and possibly affections of the oesophagus. There are few glands between these structures, and the manubrium and these are but seldom affected. In very few instances can the above pathological conditions produce by pressure a lack of resonance which returns with a deep breath. When both phrenic nerves are involved, the extreme thoracic effort produces a further expansion of the upper lobes and renders this area resonant.

2. *Lower Level of Pulmonary Resonance.*—This is raised. Posteriorly it may extend as high as the seventh rib in the scapular line. When the left

phrenic alone is involved the elevation is likely to be on the left side only. With right phrenic involvement the level on the left may be found as high as the ninth and on the right a little higher—e.g., eighth. Anteriorly on the right side the level may be as high as the third space. If the level is marked out all round it will be found to rise in the posterior axillary line and again between the nipple line and the sternum. The explanation of the first-mentioned elevation is that at this point the muscle-fibres of the diaphragm are longer than elsewhere, and when paralysed relax to a greater extent. Of the second, that the crus exerts its direct pull towards this point on the chest wall, and when this tension is eliminated the anterior paralysed portion of the diaphragm is raised out of proportion to the adjacent and outer part which is less influenced normally by the crus. On the left side the stomach resonance renders percussion in the axilla uncertain. The spleen may occasionally be made out to be raised, as indicated by a rise of the normal level of dullness.

3. *Type of Breathing.*—Normal inspiration is effected by descent of the diaphragm—the so-called “abdominal” element—with raising and expansion of the bony thorax—the so-called “thoracic” element. The relative proportions in which these two elements come into action varies in different individuals, and it is in general true that the more conscious the breathing the more the thoracic element is called into play, also the older the patient the less the thorax is used. The value of deductions as to the relative proportions of the thoracic and abdominal breathing in any case will largely depend on the observer's experience, but it is an invariable rule that conclusions should not be drawn in the early stages of examination, when the patient's attention is more or less turned to his breathing, or from a voluntary forced inspiration. The last will certainly be almost purely thoracic.

With inspiratory descent of the diaphragm the epigastrium should be pushed forward. When both phrenic nerves are paralysed conditions are reversed, and epigastric recession is usually very marked. With unilateral paralysis matters are less simple. In most cases the epigastrium is protruded, but frequently with unsteady or intermittent force. In some normal protrusion is reduced and forms a contrast with the simultaneous thoracic action, which is increased. In a few cases there has been a clear difference of propulsion in the two sides of the epigastrium in favour of the sound side. A test may be applied by laying the hand on the umbilicus, and asking the patient to press it up. With bilateral paralysis this is impossible, but with unilateral paralysis it can be accomplished, and with a considerable amount of force.

The diaphragm, in conformity with the general law governing muscle, acts best when its fibres are under tension. Tension is provided by intra-abdominal pressure and is reduced when the abdominal wall is lax.¹³ When such tension is absent the tendency to epigastric recession is greater, as was well shown in one of my cases which developed ascites. The degree of epigastric recession varied with the quantity of fluid, being marked after tapping and disappearing again as fluid reaccumulated. Recession is marked when general wasting has occurred.

With regard to the thoracic element of inspiration, in cases where both phrenic nerves are involved and dyspnoea becomes extreme, thoracic expansion is increased to a very marked degree. In such cases the upper lobes are markedly over-distended and the manubrium becomes resonant, while the signs in the lower part of the chest become more marked.

With unilateral paralysis thoracic respiration is generally increased. Comparison of the two sides of the chest does not always show greater movement on the affected side, indeed the reverse may occur. In a number of these cases thoracic movement is peculiar, inasmuch as the chest is held elevated by the scalenes and expanded by the intercostals, neither of which relax to the usual degree during expiration. These patients are apt to suffer from persistent pain in the

shoulder and down the arm. In three individuals with unilateral paralysis who lived for a considerable period thoracic movement on the sound side developed to such an extent that with each inspiration the chest came forward in an arc, the centre of which appeared to lie somewhat outside the opposite axilla. The resultant “swinging” chest is a remarkable object.

4. *Auscultation* reveals a deficient inspiratory murmur on the paralysed side. The expiratory murmur is often of equal length and intensity on the two sides of the chest. The breath sounds may be abnormal, having a puerile or broncho-vesicular character. Voice sounds may be altered, and if examined before a deep breath be taken, ægophony may usually be heard at the lower level of the pulmonary resonance. With a deep breath everything may be altered, and the variations seen on different occasions, even in the same individuals, are remarkable. The differences are readily accounted for by variations in the degree of deflation and air exchange.

5. *Cardiac Dullness.*—Owing to the lung retraction this is increased on the affected side, the abnormal extension being decreased by a deep breath. This is apt to lead to the conclusion that the heart is displaced or enlarged, conditions which can be shown by X rays not to exist.

6. *Cardiac Impulse.*—Again, owing to lung retraction the area over which pulsation is felt may be unduly wide and lead to false impressions. In left-sided paralysis the apex beat may be displaced outwards, and may also be rotated upwards to the fifth rib or fourth space. In right-sided paralysis pulsation, the auricular origin of which can be demonstrated by the polygraph, may appear to the right of the sternum. The apex beat is not displaced unless dyspnoea is severe, in which case it may be displaced down to the sixth or even seventh space, and slightly outwards, but may be obscured by the usual simultaneous over-inflation of the left upper lobe. This is due to overaction on the part of the sound left side of the diaphragm.

7. *Differences in the Movement of the Costal Margin.*—In quiet breathing there will frequently be no difference on the two sides. If a difference is present the costal margin of the paralysed will move outward, more than the normal side. A forced inspiration may either accentuate or diminish the differences according to the proportionate activity of the thorax and diaphragm. Hoover¹⁴ lays great stress on the movement of the lower thoracic margin in cases of pleural effusion, and states that the more horizontal the diaphragm the greater the indrawing of the costal margin and vice versa.

8. *Tracheal Displacement.*—The trachea may be situated mesially or may be displaced, either away from or towards the affected side, whichever that may be.

It has been noted that the signs are the more marked when the right side of the diaphragm is affected. This is no doubt due to the presence of more muscle in the right crus of the diaphragm, the force of which is expended in the postero-anterior direction rather than elsewhere. It tends to form a band between the spine and meso-lateral costal margin, and will be scarcely displaced to the right side by the weaker fibres arising from the ribs in the right axilla. The left crus is much less developed, and will be proportionately less able to resist the corresponding lateral pull. Accordingly, when the right half of the diaphragm is inoperative and this antero-posterior force is in abeyance, the fibres from the left costal margin will more easily displace the central tendon and structures attached to the left.

Arising from the diaphragm along this line of traction is the right side of the pericardium, which is especially reinforced here by fibrous tissue, and is extended upwards to the cervical fascia through the superior cava and mediastinal fascial coverings. This, when controlled by the right crus, must tend to steady the mediastinum and prevent displacement. On the left side the pericardium as a ligament is

practically of no consequence. There will accordingly be a greater tendency to pull the heart and mediastinum to the left when the right side is paralysed than to the right when the left phrenic is affected. The absence on the left side of a distending force on the muscle fibres, such as is constantly exerted by the liver on the right side, must render the left half of the diaphragm normally less efficient than the right, and accordingly the effects of the left-sided paresis less severe than that of paresis of the right side. I think these are reasons for the lesser degree of discomfort when the left side is paralysed.

Symptoms of Phrenic Paralysis.

This communication is not concerned with the general signs and symptoms of mediastinal or other lesions. There are, however, three symptoms which deserve mention because they are directly connected with the phrenic paralysis.

1. *Pain.*—At the onset of paralysis there may be a history of acute pain on the affected side, either over the shoulder and down the arm, or in the neck or thorax. The pain is accentuated on pressure over the scalene and intercostals, and is due to undue stress and fatigue of these muscles.¹⁵ Similar pain may occur behind the sternum owing to the stress of the triangularis sterni and transversalis abdominis, expiratory muscles which also become tender to pressure. These pains are particularly connected with the onset of phrenic paralysis because of the sudden call on these muscles for extra effort to compensate for the diaphragmatic defect, but later they may accompany extra effort due to exertion.

2. *Respiratory Distress.*—Dyspnoea is apt to be well marked at the onset of paralysis, but then diminishes and reaches a stationary condition after 10 or 14 days. As might be expected, this dyspnoea of onset is absent in patients in whom the paralysed half of the diaphragm was previously anchored to the chest wall by adhesions, as was noted in three of my cases. There is considerable difference in the degree of dyspnoea experienced by different individuals. Some can walk about easily and only become distressed on exertion, whereas others can hardly walk at all owing to dyspnoea and pain of the type mentioned. In general the younger the individual the less the distress. In older people the disability varies with the capacity to expand the thorax—in other words, it is proportional to the amount of senile fixation of the bony framework.

3. *Posture.*—When in bed patients with unilateral phrenic paralysis prefer to be slightly propped up or to lie on the affected side. Even those who are able to walk without undue distress become uncomfortable when lying on the sound side. It can be shown by X ray examination that when the body is in the lateral position it is normal for the lower half of the diaphragm to become relatively quiescent, throwing extra work on the upper half; hence when the latter is paralysed distress is bound to be felt. The work of Adams and Pillsbury¹⁶ supports this view.

Summary and Conclusions.

A syndrome recognisable clinically has been described the signs of which are due partly to defective action of one-half of the diaphragm, and partly to the resultant incomplete expansion of the lungs. In this series of cases the causal factor has been pressure on the phrenic nerve of one side. This syndrome is important as assisting in the diagnosis and localisation of intra-thoracic lesions. Too much stress cannot be laid on the importance of making the physical examination during quiet and natural breathing.

I have to thank my colleagues for allowing me to investigate the cases under their care, and Prof. Frazer of St. Bartholomew's Hospital for a similar courtesy in one instance. I am also greatly indebted to Dr. Wiltshire for his help and criticism of this paper, to Dr. Greenfield and Dr. da Fano for advice on the microscopic technique, and to Mr. S. Mitchell for the preparation of the sections.

(Continued at foot of next column.)

NOTE ON A CASE OF PARENTERIC FEVER CAUSED BY *B. COLUMBENSIS CASTELLANI.*

BY H. N. C. VAN GEYZEL KELAART,
M.R.C.S. ENG.,
RESIDENT MEDICAL OFFICER, ITALIAN HOSPITAL, LONDON.

FOR some years it has been noted by various observers, and principally by Castellani, Chalmers, Balfour, and Archibald, that in tropical and sub-tropical zones, and occasionally also in temperate zones, there occur a comparatively large number of cases clinically somewhat resembling typhoid or paratyphoid, in which, however, the bacteriological examinations for typhoid and paratyphoid are constantly negative, while other organisms are found which are in all probability the true aetiological agents.

Castellani has introduced the term *parenteric* to indicate these cases, and he has suggested the following classification of intestinal fevers: 1. Fevers due to *B. typhosus* Eberth, *B. paratyphosus* A Schottmüller, *B. paratyphosus* B Schottmüller, *B. paratyphosus* C Hirshfeld = enteric. 2. Fevers due to intestinal bacilli which differ from typhoid and paratyphoid bacilli = parenteric. To cover both groups of fevers, enteric and parenteric, he introduced the term "enteroid" (enteroidea).

The best known types of parenteric are *B. asiaticus* parenteric and *B. columbensis* parenteric, both first described by Castellani. The former has recently been thoroughly investigated in Egypt by Khaled.

Clinical Record.

It may be of interest to put on record a case of *B. columbensis* parenteric which I had the opportunity of investigating at the Italian Hospital, London, a few months ago:—

Miss N. B., aged 26, sister-in-charge of a medical ward. Nothing important in her past medical history; never had typhoid. Has been residing in London since March, 1923; always in good health. At the beginning of May, 1924, began to feel somewhat tired, complained of headache; had small nasal hæmorrhage. From the 9th on she took her temperature daily, morning and evening; on the 9th in the evening it was 100°, on the 14th, 102°. The temperature in the early morning varied according to her statements from 99° to 100°. She continued working until the 15th, when, feeling very bad, she reported sick to the matron, and I saw

(Continued from previous column.)

PHRENIC NERVE PARALYSIS: REFERENCES.

1. Oppenheim, H.: Text-book of Nervous Diseases, translated by Bruce, 1911, i., 423-5.
2. Nesbitt, G. E.: Dublin Jour. Med. Sci., 1917, cxliii., p. 353.
3. Morriston Davies, H.: Brit. Med. Jour., 1918, i., 392, and Quarterly Jour. Med., 1918, xi., 205.
4. Schroeder, W. E., and Green, F. R.: Amer. Jour. Med. Science, 1902, cxxiii., 196.
5. Sir Charlton Briscoe: The Mechanism of Post-operative Massive Collapse of the Lungs. Quart. Jour. Med., 1920, xiii., 293.
6. Woodburn Morison, J. M.: Elevation of the Diaphragm, Unilateral Phrenic Paralysis, Archives of Radiology and Electro-therapy, 1923, xxvii., et seq.
7. Platt, H., and Bristow, W. R.: Brit. Jour. Surg., 1924, xi., 535.
8. Buzzard, E. F., and Greenfield, J. G.: Pathology of the Nervous System, 1921, p. 100.
9. Oppenheim, H.: Text-book of Nervous Diseases, translated by Bruce, 1911, i., 404.
10. Ducceschi, V.: Archiv für Physiologie Pflüger, 1901, lxxxiii., 38; Luciani Physiology, translated by F. A. Melby, 1915, iii., 193.
11. Meek, W. J., and Leaper, W. E.: Effects of Pressure on Conductivity in Nerve and Muscle, Amer. Jour. Physiol., 1911, xxvii., 308.
12. Bernhardt, M.: Erkrankungen der Peripherischen Nerven, 1902, i., 76.
13. Grace Briscoe: The Muscular Mechanism of the Diaphragm, Jour. of Phys., 1920, liv., p. 46.
14. Hoover, C. F.: Jour. of Amer. Med. Assoc., 1919, lxxiii., 17.
15. Sir Charlton Briscoe: The Origin of the Anginal Syndrome. THE LANCET, 1921, ii., 1257.
16. Adams, R. D., and Pillsbury, H. C.: Archives of Int. Med., 1922, xxix., 245.

Table Showing Biochemical Characters of B. Columbensis and Some Other Pathogenic Intestinal Germs.

Bacteria.	Motility.	Gram.	Gelatin.	Serum.	Litmus milk.	Lactose.	Saccharose.	Dulcete.	Mannite.	Glucose.	Maltose.	Dextrin.	Raffinose.	Arabinose.	Adonite.	Inulin.	Sorbit.	Galactose.	Levulose.	Inosite.	Saline.	Amalgalin.	Isodulcite.	Erythrite.	Glycerine.	Indol.	Voges-Prosh.	Broth.	
1	<i>B. columbensis</i> Castellani (1905)	+	0	0	0	A Vs, Alk, D, or A	0	0	A, G A, G A, G A, G	0	0	0	0	A, G	0	0	0	A, G A, G A, G	0	0	A, G	0	A, G	0	A, G	+	0	Gt	
2	<i>B. asiaticus</i> Castellani (1905)	0	0	0	0	A, Alk	0	A, G	0	A, G A, G A, G A, G	0	0	0	0	0	0	0	A, G A, G A, G	0	0	0	0	A, G	0	A, G	+	0	Gt	
3	<i>B. asiaticus mobilis</i> Castellani (1914)	+	0	0	0	A, Alk	0	A, G	0	A, G A, G A, G A, G	0	0	0	0	0	0	0	A, G A, G A, G	0	0	0	0	A, G	0	A, G	+	0	Gt	
4	<i>B. kondensis</i> Castellani (1912)	+	0	0	0	A S, D, Alk	0	A S	0	A A A	0	0	0	0	A	0	0	0	A A A	0	0	0	0	A A	0	A A	0	0	Gt
5	<i>B. tularensis</i> Castellani (1909)	+	0	0	0	Alk, D	0	A	0	0 A 0 0	0	0	0	0	0	0	0	0	A A A	0	0	0	0	0	0	+	0	Gt	
6	<i>B. prinitzei</i> Castellani	+	0	0	0	A	0	0	0	A A A	0	A	0	0	0	0	A	0	A A	0	0	0	0	0	0	+	0	Gt	
7	<i>B. paratyphosus A</i> Schottmüller	+	0	0	0	A	0	0	A, G A, G A, G A, G	0	0	0	A, G	0	0	0	0	A, G A, G A, G	0	0	0	0	A, G	0	0 or A S	0	0	Gt	
8	<i>B. paratyphosus B</i> Schottmüller	+	0	0	0	A, Alk	0	0	A, G A, G A, G A, G	0	0	0	A, G	0	0	0	0	A, G A, G A, G A, G	0	0	A, G	0	A, G	0	0	0	0	Gt	
9	<i>B. typhosus</i> Eberth	+	0	0	0	A	0	0	0 A A A	0	A A A	0	A S	0	0	0	0	A A	0	0	A 0	0	0	0	A S	0	0	Gt	
10	<i>B. veblodia</i> Castellani (1909)	+	0	0	0	A, Alk	0	0	A, G A A, G A, G A, G A, G	0	0	0	0	0	0	0	0	A, G A, G A, G A, G	0	0	A 0	0	A	0	0	0	—	Gt	

Abbreviations.—A = acid; G = Gas; C = Clot; D = Decolourised; Alk = Alkaline; S = slight; A. Alk = Acid then alkaline; Gt = general turbidity; Vs = very slight; 0 = negative result—viz., neither acid nor gas in sugar media, non-production of indol, non-liquefaction of gelatin or serum as the case may be; + = positive result.

Remarks.—Certain strains of *E. columbensis*, serologically typical, ferment dextrin; certain strains of *E. asiaticus*, serologically typical, have no action on dextrin, raffinose, and sorbitol.

her. She was feeling very tired and complained of severe headache and slight abdominal discomfort and constipation. Tongue very coated; nothing worth noting at the examination of the chest; abdomen somewhat distended, no roseola; spleen and liver not palpable; no albumin or sugar in the urine. She was put on liquid diet and so-called intestinal disinfectants. The temperature, at first subcontinuous then tending to be intermittent, lasted two weeks more (probably three weeks in all). No complications arose.

Bacteriological Examinations.—The blood was examined by serological tests during the fever and after defervescence. The agglutination was always completely negative for *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, and *B. paratyphosus* C, also for *M. melitensis* and *M. parameitensis*, also for *B. asiaticus* (variety *mobilis* and variety *immobilis*); the microscopical examination of films for malaria was negative. The blood agglutinated *B. columbensis* up to a dilution of 1:160. Further agglutination tests showed that the agglutination gradually decreased until, on Sept. 14th, it was 1:40.

Stools.—No typhoid or paratyphoid bacilli found; a bacillus was grown with all the characters of *B. columbensis*. It was agglutinated by the patient's blood in slightly higher dilutions than the laboratory strains of *B. columbensis*; it was not agglutinated by typhoid or paratyphoid sera. Highly agglutinated, more than 1: 600, by *B. columbensis* serum kindly supplied by Dr. Mackenzie Douglas.

Remarks on the Strain of B. columbensis Isolated.—The principal characters of this strain isolated from the stools are as follows : It is a motile, Gram-negative bacillus easily stained by the usual aniline dyes. Lactose is not fermented; this is interesting in view of the statement made by Castellani and others that certain strains of this bacillus when recently isolated have an inconstant action on lactose, generally not fermenting it, but occasionally doing so and producing at times a slight amount of gas. So far my strain has been always negative as regards lactose. The action of my strain on other carbohydrates is as follows :—

Glucose: acid and gas. Maltose: acid and gas. Saccharose: no change. Dulcitol: no change. Arabinose: acid and gas. Glycerine: acid and gas. Lævulose: acid and gas. Galactose: acid and gas. Raffinose: no change. Mannitol: no change. Inositol: no change. Dextrine: no change.

In litmus milk there is a slight acidity at first, then the medium becomes slightly alkaline. My strain produced indol, and the Voges-Prosk reaction was negative. Gelatin and serum did not become liquefied. In broth and peptone water it produced a general turbidity. Serologically the strain isolated is identical with the laboratory strains; it is not agglutinated by typhoid and paratyphoid sera, it is agglutinated in high dilution by columbensis serum.

The biochemical characters of *B. columbensis* are recorded in the table, together with the biochemical characters of a few other intestinal bacilli. A complete table of intestinal bacilli may be found in Castellani and Chalmers's "Manual of Tropical Medicine," p. 944.

Résumé and Conclusions.

The patient developed a fever which lasted approximately three weeks. All the serological reactions for typhoid and paratyphoid were constantly negative as well as the bacteriological examination of the stools for the same germs. Instead the blood showed marked agglutination (1:160) for *B. columbensis*, which has gradually decreased since the fever ceased. From the stools a bacillus was grown with the characteristics of *B. columbensis*; it was well agglutinated by the patient's blood in slightly higher dilution than the laboratory strains.

In my opinion the case I have briefly described is in all probability a case of "parenteric fever" due to *B. columbensis* Castellani. This type of parenteric is also known as "febris columbensis."

References.

- Castellani: Ceylon Branch of the British Medical Association, 1905-1914; *Journal of Tropical Medicine and Hygiene*, 1912.
Castellani and Chalmers: *Manual of Tropical Medicine*, third edition, 1919.
Ibid.: *Annales de l'Institut Pasteur*, 1920.
Khaled: *Journal of Hygiene*, 1923, vol. lxxi, No. 4.
Lal: *Annals of the Tropical Medicine and Hygiene*, *THE LANCET*, 1916, i., 350.
Spaar: Case of Fever due to *B. Columbensis* Castellani, *Journal of Tropical Medicine*, Nov. 15th, 1915.

OBSERVATIONS UPON THE EFFECT OF AN ANTISERUM UPON CANCER CELLS IN VITRO.

BY THOMAS LUMSDEN, M.D. ABERD.

(From the Department of Experimental Pathology,
Lister Institute.)

In 1906 Ehrlich¹ observed that a mouse tumour inoculated into a rat survived and increased in size for some days and then died out. Thereafter the rat was immune to the tumour concerned. This observation has been confirmed by many workers. The serum of a rat thus immunised has no appreciable curative effect when injected into a mouse bearing the tumour. Using the method of tissue culture, previously described,² I found that the mouse cancer cells may retain their activity in such a serum for a month or more, which indicates that the latter must contain few if any antibodies. It seemed possible, however, that by repeating the inoculations into the rat an effective amount of antibodies might be produced. I was encouraged to pursue this idea by the fact observed by Ledingham³ in 1914, that a potent anti-platelet serum was produced in the rabbit only after repeated inoculations of guinea-pig blood platelets. Several interesting papers on immunity to cancer and reviews of the literature up to 1912 are to be found in the third and fifth scientific reports of the Imperial Cancer Research Laboratory. Since that date no fresh facts of outstanding importance have been forthcoming on this subject.

Method.—A mouse mammary carcinoma (M 63 of the Imperial Cancer Research Laboratory) was dissected out carefully, with rigid aseptic precautions, washed in normal saline, and finely divided up with scissors. Of this 0.1 c.cm. was inoculated subcutaneously into two rats. Tumours appeared and grew for 10–12 days and were then reabsorbed. Thereafter, 1 c.cm. of similar tumour material was injected into the peritoneal cavity of each rat, weekly for eight weeks.

Seven days after the last injection in Rat 1, and three days after in Rat 2, the serum of the rats was collected and stored in sealed capillary tubes made of "resistance" glass. An anti-rat-cancer serum was similarly made from two rabbits. Cancer cells, various normal tissues from young animals, and both of these together were then cultivated in the antisera, with controls in normal rat or rabbit serum.

Experimental Observations.

1. In the serum of Rabbit 1 six cultures of rat cancer were set up with controls in normal rabbit serum. All the controls showed the usual amount of migration. In the immunised rabbit serum a precipitate appeared and in every instance the cancer cells died within 24 hours. No migration occurred.

2. In the serum of Rat 1 four cultures of cancer (M 63) were set up, controlled by six fragments of the same tumour in normal rat serum. In the former precipitation occurred in the serum and death of the tissue rapidly took place, as evidenced by complete absence of migration, and by fatty degeneration of the original fragment. All the controls grew vigorously; of these two were selected and were re-fed on the third day (when showing very active migration) with the

serum of the immunised Rat 1. The migrating cells were found to be completely lysed within six hours. On the fifth day two other controls were similarly treated with a like result. (Figs. 1 and 2.)

3. In order to determine whether the lethal factor in this serum was anti-mouse or anti-cancer bodies, a series of 16 cultures were set up as follows: In the

serum of Rat 1, two cultures of cancer alone, one of cancer and heart symbiotically, one of cancer and kidney, one of cancer and spleen; similar tissues were set up in normal rat serum as controls. Cultures of mouse heart, kidney, and spleen were also set up alone in each serum. The pH of the serum was in all cases roughly 7.6. All the cancer fragments in the immunised rat's serum were dead within 24 hours, whereas the normal young mouse tissues survived. Thus the heart muscle continued to beat for several days

and to grow alongside the dead fragment of cancer. In the controls in normal rat serum all the normal tissues grew and the cancer fragments showed very active migration. After some days certain of the control cultures in which both cancer and heart

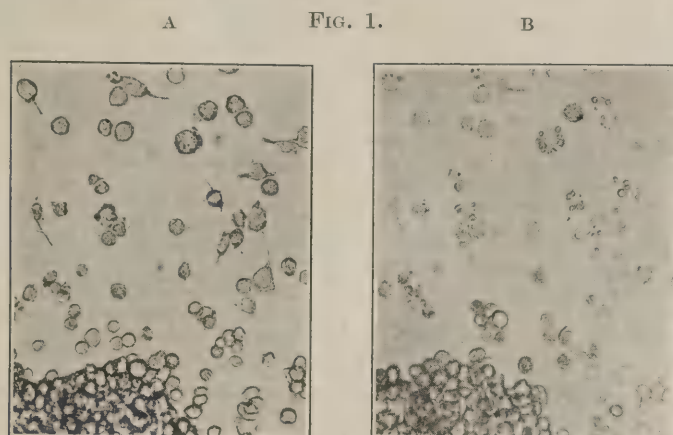


FIG. 1.
A. Cells migrating actively from fragment of mouse cancer growing in normal rat serum.
B. The same six hours after being treated with antiserum from Rat 1. Each cell now consists of structureless protoplasm surrounded by a ring of fatty globules.

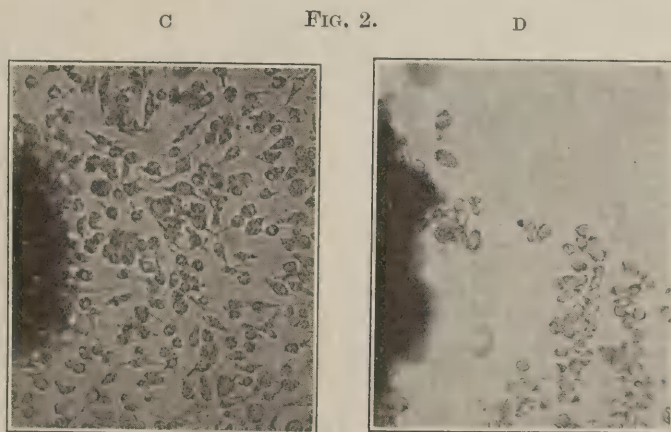


FIG. 2.
C. Mouse cancer cells migrating regularly over the cover-glass.
D. The same cells "clumped" three hours after application of antiserum from Rat 2. When stained such cells already show chromatolysis.

¹ Ehrlich: Arbeit. a. d. Kgl. Inst. f. Exp. Therapie, 1906.

² Lumsden: THE LANCET, 1924, ii., 65.

³ Ledingham: THE LANCET, 1914, i., 1673.

muscle were active, were fed with the immunised rat serum—photographs being taken before and after. In every instance the migrating cancer cells were completely lysed; the normal tissue continued to grow.

4. With the serum of immunised Rat 2 further series of cultures similar to those mentioned above were set up, with entirely confirmatory results. The normal tissues used were young mouse kidney, salivary gland, and heart. This serum (Rat 2) did not, however, show a precipitate, but some (? lipid) substance separated out in a fine scum at the interface between the drop of serum and the air in every case where mouse cancer was present. This did not occur in the controls. The interface appeared wrinkled and not unlike a certain variety of non-transparent "frosted" glass.

Remarks and Conclusions.

The number of experiments is small and the most appropriate control tissue (breast) has not so far been used, but the results in over 100 cultures in sera from two rats and two rabbits have been constant and positive. No instance was seen in which the antigenic tumour cells survived. In ten cases a few cells migrated out, but these succumbed after re-feeding with the antiserum. In the symbiotic antiserum culture heart muscle grew normally and beat for two or three days, in one case for six days. Kidney and spleen survived but grew somewhat less vigorously than in normal rat serum. In all the controls both cancer and normal tissue survived and grew well.

If the above experiments can, as I anticipate, be repeated consistently, the conclusion seems justified that antibodies more or less specific to cancer can be produced by its repeated inoculation into an animal of another species. Apart from this serum, all other agencies I have tried (heat, cold, radium, ultra-violet rays, bacterial infection) cause the death of normal tissues *in vitro* before that of cancer cells. On account of the dilution involved, and probably for other reasons, results comparable with those referred to above are not likely to be readily obtained *in vivo*, if, indeed, they can on these lines be obtained at all.

Further experiments *in vitro* and *in vivo* are in prospect both with animal and human cancer.

I am indebted to Prof. C. J. Martin, F.R.S., director of the Lister Institute, for putting a laboratory there at my disposal while carrying out the above research.

NOTES ON AN UNUSUAL CASE OF DIABETIC COMA.

By G. J. LANGLEY, M.D., M.R.C.P. LOND.,

PHYSICIAN, ANCOATS HOSPITAL; HONORARY ASSISTANT LECTURER
IN EXPERIMENTAL PHYSIOLOGY, UNIVERSITY OF MANCHESTER.

A SUFFICIENT number of records now exist to render the life-sparing effect of insulin in diabetic coma an established fact. The following record is made on account of the large amount of insulin required and the length of time that elapsed before consciousness returned.

History of Case.

A married woman, aged 35, was treated in June, 1923, for severe diabetes of nine years' duration. On discharge from supervision a diet was being taken containing 1850 calories made up of proteïn 120 g., fat 110 g., and carbohydrate 110 g., with two daily doses of insulin each of 25 units. The diet was so arranged that a large meal was given at 9 A.M. and again at 5 P.M., with two small meals containing very little carbohydrate at 1 P.M. and 9 P.M. In this way two daily doses of insulin sufficed. This arrangement maintained good health, fair exercise tolerance, and no great gain in weight, but permitted fairly frequent glycosuria. During August and September, 1924, large quantities of acetone appeared in the urine, but for this no medical advice was sought. The patient had been taught to use the nitroprusside test.

On the morning of Sept. 29th, 1924, the patient awakened to find that breathing was difficult and occasioned great pain in the right lower chest and right shoulder. An intense degree of air-hunger was later established which led to coma by 5 P.M. The urine was loaded with sugar and acetone, the blood-sugar was 0.4 per cent., and the patient was given glucose, 50 g., and 40 units of insulin.

The following notes give a very brief indication of subsequent events with blood-sugar readings at fairly frequent intervals. It will be seen that consciousness was not fully regained until midday of Oct. 5th, after the administration of 1100 units of insulin, and that contemporaneously the acetone became reduced to a mere trace.

Sept. 29th, first day: 9 A.M., very short of breath, pain under right lower ribs and in right shoulder. 12 noon, severe pain all over chest; given inj. morph. hypod., gr. $\frac{1}{4}$. Still short of breath. 4 P.M., typical air-hunger; conscious, but very ill and in great pain. Blood-sugar (b.s.), 0.4 per cent.; given 50 g. glucose and 40 units of insulin and removed from home. 7, b.s. 0.52 per cent., comatose, 20 units of insulin. 10.30, b.s. 0.52 per cent. 12 midnight, 40 units insulin.

Second day: 3.40 A.M., b.s. 0.52 per cent., 40 units insulin. 6.30, b.s. 0.52 per cent., 20 units insulin. 9, b.s. 0.52 per cent., insulin 40 units, air-hunger distinctly less. 12 noon, b.s. 0.52 per cent., 40 units insulin and 25 g. of glucose given. 3 P.M., b.s. 0.52 per cent., 40 units of insulin. 6, b.s. 0.52 per cent., 20 units of insulin and 25 g. of glucose given. 8, b.s. 0.52 per cent., 60 units insulin. 10.45, b.s. 0.52 per cent. In 24 hours passed 44 oz. urine, containing much sugar and acetone. Food consisted of weak bovril, brandy, and soda-water, vomiting occurred three times, coma was unchanged, but the air-hunger was much diminished. Volume of ingested fluid unknown.

During the third day the blood-sugar varied from 0.27 to 0.45 per cent., and 190 units insulin were given in seven doses. Urine in the 24 hours amounted to only 18 oz., containing much sugar and acetone with a trace of albumin. Vomiting occurred in small quantity ten times, and hiccough was present from time to time. Food consisted of weak bovril, chicken broth, brandy, one egg, and much soda-water. The air-hunger disappeared, but the coma remained unchanged.

During the fourth day the blood-sugar varied between 0.31 and 0.52 per cent.; 120 units insulin were given in six doses. Food as on previous day till 1 P.M., when it was limited to one part milk and two parts soda-water, given freely. Coma rather deeper. Urinary output only 10 oz., containing trace of albumin, with sugar and acetone still in large quantity. There was no vomiting, but the patient was extremely restless.

Fifth day: 2 A.M., b.s. 0.48 per cent., insulin 60 units. 5.30, b.s. 0.28 per cent., insulin 40 units. 7.45, b.s. 0.15 per cent., insulin 12 units. 12 noon, b.s. 0.12 per cent., insulin 12 units. 1 P.M., b.s. 0.09 per cent., slight sweating. 5.30, b.s. 0.16 per cent. 9.30, b.s. 0.26 per cent., insulin 10 units. The patient was incontinent the whole day and very restless during the first half, although much quieter later. The diet consisted of one part milk and two parts soda-water, taken freely. No return of consciousness accompanied the fall in blood-sugar; in fact, the patient seemed a good deal worse, and the pulse flagged in volume somewhat.

During the sixth day the blood-sugar varied from 0.44 to 0.48 per cent., and 215 units insulin were given in eight doses. Incontinence disappeared early in the day, the volume of urine passed was 93 oz., sugar being present but acetone much reduced. The patient was much less restless and only vomited once. Consciousness was partly re-established during the latter half of the day, and a fair response to simple questions was obtained.

During the seventh day the blood-sugar ranged between 0.16 and 0.36 per cent., and 150 units of insulin were given in seven doses. She became fully conscious at 10.15 A.M. Up till now 1170 units of insulin had been given. Urine passed 58 oz., containing sugar and some acetone. Vomiting only occurred once.

Discussion.

Several points of interest arise from this clinical record. In several previous cases glucose had been given, in spite of a high blood-sugar, because it had been suggested that insulin did not act as well against sugar derived from protein, and possibly from fat, as it did against glucose directly given,¹ and that therefore delay occurred in the removal of the ketosis. The subsequent findings in this case would go far to negative such a view, since no carbohydrate was given during the last four days of the coma. And further, Nash has shown that injection of insulin into phloridzinised dogs reduced the blood-sugar to the level of hypoglycæmic coma, the sugar in such dogs coming from the high protein wastage known to exist.²

The most striking fact is perhaps the very long delay in the recovery from coma. The air-hunger was materially reduced in severity after 12 hours of treatment, but persisted in easily recognisable form for 36 hours. After its disappearance coma still remained and showed no signs of reduction in degree. Sodium

bicarbonate was given by mouth throughout, but never in any larger dose than a drachm at a time. It is suggested that a factor which was overlooked in the treatment is possibly a very potent one—namely, the available phosphates.

J. B. S. Haldane has shown³ that acidosis may be induced by giving large doses of ammonium chloride by mouth, and that the acidosis so produced may be prevented or relieved by the administration of neutral sodium phosphate, which enables the kidney to secrete much more acid.

It is possible that had phosphates been given freely, a much more rapid recovery of consciousness would have taken place. Some support to such a view is given by the fact that after recovery the tongue remained for several days thickly coated with a brown fur, which did not clean in spite of much bicarbonate and constant buccal toilette; it, however, cleaned completely in 24 hours on the addition of 15-gr. doses of sodium phosphate to the diet. The fall of the blood-sugar to below the level of 0.1 per cent. might also be explained on this basis, for recovery of consciousness did not then take place.

The great reduction in urinary output on the third and fourth days in spite of a reasonable fluid intake and no marked sweating or diarrhoea is also difficult to explain. It certainly was not due to circulatory failure, for the heart throughout the attack gave no cause for great anxiety and the pulse remained of good volume and tension. During the period of limited urinary output a faint trace of albumin was found, but this disappeared immediately the secretion rose in volume and has not been found since. The bearing of diminished urine upon the blood-sugar must not be overlooked, for it follows that the sugar wasted by passage through the kidneys will not require the artificial aid of insulin for its combustion, and hence that if the sugar secretion via the kidneys is reduced a larger amount of insulin will be needed, it being known that insulin is capable of burning somewhere between one and two grammes of sugar per unit.⁴

The giving of food during coma is always a difficult problem. In this case the nutritive value of the food given was extremely low, but recovery took place when half a pint of milk was given every four hours and the insulin pressed until the blood-sugar was reduced to within normal limits. This would suggest that insulin acts best when the relative proportion of proteins, fats, and carbohydrates approaches most nearly to the normal, for it is surely tenable that milk would most likely represent such a combination.

There would seem to be little doubt but that sugar was produced in very large quantity from protein during the several days when no carbohydrate whatever was given, and during which the blood-sugar maintained its high level in spite of large and frequent insulin doses. And it would further seem that the administration of a properly constituted diet with the insulin allowed the vicious metabolic circle to be broken.

It is remarkable that although coma developed to the degree of incontinence, yet throughout the patient took fluids freely and easily.

Conclusions.

The conclusions submitted for consideration in this case are as follows: (1) That the failure of insulin to maintain good health in a diabetic patient is to be attributed to bad management and not to any ineffectiveness of the drug; (2) that recovery from prolonged coma is still possible by somewhat heroic dosage with insulin; (3) that insufficient treatment may keep the patient alive without overcoming the acidosis sufficiently to allow of consciousness being regained; (4) that a probable factor in delayed return to consciousness in some cases is the amount of available phosphate; (5) that insulin is effective alike against glucose administered and the sugar produced by protein breakdown.

References.—1. MacLean, H.: *Modern Methods in Diagnosis and Treatment of Diabetes*, p. 159. 2. Nash, T. P.: *Jour. Biol. Chem.*, December, 1923. 3. Haldane, J. B. S.: *Jour. Physiol.*, 1921, p. 265. 4. Ringer, S.: *Jour. Biol. Chem.*, December, 1923.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

NON-SPECIFIC DISTURBANCES OF HEALTH DUE TO VITAMIN DEFICIENCY.

ON Feb. 16th this Society held a general debate on this subject. The chair was occupied by Sir STCLAIR THOMSON, the President.

Dr. LEONARD WILLIAMS, in opening the discussion, pleaded for an extension of the meaning of the word "vitamin" far beyond the limits of the three accessory food factors to which it was usually applied, for it was impossible to place a vitamin in a watertight compartment, and its fellows must be sought outside the orthodox trinity of fat-soluble A, water-soluble B, and anti-scorbutic C.

Supplementary Substances.

The first of the supplementary substances, he said, were the mineral salts. Dr. J. Boyd Orr had pointed out that the mineral might be present in a combination from which it could not be easily dissociated in the alimentary canal. Therefore the diet might suffice in amount, but owing to difficulty of assimilation, only a small proportion might be utilised. Orr showed that in the case of most minerals, both absorption from the intestine and excretion by the kidney were influenced by the amounts of other minerals present. Excess of magnesium had been shown by Hart and Steenbock to interfere with the utilisation of calcium, while phosphorus and calcium were mutually dependent on each other for utilisation; as also were calcium and iron.

Dr. Williams asked where the balance was to be obtained, except in Nature's laboratory. There were also the catalysts, which effected chemical changes without themselves taking part in those changes or being altered by them. Bayliss's work seemed to show that catalysts as found in Nature were essential to the proper utilisation not only of the mineral salts, but also of the proteins, fats, and carbohydrates. And in this category it was necessary to include the enzymes, which Bayliss defined as catalysts produced by living organisms. The enzymes were produced by friendly bacteria. The great influence of chlorophyll must also be taken into account, upon which all life depended, and which was manufactured by the vegetable kingdom alone. Speaking of the value of sunshine, he referred to the statement of Prof. Arthur Thomson that if rats kept on a deficient diet and not fortified by ultra-violet light were fed with the flesh of other rats which had been treated with ultra-violet rays, they thrived and escaped rickets. Moreover, Steenbock and Black had shown that if a food ration known to be deficient in rickets-preventing vitamin was exposed to ultra-violet light before being fed to the rats, it became adequate and sufficient. Turning to electricity, he said mineral salts were electrolytes; colloids had an electrical discharge, and enzymes were colloids.

It was important, he said, to recognise that each of the substances or agencies mentioned—mineral salts, catalysts, enzymes, chlorophyll, violet rays, and electricity—was either destroyed by heat or so altered as no longer to be recognisable as Nature's product, and so ceased to operate as our reinforcements, and might even become our enemies. He therefore declared that all disease, whether microbic or metabolic, was a function of cookery and concentration, and he urged the essential representation in food of raw fruits and raw vegetables.

Disturbances of the Gastro-intestinal Tract.

Lieut.-Col. R. MCCARRISON dealt with the subject of the disturbances on the gastro-intestinal tract due to vitamin deficiency. These disorders included

irregular action of the bowels, infection of the tract, chronic digestive disturbances with impaired absorption and assimilation of food, gastro-intestinal stasis, mucous disease in children, and colitis in adults. Vitamin deficiency of lesser degree continued for long periods might cause effects similar to those of greater degrees of this deficiency for a shorter time. There was found to be a great variation in individual idiosyncrasy among animals of the same species and age to chronic vitamin starvation, and in the animals used for experimentation on this subject there was a variation of results according to the pathogenic flora of their intestines. In general, these animal experiments were fairly applicable to man. The effects of vitamin deficiency were enhanced by want of balance of the food in respect to starch, fats, suitable protein or mineral elements, and he had used largely in his investigations wild monkeys which had been living their natural life in the Madras jungles. He related the careful experiments he had conducted, and said that the first effect of food deficient in vitamins was to render the intestinal tract—especially certain parts of it—susceptible to invasion by bacterial or protozoal agents. In due time the monkeys died, or were killed when about to die, and he found the following gross anatomical lesions: (1) enlargement of the mesenteric glands; (2) dilatation of the stomach; (3) congestion of the gastro-intestinal tract, with ecchymoses scattered over its peritoneal surface, most commonly in the colon; (4) ballooning of various parts of the tract; (5) marked thinning of the muscular walls of the colon, and partial disappearance of its longitudinal muscular bands. Various pathological changes were noted on opening the tract, including congestion and ecchymoses of the stomach, especially round the pylorus, shallow ulcers, papillary downgrowths of epithelium suggestive of commencing carcinoma in the pyloric region. In the colon there were varying degrees of colitis, sometimes involving the whole viscus. Colitis was the most marked and one of the most constant of the morbid anatomical changes present. He also found a number of histological changes in the tract, such as congestion and hemorrhage, atrophy of the muscular coats of the bowel, degenerative changes in the plexus of Auerbach, atrophic, necrotic, and inflammatory changes in the mucous membrane of the entire tract, but especially in the colon, bacterial invasion of the bowel walls, opening of portals of entry for bacteria into the blood-stream, and pronounced atrophy of the lymphoid elements of the intestinal mucosa. Rarely were all these changes present in all the deficiently fed animals, but most of them were. Usually they were more pronounced in the animals whose deficiency was in both A- and B-vitamins. Dr. Cramer had found that the digestion of fats was less complete and rapid in the absence of vitamins from the food, and that the vitamins, especially B, had a definitely stimulant action on the processes of intestinal digestion and absorption. Dr. Gross, using synthetic diets deficient in vitamin B, had shown, in vivo and in vitro, that it resulted in definite impairment of the motor functions of the intestinal tract; and Pappenheimer and Larimore showed that gastric lesions occurred in 55 per cent. of rats fed on synthetic diets in which the only deficiency was vitamin A. And they found that the addition of cod-liver oil afforded complete protection against those gastric lesions. Those authors commented on the fact that the gastric lesions resulting in their rats from food deficiency bore a remarkably close resemblance to those described by Fibiger as resulting from infestation by the nematode *Spiroptera neoplastica* which was present in their rats. The only reference to the diet of Fibiger's rats was the statement that they were fed solely on white bread. Col. McCarrison said he had noted in pigeons fed on a vitamin-deficient diet a tendency to favour the action of an invisible virus capable of causing epithelial new growth and of the disease known as epithelioma contagiosum. There was, Pappenheimer and Larimore pointed out,

a similarity of the hyperplasia produced by this virus to the papillary outgrowths and downgrowths of epithelium figured in some of their gastric lesions in rats; this was comparable to the downgrowths of epithelium, resembling commencing carcinomatous change, encountered in one of the speaker's monkeys which he experimented upon.

Col. McCarrison showed on the screen some very instructive slides to demonstrate the various lesions produced by the vitamin deficient foods which he had described.

New Specific Impairments in Health from this Cause.

Dr. W. CRAMER paid a tribute to the pioneer work of Col. R. McCarrison on the aspect of the vitamin problem under discussion. He was in agreement with most of Col. McCarrison's conclusions. Minor differences in their observations could be attributed to the fact that the speaker had worked mainly with single vitamin deficiencies operating on a synthetic diet with properly balanced inorganic salts, while Col. McCarrison had observed the effects of the deficiency of more than one vitamin in natural diets where other factors such as proteins of low biological value and a disproportion of inorganic salts were additional factors. Dr. Cramer protested against the extension of the vitamin conception as unjustified; he pleaded for a restriction of the term vitamin to the three food accessory factors, A, B, and C. Contrary to what had been stated light could not replace any of the vitamins. Several observers, including the speaker, had succeeded in rearing animals in the absence of light, but nobody had as yet been able to rear animals in the absence of vitamins no matter how much light was applied. All that light could do in those circumstances was to delay slightly the fatal issue.

Dr. Cramer pointed out that there was no justification for any fundamental distinction between specific and non-specific impairments of health due to vitamin deficiencies, as both were manifestations of specific pathological changes. The so-called specific deficiency diseases were merely the last links in the chain of events of which, he said, the non-specific impairments were the earlier ones. When vitamins were withheld from the diet, the health of the organism at once declined. There was loss of appetite, constipation, a gradual fall in the body temperature, a diminished nitrogen retention, an impaired absorption of food, and a progressive atrophy of the lymphoid tissue; and all those disturbances were specifically remedied by the administration of vitamin B. The latter vitamin, therefore, had a drug-like specific, stimulating action on the functions of the digestive tract, and he contended that a complete analogy existed between its action and the action of the hormones. In the case of both these substances the absence of the specific stimulus led to atrophic changes. Dr. Cramer said that a striking feature of mammals suffering from vitamin-B deficiency, even in its most advanced stages, was the absence of spontaneous infections, in spite of the condition in the animal of complete marasmus. He drew a particular distinction between the resistance of the organism to spontaneous infections and the resistance to experimental infections produced by injections of bacteria under the skin. The latter was said to be diminished in the case of the animal being fed on food deficient in vitamin B.

Vitamin-A Deficiency.

Animals suffering from vitamin-A deficiency presented the precise reverse condition, for they always developed spontaneous infections. These infections were observed to commence in the mucous membranes of the intestinal and the respiratory tracts, and in that of the eye. They were due to the weakening of the local defences of these tissues, represented by the mucus and the tears. But the general humoral defences of these animals remained unimpaired until long after the local infections were

established. The same diminished resistance to local infections had been observed in children, in whom xerophthalmia was always accompanied—sometimes preceded—by an infection, usually of the lungs. Therefore when in badly nourished children general infections occurred—e.g. pneumonia or enteritis—they must be regarded as specific deficiency diseases just as much as was the xerophthalmia. Dr. Cramer reminded the meeting of the condition of "vitamin under-feeding" to which he drew attention in 1922, in cases in which the intake of vitamins, though sufficient to enable the animals to grow and reproduce themselves, was not productive of full health. He also referred to the harmful effect of vitamin under-feeding in pregnancy, both to the mother and her offspring during lactation. Webster made an experiment in the vitamin under-feeding of mice, in which an intestinal infection with mouse typhoid was increased from a mortality of 20 per cent. to one of 100 per cent. It had been widely asserted, he said, that a civilised community living on a freely-chosen mixed diet was in no danger of suffering from a deficient vitamin intake, but Denmark furnished a refutation of this idea, as shown by the work of Blegvad and Widmark. Owing to economic conditions, the people of Denmark had suffered from an extensive vitamin deficiency, as indicated by the decreasing consumption of milk fat, and the increasing consumption of margarine. Similar conditions existed in this country, for the poorer classes, owing to their consumption of margarine, which was free of vitamin A, and their consumption of white bread, which did not contain vitamin B, were cut off from the main natural supplies of vitamins. It was not recognised that this steady deprivation resulted in a lowered standard of health, and the failure to recognise the importance of the matter was added to by the statement of leading authorities that the supply of vitamins was sure to be adequate if there were no specific deficiency diseases. The organism, especially in its young stage, required for its full functional development an abundant supply of vitamins, and restrictions of this intake would assuredly result in manifold disturbances of function.

Bone-marrow Changes.

Dr. G. M. FINDLAY spoke specially of the bone-marrow changes found in association with vitamin-deficient feeding. He said that the most important of the non-specific disturbances of health due to this deficiency was the increased liability to bacterial infection. In studying the reasons for this breakdown in the defence mechanisms, it was essential to investigate the condition of the leucoblastic tissues, especially those concerned with the formation of polymorphonuclear leucocytes. In animals fed on synthetic diets deficient in vitamin A, it was, he said, rare to find lesions in the leucoblastic bone-marrow, though in a very few adult animals which were maintained for many months on a diet deficient in vitamin A, an aplastic condition of the bone-marrow was observed. Associated with this was the fact that there was no reduction in the number of leucocytes in the blood-stream in this form of deficiency. In fact, after the onset of keratomalacia it was not uncommon to meet with a polymorphonuclear leucocytosis, and there was, at the same time, a fall in the bactericidal power of the blood, and this diminution of the function was present in all acute infections. Thus the infections associated with a deficiency of vitamin A in the diet were solely due to a local breakdown at the sites of infection, e.g., the conjunctiva, and the lining of the respiratory and intestinal tracts. Fleming had found, in the secretion of tears and of the respiratory mucous membrane, a substance—lysozyme—possessing a strongly lytic action on certain bacteria, and in rabbits with keratomalacia as a result of vitamin-A deficiency the lysozyme in the tears was greatly reduced. Indeed, in rats it was possible to prevent the onset of keratomalacia by washing the conjunctival sac with undiluted tears. Animals fed on diets wholly deficient in vitamin B showed numerous

small hæmorrhages in the bone-marrow. When vitamin B was not entirely withheld there was gelatinous degeneration in the bone-marrow, the leucoblastic cells being reduced in number. While the opsonic power of the blood and the ability to form agglutinins, hæmolysins, bacteriolysins, immune body, and antitoxin remained unimpaired, it was usual to find a fall in the bactericidal power of the blood of animals fed on diets deficient in vitamin B, and this seemed to be correlated with the synchronous fall in body temperature. Animals with lowered temperature lost their capacity to resist bacterial infections. Referring to deficiency of vitamin C, Dr. Findlay said that guinea-pigs with acute scurvy showed many small hæmorrhages in the bone-marrow. In chronic scurvy in that animal, which did not show definite clinical symptoms, the bone-marrow underwent either a gelatinous degeneration or a fibrotic change, one not confined to the epiphyseal ends of the bones. In conclusion, Dr. Findlay said the increased susceptibility to infection occurring as a result of these vitamin deficiencies did not apply to all bacteria, as diets lacking in vitamin did not modify the course of experimental tuberculosis in either guinea-pigs or rabbits.

The discussion was adjourned.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A MEETING of this Subsection was held on Feb. 11th, Mr. F. SWINFORD EDWARDS, President, being in the chair.

The President opened a discussion on

FISTULÆ.

The subject he described as a specialty within a specialty. He referred to the paper he published in THE LANCET in 1918 (i., 673) and stated that he had nothing to add to, or retract from, what he had said then. Speaking of the genesis of the "horseshoe" fistula, which he believed to be much more frequently found than was generally supposed, Mr. Edwards said that the first step was the formation of an abscess in the mid-line dorsally between the two sphincters, due probably to an abrasion of the mucous membrane. Thence the suppurative process tracked above the ano-coccygeal ligament and the coccygeal fibres of the sphincter, which prevented the pus from coming to the surface in the mid-line and directed it to one or both sides, producing a semi or complete horseshoe fistula. The failure of operative interference he ascribed to (1) lack of a thorough acquaintance with the topography of the case and resulting incomplete opening out of the whole tract; (2) recurrence due to caries of the coccyx or tuber ischii, or the presence of a foreign body in the sinus; (3) infection with tuberculosis, though in his experience cases in which tuberculous caries was present healed very well, only two instances of callous wounds having occurred; he recommended the avoidance of operation when active tuberculosis was present in the lung, but the immediate opening of abscess cavities though less freely than in non-tuberculous cases; (4) the omission to remove overhanging margins of skin and mucous membrane; (5) injudicious after-treatment, painful or too abundant dressing, or too long confinement to bed. He stated that where the external opening lay behind a transverse line across the centre-point of the anal orifice the internal opening would be found as a depression between the two sphincters dorsally if the external orifice lay anterior to the mid-line the internal would usually (though not always) be found opposite. An anterior horseshoe fistula was unknown; where there were two or more external orifices in the perineum and the internal orifice lay to one side of the mid-line a branched fistula would be found. Mr. Edwards spoke of the danger of dividing the fibres of the external sphincter obliquely, healing being much more difficult in this case, and reminded operators

of the possibility of a deep sinus, running up at right angles to open into the bowel by a second internal orifice, joining the main fistula below in the mid-line dorsally. If such an extension were present the lower internal orifice might be felt between the sphincters as a depression; the upper as a small papilla. The high sinus should be laid open if its course was wholly submucous, but if such a treatment would involve cutting the internal sphincter it must be opened by a posterior incision from the lower part, producing a wide funnel-shaped cavity which was then freely curetted and packed. The application of silver nitrate solution or the solid cautery about a week later would generally give satisfactory results. In extensive cases the operation should be done in two parts, the first laying open all the side-tracts into the main posterior one, and the second, three to five weeks later, dividing the main dorsal sinus and the external sphincter. This was then a relatively small matter and usually resulted in a cure in two or three weeks more. The keystone of the operation for horseshoe fistula was the antero-posterior dorsal incision.

Discussion.

Sir C. GORDON-WATSON agreed as to the misleading impression usually conveyed by text-books in the matter of tuberculous fistulæ. Such cases were by no means hopeless. Many fistulæ might be tuberculous without the patient being tuberculous. In the latter case the fistula would do badly, but not in the former. Tuberculosis was no bar to a cure if the surgery and the after-treatment were correct. Referring to the President's statement that anterior "horseshoe" fistulæ were unknown, he thought that this indicated a difference in nomenclature, as the "branched" fistulæ, approximating very closely sometimes to a horseshoe shape, were undoubtedly found anteriorly. The high second internal opening was usually that of a submucous tract only, but when not submucous the granulation was very slow. He had at times ventured to open them up into the bowel, and although incontinence had resulted it had not been permanent. He emphasised the importance of the two-stage operation, and ascribed failures to an incomplete opening up or else to an over-bold primary opening. He believed in the use of primary suture in suitable cases, and referred to a series of 17 cases he had shown before this Section, in which the results, combined with the use of flavine, bipp, or ether, had been excellent. Even if it failed, ground had not been lost, as granulation followed, and if it were successful the convalescence was much shortened. The results of using Finsen light to encourage the healing of very chronic cases had also been gratifying.

Mr. W. E. MILES said that the average surgeon did not realise that there were more types of fistula than one, and referred to the text-book classification, emphasising the point that the track of a fistula is an unobliterated abscess cavity, and that the four varieties distinguished should be the subcutaneous, the submucous, the ischio-rectal, and the horseshoe. The disposition of the fistula was entirely due to the process of dissemination by lymphatics. The difference of opinion as to whether the high internally-opening track could be opened with impunity was due only to a failure to differentiate between the track resulting from a submucous abscess and a pelvi-rectal one. What really mattered in the question of incontinence was the division of the point of convergence of levator ani with the sphincters. He urged the importance of making the surface area of the wound greater than the area of the two sides, otherwise the epithelial layer would be completed before the granulation from below had come up to meet it. Mr. Miles was in the habit of making three or four relief incisions at right angles to the opening incisions. He opposed the packing of the wound on the ground that this resulted in a surface depression, which, if it crossed the anal margin, resulted in a mechanical incontinence apart from any muscular damage.

Mr. ASLETT BALDWIN spoke of the value of ionisation, particularly for the case with high internal orifice. In one very severe case, where operation had been refused, the passage of a pure zinc electrode along a director, with ionisation on the track in pieces, had resulted in complete comfort for the patient. A callous surface, whether simple or tuberculous, could always be made to heal with zinc ionisation.

Mr. IVOR BACK suggested that the constant situation of the internal orifice between the two sphincters was due to a tearing of the anal papillæ by the passage of a constipated motion, producing a crack which subsequently became infected. He believed that the infection did not usually track diagonally across between the two sphincters, but that its common course was external to the external sphincter, producing an ischio-rectal abscess; the resulting fibrosis behind it would leave a mass of hard tissue which was what was cut by the surgeon when he believed he was cutting the external sphincter. In the cases where the fistula really seemed to lie between the two sphincters he suggested that it was the result of a long-standing process tracking round again from the ischio-rectal fossa. He classified fistulæ into (1) those with an internal opening; (2) those with a high internal opening, always secondary to one lying between the sphincters, and representing the upper pole of a submucous abscess working upwards—the treatment was to open up as for an ordinary fistula and then open the submucous tract into the rectum; (3) the pelvi-rectal abscess, which had nothing whatever to do with the rectum, but indicated tuberculosis of the viscera, ovary, or pelvic bones, and could not possibly be opened right up. He believed firmly in the value of primary suture, and considered that cases of failure of this method were due to the stitches not being put deep enough to include the whole cut area, but crossing the incision above its lowest part and so leaving an empty open space beneath the united portion. He spoke of the value of sunlight, artificial or real, in the healing of obstinate cases.

Mr. L. NOBBURY agreed with the previous speaker as to the relation of the fistula to the external sphincter, but thought that in some cases the fistula might track between the fibres of the muscle. He also agreed as to the operability of tuberculous cases, referring to several very bad cases on which he had recently operated under spinal anaesthesia with complete healing. He asked if any member had had experience of the development of malignant disease in fistulæ.

Sir C. GORDON-WATSON described a case of malignant disease occurring on the site of a non-healed horseshoe fistula, shown to the Proctological Society some years ago. The man had died some three years later with a large mass of secondary deposit in the liver.

Reply.

The PRESIDENT, replying, spoke further of the pelvi-rectal abscess which he regarded as very rare; all his cases had been the result of gonorrhœal prostatitis with peri-prostatic abscess. A high rectal carcinoma might have a pelvi-rectal abscess and fistula as a secondary result.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the University of Bristol on Feb. 11th. In the absence of the President, Mr. J. LACY FIRTH took the chair.

Mr. PERCY SARGENT read a paper on the

Surgery of Tumours of the Central Nervous System.

He laid emphasis first on the necessity for accurate diagnosis. Coöperation between the neurologist and the surgeon must be close, and the former must afford the earliest opportunity for the latter to give that help to the patient which, in these cases, operation alone could bring. He proposed to speak of four classes of tumour.

Tumours of the Pituitary Region manifested themselves in two ways. Function was disturbed, with changes in the skeleton, in other glandular functions, producing such conditions as hairlessness, and pressure produced intolerable headaches with failing vision. It was for the latter symptoms that, in the present state of our knowledge, the skill of the surgeon was sought. These tumours fell into two divisions. 1. Simple adenomata of the pars anterior excavated the sella, and also pushed up the optic chiasma, but in invading the cranial cavity they remained encapsuled. It was with these types of tumour that the glandular disturbances might occur; and one must bear in mind that such patients bore operations badly. 2. The other division was composed of suprapituitary tumours: (a) meningeal tumours of the interpeduncular space, (b) tumours or cysts of complex structure probably arising from the infundibulum. With these the glandular changes are not remarked. Either type may be approached (1) by the temporal route used by Horsley 20 years ago, (2) from below through the sphenoidal sinus as advocated by Cushing, (3) by means of a frontal osteo-plastic flap as devised by Frazier. The speaker preferred the last method. The prognosis was best with adenomata; with improvement in technique the proportion of satisfactory results was quite gratifying. Suprapituitary tumours were less satisfactory to deal with. Some were cystic, and contained cholesterol; with these there seemed to be a risk of death from toxæmia following the liberation of the fluid.

Cerebello-pontine Tumours were usually neuro-fibromata of the auditory nerve. Others were cholesteatomata, or "pearl tumours." The former were usually firm, solid, encapsuled tumours, but might be soft or even cystic. They enlarged the internal auditory meatus, sometimes to a remarkable degree; this could be demonstrated by skiagraphy. Deafness and tinnitus might be the only symptoms for years. Loss of function of the vestibular part of the nerve was early demonstrable. Loss of the corneal reflex of the same side was also frequent. Later, the classical signs of tumour, headache, vomiting, and papilloedema appeared. By this time operation had become a more difficult, as well as a more hazardous, procedure. The tumours should not be removed en masse; this could be done, but the resulting disturbance to the vascular supply of the medulla commonly induced death; the tumour should be removed intracapsularly by morcellement. This method had given the speaker a mortality of 3 only in 19 cases. Decompression might be done if piecemeal removal was not thought advisable, but the results were not nearly so satisfactory.

The group of *endotheliomata* was histological rather than regional, though the tumours were meningeal and tended to be superficial. They cupped but did not infiltrate the brain, and probably arose from the arachnoid tufts which formed the Pacchionian bodies and so tended to be found about the longitudinal sinus. Growing very slowly, they might attain very large size before giving rise to symptoms. These tumours might often be diagnosed and localised with certainty before signs of general pressure appeared. This was a great advantage as an osteo-plastic flap could be employed. A two-stage operation was not advised; the patient might die between the two operations. These tumours formed only a small proportion of the whole class of tumours of the cerebrum and were rare in the cerebellum. The glioma of an infiltrating type was the common tumour. For these, decompression and partial removal gave some relief, and it seemed that gliomata were tumours favourable for the action of radium buried in their substance. In any case, where there was a high degree of intracranial pressure, any operation was fraught with difficulty and danger; the classical signs of tumour should be regarded rather as danger signals or even portents of impending death. Early and accurate diagnosis were the points of essential importance.

Spinal Tumours, he said, provided some of the most gratifying results of operation on the central nervous system. A large proportion were benign extra-medullary growths, and in all these there must be some stage where operation afforded prospect of complete removal at very small risk. In addition to neurological means of diagnosis and lumbar puncture, skiagraphy after injection of lipiodol through the occipito-atlantoid ligament afforded valuable means of localising the tumour.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held recently, Dr. PETER HOWIE, the President, in the chair, when Dr. A. G. ANDERSON read a paper on

Encephalitis Lethargica.

Dr. Anderson's experience of the disease extended to some 20 cases, and he outlined the various points of interest which had emerged from the study of these cases. After describing the original appearance of encephalitis lethargica in 1917 and its spread in different countries, and stating that the description of "lethargic" was now inapplicable to many of the recent cases, Dr. Anderson recounted the details of the first case he had seen on March 17th, 1920, in a woman of 37, who presented the typical features of fever, ocular disturbance, and lethargy which lasted for seven or eight days. The most interesting feature was that in a few days the mask-like facies developed, and by the end of May the typically stiff gait like a case of paralysis agitans had appeared. During the next two or three years the residual phenomena noted were the mask-like face, the stiff hesitating movements of the limbs—the arms being held in the characteristic mid-brain attitude. Fortunately, the Parkinsonism was not progressive, and during the past year the patient had emigrated and was able to do active work. Dr. Anderson then discussed the development of the mid-brain syndrome, and indicated that this was now regarded as one of the commonest sequelæ of encephalitis lethargica, the time of its appearance being extremely variable.

In the description of further cases of the series Dr. Anderson dealt fully with the various characteristic symptoms and signs which had appeared, and discussed their features especially as regards period of onset and diagnostic and prognostic import. Such were Parkinsonism, lethargy, muscular and mental passivity, the running gait, akinesia paradoxa, disorders of speech, tremors, emaciation, excitomotor phenomena, pain, myoclonus, chorea, athetosis, spasmodic tics and automatic movements, facial paralysis, and signs simulating meningitis. One patient had a pregnancy after the onset of the encephalitis, a healthy child being born; the case illustrated the facts that encephalitis does not necessarily lead to premature labour, that the child need not be infected, and that pregnancy seems to have a definite effect in aggravating an existing Parkinsonian syndrome. In connexion with the choreic type of case Dr. Anderson described fully two cases: one, a boy of 14, who had attacks nightly lasting about four hours, when he went through a series of "antics"—coughing, snorting, jumping in and out of bed, and so on, till he fell asleep exhausted. The other case, also a boy of 14, had similar restless attacks with very marked insomnia, the wakefulness persisting till 4 or 5 A.M.; one period of insomnia lasted for 48 hours. This boy also had attacks of marked respiratory disturbance. The mental and moral changes in the disease were next discussed, and their problems indicated.

In conclusion, Dr. Anderson dealt with the theories of the infective nature of the disease, referring to cases which might lend clinical support to the idea. He also briefly referred to the necessity of a complete examination of the cerebro-spinal fluid in all cases, not so much for the possible positive findings as for

the information obtained making it possible to exclude other diseases. He stated that there was no really characteristic picture of the cerebro-spinal fluid in encephalitis lethargica except that it differed from most other diseases in that the sugar-content was invariably high. He pointed out also that in this disease the virus remained in the nervous system for long periods of time, waking into activity at intervals, and affecting different parts of the brain at different times; so that the original conception of a disease with an acute stage passing off and then followed by certain residual phenomena was no longer tenable. No form of treatment so far had been found to have the slightest effect, but in Dr. Anderson's opinion any form of effective treatment which might be discovered would probably be in the nature of an anti-serum rather than drugs.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

At a meeting of this Society held on Jan. 21st Mr. DAVID LEES showed a cinematograph film prepared by Colonel L. W. Harrison on the

Diagnosis and Treatment of Gonorrhœa in the Male.

The film in a graphic and diagrammatic manner showed the progress of infection of the genito-urinary tract, the spread of infection, and complications likely to occur both immediate and late, and also demonstrated the importance of a knowledge of the anatomy and histology of the urinary tract in diagnosis, treatment, and in tests of cure.

Exhibition of Clinical Cases.

Mr. Lees showed two clinical cases and described a third.

1. *Juvenile Paresis.*—This patient, a boy aged 12, was admitted to hospital with definite spasticity of the legs and could not walk. Definite evidence of congenital syphilis was obtained both from the family history and the appearance of the fœces. The case presented, in addition to the spasticity of the lower limbs, lowered intelligence, inequality of the pupils, and exaggeration of the reflexes with marked clonic contractions in both ankle and knee reflexes. Localisation of the lesion was difficult. The specific infection had not involved grossly one definite area and a diagnosis of meningitis and myelitis was all that could be arrived at. The multiplicity of symptoms indicated that the prognosis was likely to be poor, and this was confirmed on examination of the cerebro-spinal fluid, which showed a strong positive Wassermann, increase of cells and globulin, and the so-called parietic curve in the colloidal gold test. The interesting point in the case was the amount of salvarsan that had been tolerated; this boy had tolerated more than an average adult dosage with increase of weight and general improvement; the importance was emphasised of forcing the dosage in the early stages. Careful re-education by exercises was practised, together with massage and tonic treatment.

2. *Juvenile Tabes in Association with Systemic Syphilis.*—The patient, a boy aged 12, was admitted to hospital suffering from subacute osteo-myelitis of the tibia, which on X ray examination showed definite sclerosis of the bone. In view of the subacute nature of the condition arsenic and bismuth were given with a very rapid result in easing the pain and causing general improvement of the patient. The father of this patient was at present under treatment for tabes, and the boy showed a definite Argyll Robertson pupil; the case was treated with silber salvarsan and bismuth with great improvement. There was a great cellular decrease in the cerebro-spinal fluid, from which globulin, though previously markedly increased, was now absent. The Wassermann test was still definitely positive, but it was hoped that with further treatment this would be negative and that the later symptoms of the tabes would be prevented from appearing.

3. *Case for Diagnosis.*—This patient, a man aged 53, was admitted to hospital with a condition resembling a double Charcot's disease of the knee-joints. The history was that 20 years ago he contracted gonorrhœa, but no history of syphilis is given; he had multiple arthritis in the left knee 14 years ago, and in the right knee four years ago.

For the last two years the joints had been painless, but now showed a bilateral arthritis with irregularity of the joint surface clinically suggesting Charcot's disease. On examination no appearance of any lesion, either of the genitals, skin, or mucous membranes was found, there were no signs on examination of the eyes with the exception of early choroiditis; the pupils reacted to light and accommodation equally and well. Knee-jerks and ankle-jerks were present, likewise the abdominal and cremasteric reflexes; there was no disturbance of sensation and no ataxia or incoördination—in fact, not a single sign or symptom which would suggest that the patient was suffering from the disease. The Wassermann reaction in both blood and cerebro-spinal fluid was negative, in the cerebro-spinal fluid globulin was negative, the cell count was 1 per c.mm., the colloidal gold test 001332210000. There was no clinical evidence of gonorrhœa except an enlarged left vesicle; the prostatic and vesicular secretion contained pus cells in excess, but no organisms; the complement-fixation test for gonorrhœa was negative. X ray examination showed appearances resembling Charcot's disease; fluid aspirated from the joint showed no cellular deposit, and was sterile. The question was whether this condition was Charcot's disease, gonorrhœal arthritis, or osteo-arthritis.

Miss GERTRUDE HERZFELD described a case of an infant who developed ophthalmia neonatorum four days after birth; a fortnight after birth swellings appeared in the left carpo-metacarpal joint and the right elbow; this latter increased and six days later was aspirated, the fluid showing gonococci. Three and a half weeks after birth the elbow and hand were opened and pus removed from both joints. After this swellings appeared in the right ankle and left knee, an autogenous vaccine was given but without immediate effect, and both these joints were opened and pus evacuated. At present the joint swellings were subsiding, the first to be incised had healed, the others were still discharging to some extent. Vaccine was being injected with apparent benefit and without marked reaction.

Mr. J. M. GRAHAM showed a pathological specimen of *Charcot's Disease of the Hip-Joint.*

The specimen was from a woman aged 46, admitted to hospital as a case of sarcoma of the hip and who died unexpectedly a few days after. The patient had been known to suffer from tabes for four years, but when under treatment in a medical ward there was no evidence of any trophic change, and up to four months before admission she was able to walk well. Quite suddenly the right leg began to swell and she noticed shortening of the leg. Her doctor was called in and found a large tumour extending from the lower part of the iliac fossa down almost to the upper third of the thigh. On admission to hospital the condition was diagnosed as Charcot's disease, and this was confirmed by X rays. The specimen showed enormous increase in the area of attachment of the capsule which was markedly thickened, and with enormous thickening of the synovial membrane, the processes in great masses resembling a nail-brush. There were large definite tumour-like formations undergoing calcification. Sessile nodules were present but not loose bodies. The bone showed gross changes and the acetabulum was almost devoid of cartilage, and many large bursæ were situated around the joint.

ULSTER MEDICAL SOCIETY.

At a meeting of this Society on Feb. 5th, Dr. J. SINGLETON DARLING, the President, in the chair, Dr. A. GARDNER ROBB read a paper on

Epidemic Encephalitis in Belfast in 1924.

The outbreak in Belfast began at the end of March, 1924. For the first few weeks the cases were few; about the middle of April there was a sudden large increase of admissions to the Belfast fever hospitals, and the cases continued to come in in large numbers until the end of June, when the epidemic ceased even

more suddenly than it had begun, only one case occurring after that date. This seasonal outbreak coincided exactly with the experience in Belfast in the year 1920, the only other year in which there has been a serious epidemic. In that year the first cases were notified in March, there was a large increase in April, a still larger number in May, then a rapid fall in June, and by the middle of July the epidemic was at an end. The total number of cases admitted to the fever hospitals in the recent outbreak was 183, and 90 per cent. of these were admitted within two months—viz., from mid-April to mid-June. The prominent symptoms at the onset were: (1) Fleeting superficial neuralgic pains. (2) Nocturnal insomnia, often complete and lasting for several nights. (3) Mental excitement and exaltation, great restlessness, and talkativeness. A little later came: (4) Diplopia and other eye symptoms. (5) Muscular twitchings of varying degree. (6) Delirium of varying degree. (7) Lethargy of varying degree. In many cases one or more of these symptoms were absent. The neuralgic pains were usually on the scalp, over the ears and sides of the neck, down the arm, on the forearm and fingers, especially the thumb; over the iliac crests, unilateral at first, later bilateral. In some cases the pains were in the leg, foot, or axillæ. It was noticed that while light touching or stroking was intensely painful, firm handling caused little or no pain. Nocturnal insomnia was a very early symptom and sometimes lasted for several nights. Some patients were very excited and talkative, and in many cases the patient, if left alone, sang or whistled throughout the entire night. Diplopia was present in 73 per cent. of cases; usually it was not observed until the second or third day. Squint, ptosis, nystagmus, and partial loss of accommodation were frequent. Muscular twitchings were present in 70 per cent. of cases; they were mild or severe. In some cases they were as severe as in severe chorea. Myoclonic jerkings of the abdominal muscles were common. Delirium was noted in 52 per cent. of cases. It varied from a low muttering type to severe maniacal states. It usually quieted down after a day or two. Lethargy was present at some stage in 72 per cent. of cases. It appeared usually in the third or fourth week and varied in degree. In many cases it was at first present only in the daytime, the patient being wakeful at night. Later it was continuous, and in a few cases there was profound coma lasting for weeks. Herpes occurred in 6 per cent. of cases. Attacks of dyspnoea were frequent. Polyuria was common. Lumbar puncture was performed in many cases. Little that varied from the normal was found except an increased sugar content. This point is one of diagnostic value. Paralysis of the facial muscles was rare. In only a very few instances was there more than one case from the same house. No member of the staff at the hospitals contracted the disease. In the 183 cases admitted the mortality was 11·4 per cent. Pregnant women did not show a mortality above the average. Many cases recovered temporarily and returned to work, only to relapse later. Opinions differed as to the proportion of cases of complete recovery. Some physicians put the figure as high as 25 per cent. or even 50 per cent. Dr. Robb thought this figure much too high. He thought 5 per cent. was nearer the mark. In the vast majority of cases some residual effects persisted.

As regards treatment there was no drug of proved value. Hexamine did not seem to possess much influence. Salicylate of soda had little influence over the pains of the disease. Paraldehyde was the best hypnotic. The turpentine ("fixation abscess") treatment, the use of diphtheria antitoxin, the intravenous injection of the patient's own cerebro-spinal fluid, frequent lumbar puncture, intramuscular injections of sterilised milk, were methods which he could not recommend. Hyoscine was of some value in dealing with Parkinsonism. He agreed with Prof. Hall that "at present any reliable therapeutic, either for the disease itself, or for its many after-results, does not exist."

Reviews and Notices of Books.

EXAMINATION OF WATERS AND WATER-SUPPLIES.

Third edition. By JOHN C. THRESH, D.Sc., M.D., and JOHN F. BEALE, B.A., M.R.C.S. London: J. and A. Churchill. 1925. Pp. 590. 25s.

A THIRD edition of this standard work is welcome at a time when so many matters of moment in connexion with water-supply are in a state of flux. The book which is, in most respects, thoroughly up to date, is arranged in five parts, with 33 chapters, a useful appendix and admirable index, and between the two covers lie 590 pages.

Part I. deals with reasons for which waters and their sources are examined—geology in relation to sources of supply and the character of water which is derived from different geological sources. This is a particularly useful section wherein the authors lay great stress on the topographical observations. Part II. occupies 111 pages and deals adequately with many aspects of the question. The chapters on the examination of (a) the sources of surface water-supplies, (b) rivers and streams, (c) springs and wells, and (d) waterworks, reservoirs, and mains, make good reading. When recommending *B. prodigiosus* as a test organism for tracing pollutions, the authors are not quite correct in saying that this microbe is very rarely found in any water-supply. (Chapter VIII., on the purification of water by storage, is fragmentary and sometimes even a little misleading. The statement that "rivers and streams in flood . . . recover their pristine condition in two or three days" is too sweeping an assertion. The questions at issue are for how long under conditions of low temperature, ground saturated with water, and recurrent rainfall, do rivers yield results continuously bad, and what duration of storage should be aimed at in order to secure safety. The fact that chlorination is a short cut to purity is not evidence against the desirability of prolonged storage without chlorination in the interests of the water consumer. In the account (p. 106) of the 1906 chlorine experiments at Cambridge the names of Otto Hehner and Alexander Houston, who were associated in the inquiry with Sims Woodhead and Dr. Thresh, are not mentioned. It is stated on p. 116:—

"Hertford is probably the only town in England where chlorine is added to the sewage effluent, and this is because the effluent enters the River Lee not far above an intake of the Metropolitan Water Board. Now that chlorination is being carried out at the waterworks, the chlorination of the exceedingly dilute effluent from the Hertford works is probably unnecessary."

The river Lee has never been chlorinated and is alone affected by the discharge of the Hertford sewage effluent. The New River is chlorinated, but the intake is above the point of discharge of the Hertford sewage effluent.

Chapter XI., on the purification of water by means of lime, is welcome. Workers from all parts of the world have been to see the authors' experiments at the Langford station, and the results obtained have attracted great attention. If the advantages of the excess lime method ultimately become widely recognised, it will be largely due to Dr. Thresh's patient investigations and his tenacity of purpose. The description of the processes for the softening of water and removal of iron are useful, but possibly too brief. An important chapter deals with the treatment of water to prevent action on lead and to remove colour. If soluble silicates can achieve the remarkable results the authors have outlined, Dr. Thresh deserves cordial congratulations on the outcome of much careful work. The chapter on the suitability of water for swimming baths and for trade purposes will be welcomed by a wide range of readers.

The third part of the book is devoted to a bold and able attempt to clear up our somewhat hazy conceptions as to what constitutes a "pure and wholesome water." It is not easy to give a definition that will be recognised as universally applicable, but it is certain that with modern methods of purification it is, at all events, safe to use waters for domestic consumption which in the old days would have been undoubtedly rejected. The authors' conclusions as to the permissible limits of various salts in water will be generally accepted as reasonable. A chapter on the interpretation of the results of physical biological, chemical, and bacteriological examinations, is full of interest, though the section devoted to odour and taste is disappointing. A chapter on electro-conductivity and hydrogen-ion concentration is a most welcome addition. The interpretation of the results of bacteriological examination of waters is one of the most important in the book. The authors complain, with good reason, of the wording of some bacteriological reports, which often create quite unnecessary alarm. It is wrong to say of a water going perhaps to a million or more consumers that it is "quite unfit to drink," or "dangerously polluted" simply because it contains *B. coli*, when the water has been drunk for years with perfect safety. Bacteriologists should, of course, aim at a high standard of purity, but a chance sample of water containing *B. coli* in 100 or even in 10 c.cm. does not necessarily indicate an alarming state of affairs. It is one thing to say that a sample does not reach the highest standard of bacteriological purity and quite another thing to assert that it is actually dangerous to health. The authors show wisdom in the following caution:—

"Too great an importance must not, however, be attached to bacteriological results, since great care is required in their interpretation. Want of experience, or a too rigid adherence to empirical standards, may easily lead to erroneous conclusions. Some knowledge of the history of a water is in most cases absolutely necessary in order to enable correct inferences to be drawn."

The book is comprehensive, and other sections deal with the interpretation of chemical analyses, analyses for sanitary and other purposes, collection of samples, physical examination, character of suspended matters, chemical analysis, examination of grossly polluted waters, softening of water and excess lime process, action of water on lead, estimation of saline constituents, and special analyses, a table of analyses of waters from various geological sources being provided.

A certain intolerance of opposing views is noticeable on occasion throughout the book and the significance of the experiments carried out by other observers is not always correctly interpreted, but the volume as a whole has great merit as a practical contribution to the literature of water-supply.

PNEUMONIA.

Its Pathology, Diagnosis, Prognosis, and Treatment. By the late R. MURRAY LESLIE, M.A., B.Sc., M.D. Edited and revised by J. BROWNING ALEXANDER, M.D., M.R.C.P. Lond. London: William Heinemann (Medical Books), Ltd. 1924. Pp. 351. 12s. 6d.

THIS book was commenced by Dr. Murray Leslie in 1919, and had practically reached completion when the author died. Dr. Browning Alexander has revised the work and brought the bacteriological section up to date, as well as the sections dealing with vaccine therapy. The book is a comprehensive survey of the epidemiology, ætiology of pneumonia, and of the clinical practice in its treatment. Practically all the ground relating to this ubiquitous disease is well covered.

A fairly full account is given of the researches at the Rockefeller Institute on pneumococcus types, but there is a regrettable tendency to use the words "type" and "group" as though they were synony-

mous terms. Serum therapy, including both the old antipneumococcal sera and the new serum of the Rockefeller Institute, receives due attention. Vaccine therapy is dealt with in a final chapter, where the opinion is expressed that there is little appreciable difference in the course of the disease when untreated or treated by vaccines. On the clinical side the use of alcohol (1) as a food, (2) as a drug is discussed at length. The administration of oxygen is dealt with in detail, and the various methods of using oxygen described. The thorny subject of digitalis therapy is well discussed.

In the chapter on diagnosis a short section has been devoted to radiographic diagnosis which is perhaps more commonly used abroad than in this country in cases of pneumonia. The authors consider that this relatively new method of diagnosis has thrown considerable doubt on the hitherto accepted ideas regarding the so-called central pneumonia. The chapter on prognosis is one of the most interesting, especially when read in conjunction with the later section on the maintenance of the circulation. The authors rightly lay stress upon the cardio-vascular system in this connexion, and suggest as a working maxim, "Take care of the heart, the lungs will take care of themselves," though they point out they do not wish to imply the early and continuous use of cardiac stimulants.

The book should find a ready public, since it is written from a common-sense point of view by two clinicians who have a wide experience of the disease, and who will be recognised as a sound guide by practitioners.

CLINICAL ASPECTS OF THE ELECTROCARDIOGRAM.

By HAROLD E. B. PARDEE, M.D., Associate in Medicine, Cornell University Medical School; Consulting Cardiologist, Lying-in Hospital and Woman's Hospital, New York City. New York: Paul B. Hoeber, Inc. Pp. 222. 1924. \$4.

THE author of this well-written book has given the reader all that he can be expected to know about clinical electrocardiography. In this volume nothing of clinical importance likely to assist in the interpretation of the electrocardiogram has been omitted, nor has any neglect been shown in dealing with the experimental evidence upon which our knowledge of this subject, in the main, depends. It is a work which can be recommended to all who intend to specialise in disease of the cardio-vascular system and to the cardiologist who already has a working knowledge of the electrocardiograph.

It is not a book for the general practitioner. He should not be expected to be familiar with all the current knowledge of clinical electrocardiography, nor the experimental observations and theories upon which the interpretation of the electrocardiogram is based. There are ten chapters, all of which are well illustrated with helpful diagrams and electrocardiographic records which are exceedingly well reproduced. The subject-matter is dealt with in a clear, concise style under such headings as Disturbances in Rate and Rhythm, Clinical Aspects of Disturbances in Rate and Rhythm, the Use of the Electrocardiograph in the Examination of Patients.

The author at all times endeavours to keep the clinical aspects of his subject in the foreground, and refers to experimental observations only when they are likely to afford information of clinical importance. In discussing premature beats, he distinguishes those which are of no prognostic importance and others which indicate structural disease. This distinction is not based on experimental evidence, nor are clinical observations recorded which support the view that premature beats as an isolated sign are of prognostic importance. It is realised, for obvious reasons, that electrocardiographic records cannot be obtained in all patients; it is important, therefore, that this method of examination should not be omitted when an electro-

cardiogram is likely to give information of diagnostic and prognostic value. The type of patient who may have an abnormal electrocardiogram is described, and the significance which one should attach to electric curves in these clinical groups is discussed. Einthoven's tables for the determination of the direction of the heart current recorded by the three standard leads are given in an appendix. The bibliography is conveniently arranged under subject-headings.

THE CHEMISTRY OF ENZYME ACTIONS.

Second and revised edition. By K. GEORGE FALK. New York: Chemical Catalogue Co. 1924. Pp. 249.

In this small volume the author has attempted to provide a summary of modern views and theories with regard to enzyme action. After an interesting introduction Mr. Falk considers in detail the factors affecting enzyme reactions, notably the velocity, temperature, and colloidal influences. Among the most interesting chapters are those dealing respectively with the mechanism and the use and application of enzyme action. A chapter upon enzyme actions and tissues and tumours is included. The volume contains little original matter, but it presents an excellent summary of current views. Full references are given and the descriptions are clear and accurate.

PRINCIPLES AND PRACTICE OF OBSTETRICS.

Fourth edition. By JOSEPH B. DE LEE, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School, Chicago. Thoroughly revised. London and Philadelphia: W. B. Saunders Company Ltd. 1924. With 1128 illustrations on 923 figures, 201 being in colours. Pp. 1123. 55s.

THE fourth edition of this very complete treatise on obstetrics has been thoroughly revised; many of the less satisfactory illustrations have been replaced. The author deplores excess of zeal in undertaking obstetric operations and maintains a strongly conservative attitude throughout the book. A watchful and armed expectancy, he says, has proved to give the best results. He strongly condemns the indiscriminate use of pituitrin as practised to-day; we agree that this drug should not be used until after the child has left the uterus. Antenatal care is fully discussed and emphasis is laid on the value of the proper conduct of the hygiene of pregnancy as a means of preventing complications. Dr. De Lee does not believe that eclampsia can always be prevented; in discussing the treatment of this disease he states that prompt delivery will save most mothers and children—that is, if the patient is in skilled hands; but if operative skill and experience are lacking, he is strongly in favour of the conservative treatment of Stroganoff preceded by a generous venesection. His objection to eliminative methods, especially colonic flushing and catharsis, is that they soil the field of operation. The section dealing with parturient injuries of the higher pelvic fascia and pelvic floor is very good, and several new illustrations have been added here. The author lays great stress on the proper repair of these injuries and is a strong advocate of episiotomy as a prophylactic measure. He considers that an important cause of perineal tears is a narrow pubic arch, and is convinced that a large number of the deep lacerations in forceps cases are due to the unrecognised funnel pelvis. With this observation we are in entire agreement, but apparently marked contraction of the outlet is more common in America than in this country.

Dr. De Lee is an enthusiast for the new transperitoneal cervical Casarean section, or laparo-trachelotomy as he terms it. He believes that this operation should replace the classic one in all but a few exceptional cases, as it can be performed after

a woman has had a real test of labour and in cases where the abdominal section would not be considered—e.g., after a few attempts with forceps have been made and even where there is a slight possibility of infection; he considers that this procedure should almost eliminate the necessity of craniotomy on the living child. He claims for laparo-trachelotomy the following advantages: that the incision is made in the lower uterine segment and consequently there is less hæmorrhage and shock, that the intestines are not disturbed, and the field is not soiled by the uterine contents. Post-operative complications are rarer, adhesions are reduced to a minimum, and there is less likelihood of subsequent rupture of the uterus, there being only three cases reported to date. The maternal mortality is less, and out of 266 cases operated upon at the Chicago Lying-in Hospital there has only been one death, although many of the cases were unfavourable ones. Twelve new illustrations of this operation with full descriptive legends have been added, and these give an excellent idea of the technique employed. Without sharing the author's optimism, we think he has made out a good case for transperitoneal cervical Casarean section, and we await the publication of a larger series of cases with interest.

This new edition fully confirms the favourable opinion we formed of this book on its first appearance. It is beautifully illustrated and clearly printed, and is one of the best works on obstetrics in the English language.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXVIII., No. 1. Pp. 1-132. January, 1925.—The Mechanism of Hæmolysis by Complement Action, by A. Hill and G. Parker (Shanghai). An experimental hypothesis of the intimate relations of red cells, immune body, and complement in a hæmolytic system which will hardly be followed by any but real mathematicians. The upshot of it is, in common language, that hæmolysis is ascribed to complement acting intracellularly in the period between its entrance into the cell and its combination with cell constituents, both entrance and combination taking place under the influence of immune body. In this period complement acts as a catalyst, encouraging the release of hæmoglobin by a ferment in the immune body more and more of which is set free with the progress of the hæmolysis. The final fixation of the complement is due to its combination with some other constituent of the immune body.—The Deviation of Complement in the Wassermann Test, by A. Hill, R. N. McKnistry, and G. Parker (Shanghai). The principles of the preceding analysis of the inwardness of hæmolysis are applied to a new quantitative modification of the Wassermann reaction.—Regeneration of the Lizard's Tail, by C. Powell White (Manchester). The process of regeneration has been studied in a series of wild *Lacerta vivipara* caught in North Wales, which after autotomy had more or less regained their normal structure. Regeneration takes place from a growing point consisting of a mass of undifferentiated cells situated immediately beneath the epidermis at the apex. From this all the tissues are re-grown except the epidermis, which spreads along from the remaining edge and the nerves, which are derived from the last three pairs of roots in the stump. The muscles develop segmentally and in the end the spinal cord is represented by a simple epithelial tube like a long filum terminale and the vertebrae by a continuous unsegmented tube of cartilage.—The Serological Classification of the Tubercle Bacilli by Agglutination and Absorption of Agglutinins, by G. S. Wilson (Manchester) (see THE LANCET, Feb. 14th, p. 348.—The Oxydase Reaction in Acute Myeloid Leukæmia, by A. Piney (London). The oxydase reaction has generally been recognised as appearing in neutrophile leucocytes at the stage in

their development which is marked by the appearance of definite cytoplasmic granules. The observation that a positive oxydase reaction may be obtained in the pre-granular phase is shown to be due to the use of stains which are not the most effective in bringing out the granules.—Observations on Platelet Genesis, by S. P. Bedson and Mary E. Johnston (London). Anti-lymph gland and anti-endothelial sera have no effect on the blood platelets in vivo; anti-bone-marrow serum destroys most of them in the circulation without causing purpura, while anti-spleen serum destroys the platelets and produces purpura. The spleen does not normally produce platelets and its richness in platelet antigen is due to their accumulation there from the blood. By exclusion, the authors conclude that during extra-uterine life platelets are generated in the bone-marrow; they fail to find any fresh evidence to support their former view that the platelet is an independent element, and appear to be coming round to Wright's hypothesis of an origin from megakaryocytes.—Spirochaete-like Structures in the Cerebro-spinal Fluid of Experimental Animals, by D. K. Adams, J. W. S. Blacklock, and J. A. W. McCluskie (Glasgow). Deceitful spirillar structures are found almost constantly in the lateral ventricles of monkeys, rabbits, and guinea-pigs.—Spirochaetes in the Ventricular Fluid of Monkeys Inoculated from Cases of Disseminated Sclerosis, by the same authors. Real spirochaetes were found in two monkeys similar to those previously recorded from inoculated rabbits.—The Normal Differential Leucocyte Count in South African Natives, Chinese, and Others, by the late E. Emrys-Roberts (Cardiff). Compared with British students, all showed a relative lymphocytosis.—The Leucocytes in Osteitis Deformans, by A. Piney (London). Five cases all showed an increase in eosinophiles and basophiles.—Avian Tuberculosis in a Marsupial, by N. S. Lucas (London). Tuberculosis has apparently not been found before in a marsupial; the author records a case of infection with avian bacilli in a rufous rat-kangaroo from New South Wales in the London Zoological Gardens.—Multiple Microscopic Metastases in the Spleen in a Case of Liver-cell Carcinoma, by D. F. Cappell (Glasgow). There was unusually widespread bare-eye metastasis.—Variations in Immunity Response in Different Animals, by A. T. Glenn (Beckenham). From a variety of examples the caution is drawn not to found immunological conclusions on small series of experimental animals.—Interim Report of the Committee on Status Lymphaticus appointed jointly by the Society and the Medical Research Council. While asking for assistance in accumulating more data, the Committee publish their provisional conclusions, of which the most important is that there is no evidence to show that there is any connexion between the presence of a large glandular thymus and death from unexplained or trivial causes; as many large glands are found in young persons killed by violence as in those dying under an anaesthetic.

BRITISH JOURNAL OF OPHTHALMOLOGY.—November, December, and January, 1924–25.—We have already noticed W. J. Adie's article in the November number on Cataract in Dystrophia Myotonica.¹ The greater part of the November and the December numbers is occupied with recent investigations by means of the slit-lamp.—Basil Graves presents a report adopted by the Lang Clinical Research Committee on a bilateral chronic affection of the endothelial face of the cornea of elderly persons, diagnosed by the aid of the slit-lamp, which may or may not be the precursor of the affection described by Fuchs as "Dystrophia Epithelialis Corneae."—The December number contains the 1924 Doane Memorial Lecture of Harrison Butler on focal illumination of the eye with special reference to the clinical use of Gullstrand's slit-lamp with illustrations of the appearances presented by different varieties of cataractous

and subluxated lenses. Even without the use of the Gullstrand lamp much information may be obtained by carefully focusing a point of any strong light at different depths behind the cornea. This is not nearly so dazzling as diffused illumination, and so tolerant is the pupil to focused light that it is possible to examine with the narrow ribbon of the slit-lamp a patient with an inflamed photophobic eye who could not tolerate diffuse light of an intensity sufficient to reveal necessary detail. Harrison Butler is an enthusiast for the new method.—In the January number Henry Friedenwald and Jonas S. Friedenwald write on epithelial dystrophy of the cornea, connecting the affection described by Fuchs with that described in the November number by G. Graves.—There are also an article by D. J. Wood on ocular leprosy, well illustrated, and a note by A. S. Percival on the alteration of the power of the cylinder when used for close work, on which we recently published an annotation.

Reports and Analytical Records.

POST'S BRAN FLAKES.

(GRAPE NUTS CO., LTD., 5, CHANCERY-LANE, LONDON, W.C. 2.)

THIS preparation claims to be a mixture of bran flakes with other parts of the wheat berry and is one of the well-known class of ready-cooked breakfast cereals which appear to be gaining popularity in this country. When analysed the flakes were found to have the composition:—

Assimilable carbohydrates ..	69.3 per cent.
Moisture	9.6 " "
Fat	1.7 " "
Proteins	13.2 " "
Mineral matter	3.5 " "
Cellulose	2.6 " "

Calorie value per lb. 1608.

The carbohydrates consist for the most part of starch which has been gelatinised and flaked. It is to the cellulose and mineral matter present that the mildly laxative action claimed for the preparation is due. The calorie value is a high one and comparable with that of wheaten flour.

FRY'S PURE SOLUBLE COCOA.

(J. S. FRY AND SONS, LTD., BRISTOL.)

When analysed this cocoa gave the following results:—

Fat	25.1 per cent.
Moisture	4.2 " "
Total ash	7.0 " "
Water-soluble ash	5.5 " "
Alkalinity of water-soluble ash as K ₂ O	2.4 " "

These figures are typical of a high-grade "soluble" cocoa. This so-called solubility is due to the customary treatment with a small amount of alkali during roasting. As the subject of preservatives in foods is claiming considerable attention at the moment, a special search was made for sulphites, borates, and salicylates. The results were negative.

PLAYER'S "NO. 3" VIRGINIA CIGARETTES.

(JOHN PLAYER AND SONS, NOTTINGHAM.)

These cigarettes are cork-tipped and heavier than most of the Virginia cigarettes on the market, about 21 going to the ounce. The paper on each cigarette weighed 0.06 g., or about 4.5 per cent. of the weight of the cigarette. On analysis the following results were obtained:—

Moisture	13.0 per cent.
Ash	10.7 " "
Silica	1.5 " "

The tobacco is fine-cut and of good quality and the cigarettes burn evenly and not too rapidly.

¹ THE LANCET, 1924, ii., 1189.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 21, 1925.

SOME INTIMATE ASPECTS OF HUNTER.

THE opening pages of our issue this week are occupied with the Hunterian Oration delivered on Saturday last, Feb. 14th, by Sir D'ARCY POWER, before the Royal College of Surgeons of England. The Hunterian Orator approached his great subject from a particularly intimate biographical side, and as a result was able to give pathetic details of the physical disabilities under which the Father of modern surgery carried on his magnificent work during the last 25 years of his life. JOHN HUNTER died of widespread disease of the arterial system, the largest as well as the smallest arteries being involved, and there seems no doubt, after the minute and tragic story set down by the Hunterian Orator, that the cerebral symptoms from which he began to suffer after he had inoculated himself with syphilis in 1767 continued intermittently until his death in 1793. The whole of the picture, as vividly drawn by Sir D'ARCY POWER, becomes coherent when we read of HUNTER's pathological lesions alongside of the description of his mentality, while we remember the splendid range of his accomplishment. We can understand the devoted affection which he inspired in his pupils, and we can understand also how a man devoid of all tact, and ill-equipped in accurate phrasing or the arts of persuasion by speech or by letter, should have made bitter enemies; and it was a happy thought which inspired the exhibition during the Oration of a series of illustrations directly lampooning the venerated subject of the discourse. For often the advocatus diaboli proves himself a valuable biographer, in proof of which we may refer to Mrs. Piozzi, who in her venom threw light on the great JOHNSON, where the pious BOSWELL was silent.

In this way, that good hater, JESSE FOOT, by revealing the existence of a group of men who were rendered suspicious and jealous by the reiteration of HUNTER's merits, shows us that HUNTER often felt himself in contest with personal foes and knew himself to be the subject of limitless detraction at their hands. For this circumstance dictated the uncomplimentary attitude which he always adopted in his personal disputes. The water-colour drawings, which were exhibited by means of the epidiascope at the close of the Oration, were executed for FOOT by an artist named BEAUMONT, to accompany a scurrilous life of HUNTER, the preparation of which seems to have occupied the last 30 years of FOOT's life—he was a pamphleteering medical practitioner, 16 years HUNTER's junior. The sketches are not only skilful in detail but so consistent as to portraiture that to the eye of candour, as FOOT might have said, they appear both contemporary and correct. Three volumes of FOOT's history, thus extra-illustrated or "graingerised," are now in the possession of the Wellcome Historical Museum, and for the following information concerning them we are indebted to Mr. VICTOR PLARR, Librarian to the Royal College of Surgeons of England. "A note," he says, "by FOOT on the back of a ball programme, dated from Ilfracombe in 1823, disputes with one, DYER the publisher, as to the price to be

paid for the collection of illustrations, DYER claiming not less than £86, plus extras, and FOOT standing out for £78. How the matter was settled is not known. The pictures are not caricatures, but may be described as excellent uncivil likenesses. JOHN HUNTER first appears holding WILLIAM HUNTER's invitation to London in his hand, and labouring at rough farm carpentry. Then in the kind of Highland dress the English of that day supposed Lowlanders to wear, he bids good-bye to his old father at the ancestral farm. He is handed a big bag of bawbees, and looks a nice red-haired Scotch laddie. Doubtless, in common with others, FOOT resented HUNTER as an interloper from the Kingdom of Scotland. In a blue suit the young HUNTER is next seen repairing to the shop of a dentist and barber. He holds a hare punningly in his hand in allusion to Spence's stock of wigs, displayed with dentures in the shop window, and it is suggested that he forms a disreputable partnership with SPENCE. HUNTER now sheds his blue coat, becomes a successful surgeon, and appears as a typical grave figure in black, a flat black wideawake on his still auburn locks. He looks for all the world in successive sketches like a little curate—a curate of genius. FOOT, whose picture is inserted, appears by contrast stately, in blue coat and buff waistcoat and breeches. There is next a sketch of HUNTER's very bare surgery and consulting room, where he is seen malpractising on the small son of Sir ROBERT ROWLEY, bitten by a mad dog, and one of HUNTER's supposedly suppressed failures. In another scene the irate and stately PETRUS CAMPER advances with a horsewhip on HUNTER. Again, we see JOHN and WILLIAM HUNTER disputing across a table at the Royal Society in the presence of Sir JOSEPH BANKS, so hated by 'PETER PINDAR.' "

The learned librarian's comments thus bring us to the examples of BEAUMONT's pictures inserted in our text. One of these records that HUNTER builds a house in Leicester-square, and entertains the eccentric MARTIN VAN BUTCHELL, bearded and wearing a billycock, and mounted on a queer pony, to come and survey the premises. In another picture a golden calf is over the door and the approaching figure of EDWARD JENNER worships it—perhaps prophetically. In a third, HUNTER drives a pair of buffaloes from his Earl's Court house to Leicester-square and extends a friendly hand to a menagerie showman en route. A fourth is a vile rejoicing at HUNTER's sudden death in St. George's Hospital. HUNTER's face throughout the pictures is distinctive with prognathous jaw, pointed chin, lean cheeks, long sharp nose, and yellow natural hair. It is no small tribute to the fame of the philosopher that 30 years after his death FOOT knew that his enemy's personality would be recognised. This outburst of spleen had a result exactly opposite to its intent, revealing as it did to all men the welter of suspicion in which HUNTER moved and the magnificence of his triumph over it.

THE BACTERIA OF FOOD POISONING.

SINCE it has been ascertained that nine out of ten outbreaks of food poisoning are traceable to bacteria of the Salmonella group, the public have a right to ask that efforts should be made to prevent the infection of food by these organisms. The Ministry of Health has enlisted the co-operation of the Medical Research Council to this end, and while the actual paths through which the organisms find their way into incriminated foodstuffs still elude discovery, the results of an investigation subsidised by the Council clear away

several preliminary difficulties. A report¹ by Dr. W. G. SAVAGE in association with Mr. P. BRUCE WHITE throws light, not only on the identification and classification of bacteria of the *Salmonella* group, but also on their distribution in nature and on the effects produced in animals by infection with different types of organisms. All the members of this group are short sporeless bacilli with rounded ends, possessing flagella and exhibiting motility. They are Gram-negative, stain readily with ordinary dyes, and are bile-tolerant. Their principal cultural characteristics are good growth on agar and on gelatin, which is not liquefied, the production of acid and gas from glucose and mannite, and the inability to ferment lactose, saccharose, and salicin, or to produce indol. Classification of the types of organism which make up this group has been attempted by various observers on the basis of morphological and cultural characters, of serological properties, of the source of derivation, of the pathological reaction in man and other animals, and of protective specificity. The result has been great confusion and overlapping. Dr. SAVAGE and Mr. WHITE give good reasons for regarding the biological and serological characters of the different strains as the most satisfactory basis for differentiation, using the other properties as confirmatory factors. From the examination of 150 strains Mr. WHITE has differentiated ten main types, which correspond very closely with those identified and described by H. SCHÜTZE in THE LANCET (1920, i., p. 93), and the first part of this report is devoted to a discussion of their serological properties. The distribution in nature of these species and the type of disease they may produce in man as well as in animal hosts has been provisionally tabulated in the second part of the report. The common causes of food poisoning outbreaks are *B. aertrycke* and *B. enteritidis*. Of these the former produces disease in cows, calves, and rats, while the latter is a widespread cause of enteritis in mice, guinea-pigs, and birds; it is occasionally found in pigs and calves but does not occur commonly in rats. The Derby, Stanley, and Newport types can also cause food poisoning in man, but their distribution in nature is apparently much less widespread. The Stanley type has not yet been isolated from animals; the Newport type is unknown in animals other than dogs; and of the Derby type, which has been isolated from pigs, the exact disease-producing rôle is unknown. *B. suispestifer* is exceptional as a cause of food poisoning, requiring special conditions such as massive infection. The fact that of all these species *B. aertrycke* is the least specialised as regards animal hosts may well be related to its common association with food poisoning in man.

That bacilli so closely related in their biological affinities should yet have such different pathological significance is a matter of great interest. For example, *B. paratyphosus* B regularly causes paratyphoid fever in man and probably never produces acute food poisoning of the ordinary type; further, there is no evidence that it can set up disease in animals. *B. aertrycke*, on the other hand, never causes paratyphoid fever in man but commonly food poisoning, and is found not infrequently to be the causative agent of disease in animals. Dr. SAVAGE and Mr. WHITE have attempted, in the third part of their report, to throw light on these and other pathological differences by a study of the local action of different types of *Salmonella* bacilli upon the alimentary tract in experimental animals. Parenteral introduction of organisms has been used for certain experiments,

but in the main bacilli have been administered by the mouth, in order that the method of introduction may be comparable with that in the human victim of food poisoning. The majority of the feeding experiments have taken the form of a comparative study between *B. aertrycke* and *B. paratyphosus* B. Experimental evidence supports the view that the essential lesion in food poisoning is irritation of the alimentary tract by a toxic substance which the authors believe to be an internal secretion of the organism, and to be directly associated with the virulence of the strain. The irritant effect is most vigorously exhibited by those strains which are responsible for food poisoning outbreaks and is much less evident, though not entirely absent, in types such as *B. paratyphosus* B and C, which do not cause human food poisoning of the ordinary irritant type but set up a more general infection.

In a review of the relationship of some of the factors concerned in infection to food poisoning outbreaks and animal infections which concludes the report, it is noted that the serological classification coincides at many points with differences in cultural behaviour, distribution, toxicity, invasive power, and pathogenic behaviour, though a great deal more work must obviously be done before conclusive results are reached. Unfortunately, in all outbreaks of food poisoning, whatever the type of organism concerned, the clinical features are essentially the same. The symptoms are those of intense gastro-intestinal irritation, and the attack is probably localised to the alimentary tract in that large majority of cases in which recovery ensues. The low death-rate (about 1 per cent.) in a disease of such severity is attributed by the authors to its causation by organisms of intense toxicity but low invasive power. The implication of the *Salmonella* group in the outbreaks following consumption of toxic canned foods where no organisms can be isolated is regarded as highly probable. The experimental evidence bearing upon this question is certainly suggestive, but Dr. SAVAGE and Mr. WHITE do not offer it as conclusive. Indeed, throughout the report the utmost care is taken not to claim too much from animal experimentation. But the fact that the authors have made and will shortly report detailed investigations, epidemiological and bacteriological, of 100 actual recent outbreaks of food poisoning in this country is sufficient guarantee that their laboratory experiments are only auxiliary to observations of disease in man, and it is mainly by such well-balanced combination of observation and experiment that modern epidemiology progresses.

SCIENCE AND GOVERNMENT.

THE group of photographs of medical Members of Parliament in THE LANCET of Feb. 7th recalls to a correspondent an interesting discussion in *Nature* (Jan. 3rd, 1925) of the part taken—or rather not taken—by scientific men in the government of modern countries. Dr. A. D. LITTLE had addressed the Franklin Institute in Philadelphia on the anomaly that, although all the distinctive features of modern civilisation are due to the discoveries made by scientific men, yet nowhere is the governing and directing power in their hands. The premise is obviously wrong; modern civilisation has its moral as well as its material victories, and if it consisted of nothing but aeroplanes and wireless it would not be much worth bothering about. But the fact is true enough, and at first sight it is perhaps rather surprising, though a little reflection suggests that such

¹ Medical Research Council, Special Report Series No. 91. H.M. Stationery Office. 3s. 6d.

an arrangement is not as undesirable as it appears. Treating the question empirically, the writer in *Nature* points out that in fact we have no clear evidence that the majority of scientific men would be of any particular use in the conduct of affairs, or that the views of the Royal Society on international politics are worthy of any special consideration; which leads him to the general conclusion that the scientist is best occupied by sticking to his own job. General considerations seem to indicate the same answer. The scientific habit of mind consists essentially in adding up facts correctly, in doing arithmetic with real numbers so to speak, and if public affairs had to deal with material of like kind scientific experience and training could not but be helpful. But governments rarely deal with facts, they have to cope with near-facts and ideals and emotions and aspirations, and if these can be reduced to an appearance of objective reality (as may be possible for example in economics) can the result be described as better than approximate? Affairs, in short, provide just the same kind of problems as does practical medicine. The difficulties of diagnosis and the obstacles to the evaluation of therapeutic procedures dealt with recently by Dr. E. BRAMWELL¹ arise mostly from the ill-defined numbers which the physician has to add up. When a doctor has to deal with 2 and 5 he has no more difficulty in adding them up to 7 than any ordinary man, as the neurologists have shown. But as a rule he has a figure supposed to be somewhere about 2 to relate to another which may be anything from 3 to 7 and it is little wonder if the answer is only right within about 100 per cent. He cannot treat the question algebraically, he cannot even use statistical arithmetic; his patient is a concrete individual. And the man of affairs and physician alike have another difficulty which the scientist never has to meet—they have to do something, and that without immoderate delay. In scientific questions the answer has necessarily to wait until there is reasonable surety about the numbers which have to be added up and the correctness of the addition; and as the result is a new piece of knowledge which no one can miss any more than they can miss tomorrow's breakfast, no one is particularly worried at the delay. But if the problems of unemployment were treated in the same way, and by men whose minds had been trained to work in that way, some dissatisfaction would probably result. The truth seems to be that these questions of government are on the whole best dealt with by persons who have improved by experience and practice a natural inclination to consider approximate data and to make clever, perhaps inspired, guesses at the number which results from the addition of x to y , or, when that is impossible, to select a range of numbers which we may call a compromise. Medical men occupy a peculiar position in having a scientific training which culminates in learning how to reach sound conclusions from very imperfect data. In many ways this is a singularly appropriate preparation for public affairs.

THE HEALTH OF THE KING.

THE KING has been during the week suffering from an attack of influenza of the respiratory type. The general condition is improving, but it is too soon to expect any change in the bronchitis. The official bulletins, signed by Sir STANLEY HEWETT, Sir MILSOM REES, and Lord DAWSON of PENN are keeping the public informed of His Majesty's progress.

¹ See THE LANCET, Feb. 7th, p. 265.

Annotations.

"Ne quid nimis."

SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD.

It is now 25 years since Batten, Russell, and Collier gave the first general description of the nervous disease associated with pernicious anæmia, and a great deal of study has been devoted to the subject in the interval. The discussion which took place on Feb. 11th at the Neurological Section of the Royal Society of Medicine revealed the amount of work that is being done on it at present, and showed that some progress is being made in the fight. Dr. A. F. Hurst, who was the opening speaker, presented a very complete hypothesis of its ætiology. He first showed that the anæmia with which subacute combined degeneration of the cord had been associated in all the 21 cases of his series had been identical by every known test with that called Addison's or pernicious anæmia, and assuming that this was the anæmia invariably associated with subacute combined degeneration, he treated the ætiology of the two diseases together. The essential predisposing factor he believes to be absence of the hydrochloric acid of the gastric juice; if, in cases of achylia, oral or pharyngeal sepsis occurs, streptococci find their way down and implant themselves in the duodenum; there they develop their specific properties and produce two different toxins—a hæmolytic toxin and a neurotoxin—and according as one or the other of these is the more favoured by circumstances, pernicious anæmia or subacute combined degeneration dominates in the morbid state which ensues. Every step in this argument was supported by facts and figures. In pernicious anæmia and in subacute combined degeneration achylia has been found by Hurst and by Vanderhof and others in 100 per cent. of cases. That the achylia precedes the anæmia and the nervous disease, and is not merely an associated phenomenon due to the same cause, is indicated by several groups of facts; achylia has been found as much as 13 years before the onset of pernicious anæmia, and in other cases 12, 10 (twice), 7, and 6 years; pernicious anæmia has followed not only the common "constitutional" achylia, but also that produced by cancer of the stomach and gastrectomy; both pernicious anæmia and achylia may be familial and their association has been recorded in 15 different families; in one family the father had pernicious anæmia, and the three elder children, aged 10, 6, and 4 years, all had achylia; in another a woman and two of her daughters and a granddaughter all died of pernicious anæmia and the third daughter had achylia. The next step in Dr. Hurst's argument is supported by the presence of hæmolytic streptococci in the duodenum in cases of pernicious anæmia and of subacute combined degeneration; in 77 per cent. of a series of 42 such cases streptococci were obtained by means of the duodenal tube or by puncture of the duodenum at operation, while in 150 cases of various other diseases they were only obtained in 21 per cent.; the streptococci were hæmolytic in 17 out of the 19 cases of pernicious anæmia or subacute combined degeneration in which they were examined, and in the other two cases of subacute combined degeneration there was little anæmia; that these organisms gained entrance through the mouth does not need to be insisted on; glossitis was present in 85 per cent. of cases and pyorrhœa and tonsillitis were frequent.

Based on such evidence Dr. Hurst's theory cannot easily be gainsaid in regard to any case of subacute combined degeneration in which the anæmia is undoubtedly Addisonian. But other workers who are also seeing large numbers of cases have not had the same uniformity as Dr. Hurst in their findings. Dr. H. J. Macbride, who continued the discussion, gave an analysis of 199 cases collected by himself and

Dr. Carmichael from the National Hospital, Queen-square. In 40 cases, which they had personally observed during the last two years, free hydrochloric acid had been present in the gastric secretion in no less than 14, and of all the 199 cases only 26 per cent. gave a history of antecedent alimentary symptoms. Dr. Stanley Barnes, too, stated that free HCl had been found in nine of his 12 cases since 1922. Thus, in nearly half the cases of these two groups there had been no achylia. When we consider the great constancy with which achylia is found in pernicious anæmia (603 out of 613 collected cases in Hurst's table), it is open to grave doubt whether the anæmia in these other cases is the same entity as Addison's anæmia; there are some reasons for thinking that there may be another anæmia, closely allied to the true Addisonian but independent of achylia, and that either type may be associated with subacute combined degeneration of the spinal cord. Dr. Macbride and Dr. Carmichael, in a careful analysis of their cases, sought for other ætiological factors; they found in their patients a very high tolerance of thyroid, in some cases after death they found pathological changes in the testis, and they observed that in women subacute combined degeneration almost always came on at the menopause. They therefore suggest that endocrine disturbance may be an essential part of the disease. There was a general agreement on lines of treatment; hydrochloric acid to be given in large doses (3ii.) before meals to all patients with achlorhydria, eradication of sepsis, autogenous vaccines, arsenic, by the mouth or intravenously (N.A.B.), and in some cases blood transfusion. Both Dr. Hurst and Dr. Charles Hunter were able to record in cases of subacute combined degeneration associated with true Addison's anæmia great prolongation of life and recovery for several years from the nervous symptoms—the most encouraging results yet obtained.

METHYLATED SPIRIT AND ITS SUBSTITUTES.

WE noted recently in these columns (THE LANCET, Jan. 24th, p. 193) the modifications in the composition of methylated spirit, and commented on the use of isopropyl alcohol as a substitute. We have recently received some American isopropyl alcohol made from petroleum by-products, and it appears to be of excellent quality and practically indistinguishable from that made from acetone. In view of its high purity it is not surprising to find that recent publications¹ concerning its pharmacology give entirely satisfactory reports, so that there need be no hesitation in using it in the same way as the product obtained from acetone. The toxicity is not less than and not more than twice that of ethyl alcohol. It is a more powerful bactericide and antiseptic than ethyl alcohol towards the organisms so far studied (*Staphylococcus pyogenes aureus*, *Bacillus coli communis*, *Bacillus anthracis*, *Bacillus subtilis*, and acetic acid bacteria). It is effective in lower concentrations than ethyl alcohol, the most effective being 30 to 50 per cent. The technical product contains 91 per cent. of the alcohol by volume and 9 per cent. of water, and has a boiling-point of 80.4° C. and a specific gravity of 0.820 at 15° C., and a density of 0.816 at 20° C. It is obtainable under the name of "Petrohol" at 38s. per gallon for single gallons. Industrial methylated spirit free from the harmful denaturants and colouring matter found in mineralised methylated spirits is now also available for medical and surgical purposes, permission having been given by the Board of Customs and Excise for the sale of such spirit suitably denatured. "Antiseptic Surgical Spirit, B.D.H.," sold by the British Drug Houses, is colourless and has a pleasant refreshing odour, and contains a reliable non-poisonous mild antiseptic, and no harmful ingredients. Some of the denaturant, however, is thrown out of solution on the addition of water. It appears to be well-suited for use

as an evaporating cooling lotion in various forms of skin inflammation and for application to the skin for preventing bedsores. It is also recommended for cleaning and sterilising the skin preparatory to operations, and for sterilising surgical instruments, which it does not rust. It is obtainable at 10s. per gallon.

THE BICENTENARY OF GUY'S HOSPITAL.

Guy's Hospital, having reached the very respectable age of 200 years, during which period it has ministered to the afflicted with unceasing pains and care, the editors of *Guy's Hospital Gazette* have taken advantage of the occasion to issue a special number of their journal containing a short history of the hospital, together with an account of the various departments and societies which go to make up the hospital and its work. We congratulate them on the result of their labours, for the number forms a valuable record of a great and noble institution. The history of the hospital is given in an all too short paper by Sir William Hale-White, and the other contributions are all from the pen of experts in the particular subject in hand. There are many and varied illustrations which are all of interest, some of which, too, raise a smile by the quaintness to modern eyes of the dress, notably that of the group of nurses of 1865 and 1875. The proportionate space allotted to the various papers is justly spaced, except, to our minds, in one instance; the section given up to the hospital Rugby football club consists of 37 pages, while Sir William Hale-White's paper on the hospital's history only takes up 26. One of the most interesting articles is that dealing with the history of the Physical Society by Mr. J. M. H. Campbell, which contains, among other items, an exceedingly grisly story, the subject being hydrophobia. We are glad to note a panegyric upon that brilliant little journal the *Guyoscope*, now, alas, dormant. This special number is a happy thought and well carried out. The whole publication should be read by all laymen who take an interest in the well-being of their fellow creatures, for we expect that many of them have no idea of the manifold activities which go to make up the work of a hospital.

MOSQUITOES AND COCONUT PALMS.

THE breeding habits of mosquitoes have received a considerable amount of attention from medical officers, sanitarians, and entomologists for some time; but it will be news to many of them that several species breed commonly in the tops of coconut palms throughout East Africa. Dr. W. E. Haworth was acting as medical officer of health for the town and district of Tanga, Tanganyika Territory, in June, 1920, when he made this important discovery. It came about in this way. In spite of vigorous anti-mosquito measures it was noticed that the number of mosquitoes in the European houses of the town increased to an alarming degree, and that the insects for the most part were of the genus *Culex*, of which the corresponding larvæ could not be demonstrated in any surface water in the town at the time. These observations suggested that some uncontrolled breeding-place must exist, and suspicion fell on the tops of the coconut palms which adorn the picturesque town. An expert climber, one Sefu bin Mbwana, having been procured, he proceeded to climb the highest palms with ease by walking up the stem. Armed with a bottle and the hollow leaf-stalk of the pawpaw, he sucked the water which collects between the axil and the stem. In order to do so he had to sit astride the swaying leaf and force its stalk away from the stem—a highly sensational and perilous proceeding. In this manner no less than 10,382 palms were examined along the East African coast, at Kismayu, Lamu, Mombasa, Tanga, Zanzibar, Dar-es-Salaam, Mafia, Kilwa Kiswani, Lindi, and Mikidani. Twenty-seven species of mosquito were found breeding in palm water, including two species of *Anopheles*, 11 of *Aedes*

¹ D. H. Grant: *Journal of Laboratory and Clinical Medicine*, 1923, viii., 382; *American Journal of Medical Sciences*, 1923, clxvi., 261.

(formerly *Stegomyia*) and a large number of *Culex* of various species. The predominating form of mosquito was not the same at all stations. At Tanga it was *Culex fatigans*; at Dar-es-Salaam *Aedes (Stegomyia) argenteus*; possibly in some places the more dangerous malaria-carrying *Anopheles* may abound to the same degree. The number of mosquitoes proceeding from this source are most certainly a source of danger to the community. Granted even that only a few perfect insects emerge daily the total number thus produced must be a very considerable one when the number of palms, which may exceed 70,000 in one township area, is considered. What has been demonstrated¹ for one portion of East Africa probably holds true for all coconut-growing areas throughout the tropics, and the importance of this subject from a public health point of view can hardly be overestimated. Dr. Haworth is to be congratulated on a piece of work which suggests that the task of eradicating the mosquito in tropical districts is more difficult and complicated than has been apprehended. It must be a source of especial satisfaction to him that three handsome new species of the genus *Aedes* have been discovered as the result of this investigation. Excellent figures of these three species—*A. haworthi*, *A. calceatus*, and *A. soleatus*—which are described and named by Mr. F. W. Edwards in an appendix, have been drawn by Mr. A. J. E. Terzi to illustrate Dr. Haworth's survey.

VOLUNTARY AID DETACHMENTS: PROGRESS OF THE SCHEME.

THE King has graciously permitted the Royal Crown to be included in the badge for mobile members of the Voluntary Aid Detachments. Already over 200 men's and women's detachments have been formed and received official recognition. These detachments have been raised by the St. John Ambulance Association, the British Red Cross Society, and the St. Andrew's Ambulance Association. County Controllers have been appointed in nearly every county in England, Scotland, and Wales, and a Scottish and a Welsh Committee have been formed with headquarters in Glasgow and Cardiff respectively. These Committees are responsible to the Central Joint Voluntary Aid Detachment Council for the administration of the new scheme in those areas. The scheme was evolved in 1923 out of war experiences, when it was decided to reconstitute the Central Joint Voluntary Aid Detachment Committee formed during the war to administer Voluntary Aid Detachments. As it now exists, the scheme is designed to supplement the Medical Services of the Naval, Military, and Air Forces on emergency in any part of the world, and the various Territorial Army Associations are responsible for the enrolment and organisation of V.A.D. members. Members are now being trained for eight days in Naval, Military, and Air Force hospitals, and "Training Regulations" have been issued and classes of instruction are being held in most centres and districts.

THE SERUM PROPHYLAXIS OF MUMPS.

ALTHOUGH mumps is not a severe disease in its typical form, outbreaks of this infection in institutions for children and aggregations of adolescents and adults may cause considerable inconvenience and loss of time to the individual and the community as a whole. Joseph C. Regan² has therefore made trial of prophylactic injections of convalescent serum, a method which has been employed with such striking results in the prevention of measles on the continent and in America, though it does not appear to have been much tried in this country. Six groups of children, amounting to 81 in all, who had been exposed to

mumps at different times in the Kingston Avenue Hospital, Brooklyn, were injected with the serum of convalescents from the disease, the doses varying from 2 to 4 c.cm. The donors were healthy adults who gave a negative Wassermann reaction, were clinically free from any signs of active tuberculosis, and were between the tenth and twentieth, and usually between the fourteenth and sixteenth day of disease. Only one of the children so treated developed mumps, but it should be noted that 11 were discharged from observation before the incubation period was over, and their subsequent history was not known. Dr. Regan suggests that in order to modify the disease and particularly to avoid orchitis without preventing the occurrence of the disease altogether the serum should be injected late in the incubation stage and in somewhat larger doses than he has recommended for the other cases. A more lasting and possibly permanent immunity is conferred by an abortive attack of mumps, whereas the immunity afforded by early injection of the serum is only transient.

CANCER RESEARCH BY THE GENERAL PRACTITIONER.

A MONOGRAPH published as a supplement to *Norsk Magazin for Lægevidenskaben* for December is an example of what a general practitioner may do as a research worker even in these days of laboratories and instruments of precision. The author, Dr. Just Thoner, has practised in a mountainous district in Norway (Gol and Hemsedal) from 1907 to 1921, and throughout this period he has consistently pursued certain investigations of cancer as it occurred in this remote district whose population has been remarkably stationary. Dr. Thoner made himself familiar with the family history of every home in the two parishes in which he worked, and he collected 120 cases of cancer occurring in the period 1902-21 in an area with an average population of 3679. Of the 120 cases, as many as 73 were males, and the site of the cancer was the alimentary tract in 61 per cent. of the total. There was only one case of carcinoma of the uterus, but as great a proportion as 14 per cent. of the total were cases of sarcoma. About 50 per cent. of the cancers occurred between the ages of 60 and 80 years, and after the age of 80 there were hardly any such cases, and it would seem that, in this country district, cancer is not so much a disease of advanced age as of "incipient senility." External causes seemed to have played a part in 42 per cent., trauma alone in 19.5 per cent. of all the cases. Cancer affecting both husband and wife was observed in only 5 to 6 per cent. of the married patients, and the interval between the cancers of the husband and wife was often long—up to 25 years. Even in the homes where a cancer was associated with a profuse discharge, and cleanliness was conspicuous by its absence, it was rare to find an accumulation of cases within a short period, and Dr. Thoner concludes that "the transference of cancer from one individual to another must be rather rare if taking place at all. . . ." With regard to the influence of heredity, Dr. Thoner was able, thanks to the stationary and rural character of his material, to show that, in comparison with tuberculosis and insanity, cancer certainly does not seem to show a marked preference for certain families. But his investigation of the records of five "cancer families" showed that, if only the deaths over 35 be considered, the cancer incidence of these families was 18.2 per cent., as compared with 12.1 per cent. for the total population. Many other interesting facts, such as the geological formation of the districts concerned, the changes in the diet of the population during the past century, and the character of the daily life led by this comparatively isolated community, are discussed by Dr. Thoner, whose work has been financed by the Elizabeth and Knut Knutsen's Fund for Cancer Research. Included in his 155-page monograph is a summary in English. It is to be

¹ Mosquitoes and Coconut Palms—A Mosquito Survey of Palm Trees in East Africa and the Problems Resulting Therefrom. By W. E. Haworth, M.B., C.M., B.Sc., Trans. Roy. Soc. Trop. Med. and Hyg., 1924, October, vol. xviii., No. 4, pp. 162-198.

² Journal of the American Medical Association, Jan. 24th, 1925.

hoped that the example set by Dr. Thoner will be followed by others, and that work of this kind will not be financially starved on the assumption that research is a monopoly of the laboratory.

THE IRISH FREE STATE AND THE MEDICAL REGISTER.

THE Senate of the Irish Free State recently passed the Medical Bill, dealing with the maintenance of the Medical Register, through all its stages, and the Bill has now become law. The Bill authorises the General Council of Medical Education and Registration to continue to exercise authority in respect of medical practitioners in the Irish Free State. Persons registered under the Medical Acts are, in the Free State, to have the same rights, privileges, and immunities, and be subject to the same obligations as in Ireland before the Free State came into existence. The General Council is to have, in relation to persons and matters in the Free State, all the old powers, jurisdictions, and authorities; the Branch Council for Ireland will similarly retain its powers; the General Council and the Branch Council will continue to be constituted and elected as before; and Universities and medical corporations in the Free State continue to have powers of granting diplomas and holding qualifying examinations under the Medical Acts. The Bill is for the period of one year. Mr. McGilligan, Minister for Industry and Commerce, who was in charge of the Bill, stated that prolonged negotiations had taken place between the British and Irish Governments in reference to some points in dispute. For the next 12 months, however, the position of medical men qualified in the Free State is assured, in that they will continue to enjoy equal privileges with their colleagues in the United Kingdom and Northern Ireland.

THE DANGERS OF EARTHENWARE COOKING UTENSILS.

A VARIETY of types of saucepans, frying pans, and casseroles have been recommended from time to time by health enthusiasts, but the dangers of each have been unmasked by a relentless series of chemical investigations. Thus enamel vessels have been condemned because it has been stated that such lesions as appendicitis may result from the swallowing of small pieces of dislodged enamel. Nickel-lined utensils have also been included¹ in the danger list, since, although stable to alkaline fluids, they are unsuitable for acid foods, such as stewed fruits and the like. Aluminium² and zinc³ containing alloys have also proved to be unsuitable for the manufacture of cooking utensils. Iron and steel rust, and consequently earthenware goods have been looked upon as a last resort, and have, up to the present, been regarded as being safe. A report just issued by the Ministry of Health (Reports on Public Health and Medical Subjects, No. 29)⁴ proves conclusively that we must inquire carefully into the history and birthplace even of our casseroles and earthenware vessels before entrusting our meals to them. In this report Dr. G. W. Monier-Williams calls attention to the danger of absorbing noxious substances from the glaze of these articles. The report, which, although highly technical, is extremely interesting, commences with a brief outline of investigations already performed upon the question of lead poisoning arising in connexion with lead glazing. As Dr. Monier-Williams points out, practically all these investigations were conducted from the point of view of danger

to the workers during the actual process. Briefly, the process consists in "fritting," or fusing a mixture of red lead, clay, ground flint, and washing soda in a kiln. A mass of lead silicates is thus produced. The "fritt" is then ground up and suspended in water in which the vessels to be glazed are dipped. The vessel is then baked at a high temperature in order to produce a uniform glossy surface. As early as 1887 the Germans realised that such glaze might liberate lead if boiled with acid solutions, and they laid down a law that condemned any cooking vessel yielding lead on boiling with 4 per cent. acetic acid. The object of Dr. Monier-Williams's researches was to reinvestigate those problems, and to determine the stability of glazed articles to ordinary cooking processes. His results may be summarised by stating that certain wares do give off lead, arsenic, and other toxic substances when submitted to the ordinary cooking processes, and that consequently they are a source of danger. We gather from the report that the most unsuitable articles come from abroad, or from the smaller English potteries.

The question naturally arises as to what sort of cooking utensil really is safe. In view of the unsuitability of most ordinary materials, a new form of extravagance in the shape of platinum-lined casseroles suggests itself for delicate millionaires.

THE zeal inspired by Sir James Mackenzie will not cease with his death. It would be unfortunate indeed if the work which he initiated at St. Andrews should have to be discontinued through lack of funds, especially since the ultimate value of observations by a group of practitioners must depend largely on the length of time covered by their records. A suggestion that a fitting tribute to his memory would be the endowment of the Institute founded by him at St. Andrews is likely to receive cordial support. We understand that £60,000 is the minimum sum required if the James Mackenzie Institute for Clinical Research, St. Andrews, as it is now to be called, is to be put on a sound financial basis. Of this sum £7000 has already been collected. Donations should be sent to the hon. treasurer of the Institute, Commercial Bank, St. Andrews.

INTERNATIONAL CONGRESS OF THALASSOTHERAPY.—The fourth International Congress of Thalassotherapy will be held at Arcachon, near Bordeaux, from April 27th to 29th. The Association of Thalassotherapy (treatment of disease by a residence at the seashore, by sea-bathing, or by a sea-voyage) was founded by Prof. Verneuil, of Paris, at the International Congress at Boulogne in 1895. The President of the Association was for many years Prof. Albert Robin, of Paris, Member of the Academy of Medicine, and the presidency is now held by Prof. Gilbert, of the Paris Faculty of Medicine and a Member of the Academy of Medicine. The Association is managed by a permanent bureau with its office in Paris. This permanent bureau, together with the national committees of each country, organises the international congresses. Among the French Committee are many well-known names, such as Prof. D'Arsonval, Prof. Marfan, Prof. Pinard, and Prof. Roger, Dean of the Faculty of Medicine of Paris. Dr. Robert Pierret has been elected liaison secretary to assist the work of the British Committee, among whose members are Sir Dyce Duckworth, Sir Humphry Rolleston, and Sir St. Clair Thomson (President of the British Committee), and Dr. Campbell McClure (secretary). The question to be discussed at the forthcoming International Congress is the Marine Treatment of Rickets. The speakers from Great Britain will include Prof. Leonard Hill and Dr. P. L. Webster, and delegates from France, Italy, Belgium, and other countries will also contribute papers to the discussion. The Association is composed of titular and adhering members and the subscription for the Congress is fixed at 50 French francs for the titular members and 30 francs for the adhering members. Special facilities for accommodation at Arcachon have been secured at reasonable rates. All the members who intend to be present at the Congress are requested to write to Dr. Pierret, 7 bis, Rue Raynouard, Paris (16e) from whom further information may be obtained.

¹ THE LANCET, 1924, ii., 339.

² Ibid., 1913, i., 54.

³ Ibid., 1923, i., 242.

⁴ Reports on Public Health and Medical Subjects, No. 29. The Solubility of Glazes and Enamels Used in Cooking Utensils. By G. W. Monier-Williams, M.A., Ph.D., F.I.C. London: H.M. Stationery Office, 1925. 6d.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CX.—THE TREATMENT OF TWO CHRONIC SKIN DISEASES.

II.—ACNE VULGARIS.

Acne vulgaris is sometimes regarded as a trivial complaint which will right itself as the patient gets older. But it is a disfigurement even in its mildest forms and may if neglected take on a more serious aspect. It may last over a number of years and lead to permanent scarring. It should, therefore, never be left to take its own course in the hope that it will eventually clear up without treatment. Acne vulgaris is a disease of puberty and of early adult life. Its essential feature is the comedo or "black-head," without which there cannot be acne. The comedo was supposed formerly to be due to a blocking of the mouth of the pilo-sebaceous follicle by dried sebum and immature hairs. It is really a dense mass of acne bacilli enclosed in a sheath of horny epithelial cells which have been thrown out by the epidermis as a protection against the bacillus. The acne bacillus is not found on the skin until puberty, and the theory which best explains its presence at puberty is that the sebaceous glands then become more active and thus form a suitable soil for the acne bacillus which flourishes on an oily skin. Greasiness of the skin in the areas affected is an early and constant feature of acne. When only the oily skin and the black-heads are present we have "acne punctata." A further stage is presence of papules and of papulo-pustules. Each papule or papulo-pustule is formed around a comedo, and is due to a secondary infection by the *Staphylococcus epidermis albus*, or more virulent forms in more severe cases.

It will thus be seen that the rational treatment of acne is to begin in the earliest stages to try to control the oily state of the skin and to remove the colonies of acne bacillus from the mouths of the follicles. In most cases the time-honoured method of soap and hot water and sulphur lotion is successful if carried out thoroughly and with perseverance over weeks or months. The face should be soaped every evening, for two or three minutes by the clock, using a face towel or a shaving brush. It should then be bathed with hot water and a sulphur lotion rubbed on with a piece of absorbent wool and allowed to dry on. When the skin gets a little rough and sore the treatment should not be discontinued but should be merely omitted for a few evenings and glycerine of starch applied at bed-time. It is sometimes advised that the comedones should be expressed, but this should never be done by the patient and, if at all, only by the medical man. An ordinary toilet-soap may be used for the soaping or a sulphur soap. A suitable sulphur lotion is:—

R	Sulphur precip.	..	..	oz. $\frac{1}{2}$.
	Glycerini	..	..	dr. 2.
	Tinct. quillaie	..	..	oz. $\frac{1}{2}$.
	Spirit. coloniensis	..	..	dr. 1.
	Aq. destil.	..	..	ad oz. 6.

In cases where there are papules and pustules the same treatment may be employed, with the addition that any pustule should be broken with a pointed match stick dipped in tinct. iodi before using the soap and sulphur lotion. Where there is much pustulation a sulphur and resorcin paste may be applied at bed-time instead of a sulphur lotion, thus:—

R	Sulphur	..	..	gr. 15.
	Resorcin	..	..	gr. 10.
	Pulv. amyli	..	..	dr. 3.
	Vaseline	..	..	ad oz. 1.

Internal Medication.

Although acne vulgaris appears to be due to an external infection and there is really no evidence that an internal cause has to do with its origin, it is generally taught that anæmia, constipation, indigestion, or improper feeding are important factors, and arsenic or iron tonics and saline aperients are often prescribed. A favourite mixture is the classical Startin's mixture of iron, magnesium sulphate, and acid sulphuric. Calcium sulphide may be given internally, gr. $\frac{1}{2}$ — $\frac{3}{4}$, with the view to control suppuration, or some preparation of yeast with the same object. But reliance cannot be placed upon these internal remedies, and vigorous and persevering external treatment must not be neglected with the hope of curing by more general measures.

Associated Seborrhœa Capitis.

An important practical point is that most cases of acne are associated with seborrhœa capitis, with greasy scales and sometimes loss of hair. The acne bacillus is found in the scales and it is probable that continued infection of the face may take place from the scalp. To overcome this condition the head should be shampooed once a week with a spirit soap as follows:—

R	Saponis kalni	..	..	oz. 3.
	Spirit. vini meth. vel rect.	..	..	oz. $\frac{1}{2}$.
	Spirit. lavandulæ	..	..	dr. $\frac{1}{2}$.
	Aq. dest.	..	..	ad oz. 6.

The head is made wet with warm water and lathered with ordinary toilet-soap. A few teaspoonfuls of the soap solution are then poured on to the scalp and the lathering continued for several minutes, and the lather is then rinsed off with clean water.

Of recent years two new methods of treating acne have been employed—namely, vaccine treatment and X ray treatment.

Vaccine-Therapy.

Vaccine treatment of acne, although occasionally very successful, is uncertain in its results, so that one may hesitate to prescribe what must be a long course of treatment without any assurance of a good result. It is seldom, if ever, successful in acne punctata, and even where there is pustulation it frequently fails. It is, therefore, rather a remedy to use as a last resort or in addition to other measures than as a routine. Autogenous vaccines are more likely to succeed than stock vaccines.

X Rays.

In X rays we have a very valuable addition to our methods of treatment. It is always of great assistance, and, generally, very successful in at once clearing up the eruption or of considerably shortening its duration. It is sometimes avoided as a dangerous remedy, and it is so if not carefully applied; but with proper precautions it is entirely free from any risk of damage to the skin. This does not imply that any medical man who employs an X ray apparatus, however skilful he may be in radiographic work, is necessarily competent to treat safely a case of acne by X rays. He must have also experience in therapeutic dosage. Probably those only who have experience in the treatment of ringworm by X rays are able to appreciate fully the true meaning of an accurate dose; and there are many radiologists throughout the country who have now had this experience at the numerous ringworm treatment centres. X ray treatment may be employed even in quite early cases of acne punctata, and with excellent results. In more advanced pustulating acne, X ray treatment always shortens the cure. In cases of acne indurata with deep-seated indurations and pustules, no other treatment is so successful. In regard to the manner of application of the X rays there is a difference of opinion. Some prefer to give repeated small doses, others larger doses less often. But since there is no improvement

until by repeated small doses we reach by their cumulative effect that of a large dose, it is really safer to employ the larger dose at once, because it can be more accurately measured than can the cumulative effect of many small doses. A dose which is quite free from danger is a 2/3 Sabouraud pastille dose, and this may be safely repeated in three weeks, and after the second dose, at intervals of four weeks. In order to expose the whole face three doses are given, one to the forehead and one to each cheek. The hair at the scalp margin and the orbits, including the eyebrows, are covered with thin lead shield protections. Improvement is seen in from ten days to three weeks after each application. In some cases one or two applications are sufficient; in others, the treatment must be continued at intervals of four weeks or longer, sometimes for many months. Where in spite of a general improvement, fresh pustules continue to appear, we may supplement the treatment by a course of autogenous vaccines. Acne of the back and shoulders or chest may receive the same treatments as acne of the face.

Acné Excoriée.

It has already been mentioned that scarring is a common sequel of pustular acne. The patient should be warned of this lest the treatment by X rays or by other methods be afterwards blamed for the scarring. Scarring, sometimes quite extensive, may be produced in another way than by the healing of pustules. A patient who has acne and particularly a female patient, may acquire a habit of squeezing, pinching, or tearing with the nail every little acne spot, and may sometimes spend much time in front of a looking-glass performing this operation. Eventually, it may happen that even in slight cases this pinching, squeezing, and scratching becomes an almost unconscious habit which continues for long after there have ceased to be acne spots. Each erosion so produced not only causes present disfigurement but subsequent scarring. Such cases have been called by French writers "acné excoriée," and in cases of acne in a girl or young woman which seems to resist all treatment this cause should be considered. It will often be found that there is really no acne—no comedones and no papulopustules—but only dug-out excoriations and scars. In such cases it is generally merely necessary to convince the patient that the lesions are entirely due to her own interference and that she has only to refrain from touching her face with her fingers in order soon to bring about a cessation of the supposed acne eruption.

H. G. ADAMSON, M.D., F.R.C.P. Lond.,
Physician for Diseases of the Skin, St. Bartholomew's
Hospital, London.

THE Minister of Health has appointed Mr. Howell E. James, senior assistant secretary, Welsh Board of Health, to be secretary of the Board in succession to Mr. Percy E. Watkins, who has been appointed permanent secretary of the Welsh Department of the Board of Education from April 1st, 1925.

EUGENICS EDUCATION SOCIETY.—A lecture on Mate Selection in Primitive Society will be delivered by Mr. B. Malinowski, D.Sc., at the rooms of the Royal Society, Burlington House, Piccadilly, London, W., on Feb. 27th, at 8.30 P.M. Major Leonard Darwin will preside. All interested in the subject are invited to attend.

ROMFORD AND DISTRICT MEDICAL SOCIETY.—The first annual dinner of this new society was held at the White Hall Hotel, Romford, recently and was presided over by the President, Dr. J. H. Bletsoe. The society has already a substantial membership and the Romford Board of Guardians have granted the use of their board room for the meetings, which are to be held bi-monthly. At the annual dinner the guest of the evening was Sir John Bland-Sutton, who replied to the toast of "The Visitors," submitted by Dr. Charles D. Green, one of the oldest medical practitioners in the district. The Vicar of Romford, Rev. H. C. Robins, replied for the lay visitors. The toast of "The Society" was proposed by Mr. Alan Todd, and suitably acknowledged by the President.

Special Articles.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

HUNTERIAN FESTIVAL DINNER.

FOLLOWING the delivery in the afternoon on Saturday last, Feb. 14th, by Sir D'Arcy Power, of the Hunterian Oration, the Hunterian Festival Dinner was held at the Royal College of Surgeons of England, Sir John Bland-Sutton, the President, presiding. The following were present:—

Mr. J. H. Whitley (Speaker of the House of Commons), Lord Hewart (Lord Chief Justice of England), Sir Charles Sherrington (President of the Royal Society), Sir Frank Dicksee (President of the Royal Academy), Mr. Raymond Apperly, Mr. S. G. Asher, Sir James Atkin, Dr. Andrew Balfour, Mr. Sheriff Barthorpe, Mr. James Berry, Sir John Bland-Sutton, Sir Anthony Bowlby, Sir William Bragg, Dr. A. D. Brencley, Mr. R. H. Burne, Viscount Burnham, Mr. Alastair Cameron, Mr. H. S. Clogg, Sir Frank Colyer, Mr. S. F. Cowell, Earl of Desart, Mr. Sheriff Downer, Sir Frank Dyson, Mr. W. McAdam Eccles, Mr. C. H. Fagge, Mr. J. Herbert Fisher, Dr. H. Morley Fletcher, Maj. Stanley Flower, Sir Archibald Garrod, Mr. G. E. Gask, Sir Rickman Godlee, Lt.-Gen. Sir John Goodwin, Sir Charles Gordon-Watson, Mr. Justice Greer, Mr. H. A. Gwynne, Mr. J. Basil Hall, Mr. F. G. Hallett, Mr. W. Sampson Handley, Sir Robert Hudson, Mr. R. Johnson, Sir Arthur Keith, Mr. Rudyard Kipling, Mr. T. W. P. Lawrence, Mr. T. P. Legg, Lt.-Gen. Sir William Leishman, Mr. H. Lett, Mr. V. Warren Low, Sir Richard Luce, Sir George Makins, Merchant Taylors' Company, Sir Henry Morris, Sir Berkeley Moynihan, Sir David Murray, Mr. J. Murray, Rev. J. A. Naim, Sir George Newman, Mr. J. L. Payne, Sir Edward Pearson, Mr. H. S. Pendlebury, Mr. V. G. Plarr, Sir D'Arcy Power, Squadron Leader D'Arcy Power, Press Association, Mr. L. B. Rawling, Sir A. W. Renton, Lord Riddell, Sir Humphry Rolleston, Mr. R. P. Rowlands, Dean of St. Paul's, Salters' Company, Col. H. S. Sankey, Mr. Percy Sargent, Mr. James Sherren, Col. T. Sinclair, Mr. W. G. Spencer, Mr. E. Sprawson, Sir Squire Sprigge, Lord Stanmore, Mr. F. J. Steward, Sir Charters Symonds, Prof. A. Thomson, Sir StClair Thomson, Sir Cuthbert Wallace, Sir Holburt Waring, Mr. A. E. Webb-Johnson, Sir Dawson Williams, Prof. William Wright.

At the close of dinner the President proposed The Memory of John Hunter, when the toast was drunk standing and in solemn silence.

The Lord Chief Justice proposed the Royal College of Surgeons and claimed that nothing could possibly exceed the debt which man owed to surgery and to law. In some humorous musings upon the comparative antiquity of the two professions he said that, if medicine could be called as old as the first baby, the law might well be older, for it might be that in the Garden of Eden, before the first medical interference had been necessitated, questions had arisen concerning the law of husband and wife or landlord and tenant. He indicated one great difference between the professional life of the lawyer and that of the surgeon, which was that the lawyer was not suddenly called upon in a case which seemed likely to be fatal to do the best that he could on the spur of the moment with the knowledge that death might follow and, it would seem, with the risk that he might be prosecuted for negligence.

Sir John Bland-Sutton, in acknowledging the toast of the College, said that the nexus between the profession which the surgeons humbly followed and that which Lord Hewart so eminently adorned was, from the surgeon's point of view, as direct as the hangman's rope, explaining his reference by the well-known fact that in years gone by the satisfaction of justice provided the anatomical subjects for the London schools. The President then brought to the attention of the audience the deep interest which Hunter had taken in bones and teeth, and mentioned that Hunter's first book dealt with the natural history of the human teeth and was written, according to report, in order to defray the expenses of his wedding

Sir Holburt Waring proposed the toast of the guests, reminding them of the personality of Martin van Butchell, whose caricature they had seen in Beaumont's sketches, and whose mummified wife was in the College Museum. He coupled with the toast the Speaker of the House of Commons.

The Speaker suggested in reply that his presence at a dinner of surgeons might be due to a conspiracy, for he knew that there were some 600 Members of the House of Commons who would like to have an operation performed on his eye. But if any such operation were contemplated he thought that there might be difficulties, because each of the 600 Members would demand that the organ should be made to point in a different direction.

The Rev. Dr. Nairn, Headmaster of the Merchant Taylors' School, proposed the health of the Hunterian Orator, explaining that he did so from the point of view of personal regard as well as from that of admiration of the Orator's talents, as not only was Sir D'Arcy Power educated at the Merchant Taylors' School, but he had sent two of his sons to follow him at that institution. Sir D'Arcy Power, having briefly replied, the company were invited by the President to visit the various departments of the College, where great interest was expressed in a new portrait lent for the occasion by Mr. Buckston Browne.

A New Portrait of Hunter?

The portrait is attributed, probably with good reason, to Gainsborough. This is a John Hunter entirely different from the dreamy and noble portrait by Reynolds, or from the pawky but admittedly excellent profile by Holland, yet strikingly like the Hunter in a brown coat hanging in the outer hall of the Royal College of Surgeons of England. The upper part of the face, with slightly tilted left eyebrow, and tilted leftward more in the alleged Gainsborough, is fairly identical with the same feature in the brown Hunter. The right eye in each portrait shows a slight squint. The brown Hunter has a keen brown eye, the Gainsborough a dull grey eye. Moreover, the lower part of the Gainsborough face is full; nothing suggests the concave conformation of the jaw. Have we indeed here a portrait of John Hunter, physician, the great Hunter's contemporary, known for his excellent treatise on anthropology and his books on military hygiene in Jamaica? The Gainsborough man points at the skull of a great ape, but Doctor John Hunter as an anthropologist might have done so, quite as much as John the surgeon.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

THE PROVISION OF MEDICAL BENEFIT.

*Evidence by Mr. Brock and Dr. Smith Whitaker
(continued).*

Records of Illness.

(App. C. 71-81.) The form of record of illness which every insurance doctor is now required to keep is based on the recommendation of a Departmental Committee presided over by Sir Humphry Rolleston. It provides for a continuous record of an insured person's sickness and is passed, when he removes, to the doctor in his new district. (Q. 1214, 1215.) The Committee considered that the object of helping the doctor in the treatment of a case was paramount, but the record is also intended to serve useful statistical purposes. It has never been considered that it would

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8); The Provision of Medical Benefit (Feb. 7th, pp. 301-3; Feb. 14th, pp. 355-6). References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

be possible, consistently with having a continuous record kept by the doctor, to gather up all the records periodically and make a general statistical analysis, but sample investigations are possible, and to some small extent—up to the present—this has been done.

(Q. 1243.) In reply to a question it was stated that officers of the Ministry could, if required, make a limited investigation for the purposes—e.g., of the Industrial Research Board. A further question related to the possibility of a limited number of doctors keeping fuller records for the purposes of a special investigation. As to this, it was stated:—

(Q. 1288.) We derived some assistance of that kind in the Rheumatism Inquiry. There was very little satisfactory information as to the existence of different types of rheumatism, and, guided by the way in which the records were kept, practitioners were selected whom we could regard as reliable men to keep a special record with regard to rheumatism. Forms were issued to them and they kept a record of all cases treated within twelve months of any kind of condition that might broadly be called rheumatic. Those returns were of great value.

How the Records are Being Kept.

(Q. 1282.) When the present records were first started some difficulties were experienced in getting them properly kept; these difficulties were attributed by the witnesses to inexperience, to the agitation by some people against the records, which prejudiced the doctors against them, and to the natural reluctance of most medical men to do any clerical work that they can avoid. (Q. 1285.) The regional medical officers of the Ministry, who have the duty of examining records, all report a changed attitude on the part of the general body of practitioners towards the records. A large number of doctors say that they find the records helpful both in the treatment of cases which have been in their hands all through and in the treatment of cases that come to them from other doctors.

Size of Doctor's List—Number of Services Rendered.

(Q. 1219-1225.) The witnesses were asked to say on the basis of a list of 2500 insured persons how many patients a doctor would see in the course of a day's work. They said that on the 1923 figures it was found that a doctor saw about 50 per cent. of the persons on his list. On the average, actual patients are seen seven times, so that the doctor has to render 3.5 services per annum for each person on his list. With a list of 2500, this works out at about 29 services a day. Of these 29 services, probably eight in an urban area would be domiciliary visits; the remaining 21 would be surgery attendances. Taking a normal urban practice a doctor could do between three and four visits an hour. As regards surgery attendance, of those 21 persons attending at the surgery on the average, only three are coming for the first time, and, therefore, may be expected to require a fairly careful examination; the remainder are coming back either to report progress, or to ask for another bottle of medicine, or to obtain a sickness certificate, and those cases can be worked off pretty rapidly. If an hour is allowed for the three new cases, the others could probably be worked off at nine or ten to the hour. These are average figures, and only true of urban areas. In rural areas the proportion of visits to attendances is quite different.

The following figures as to the sizes of lists in England and Wales are of interest—35 per cent. of the total have lists of 600 or under, 30 per cent. have from 600 to 1200, 21 per cent. have from 1200 to 2000, and only 14 per cent. have more than 2000. Of that 14 per cent. a majority, probably the great majority, would be men who employ an assistant. As a broad generalisation, it was stated that the doctor with a big list was the subject of fewer complaints than the doctor with a small list.

Prescribing and Dispensing.

(Q. 1311.) The Acts provide that insured persons are entitled to "proper and sufficient medicines." The questions that have arisen have turned partly on whether particular substances were or were not medicines. Questions of this kind are those in which

common sense seems to meet the matter completely. No such cases under the Act have been put to formal test. The bulk of the questions that arise, however, are those under the Regulations relating to excessive prescribing. (Q. 1333.) The department has never at any time attempted to dictate to doctors what they should or should not order. The question has always been referred, in the first instance, to the local Panel Committee, and it is they who have considered as a medical question whether the things ordered in a particular case did or did not exceed what was reasonably necessary for treatment. If the doctor was not satisfied with the decision of the Insurance Committee, based on that expression of opinion by the Panel Committee, he had a right of appeal to the Ministry.

In order to reduce the number of cases arising for formal investigation, and to examine the general causes for the recent large increase in expenditure on drugs for insured persons, the Ministry has been engaged through its officers in an investigation.

(Q. 1316.) No disciplinary action, however, has been taken under the new arrangement. It has been thought more expedient to begin by a comprehensive investigation of the causes of high cost, and the regional medical officers are only employed at present in interviewing the doctors and ascertaining from them the reasons for prescribing of which the cost appears high.

Authority for the Regulations.

(Q. 1392.) The powers of the Commissioners to make regulations to check excessive prescribing were tested in the courts as early as 1915, and the regulations were held by Mr. Justice Rowlatt to be within the powers conferred on the Commissioners. The judge stated that:—

Experience shows that to carry out the Act you must have some check on extravagance, and that is what this rule was made for. In effect it says that if a doctor prescribes what is extravagant he must pay for it himself. . . . An Act of this kind ought to be construed liberally. The difficulties which emerge in the administration of an Act of this character are exceptionally great, and I ought to look at it in a practical way and construe the power with liberality. The making of this regulation, which certainly is a most beneficial one if properly administered, is well within the powers conferred by the Act.

Panel Drugs Not Inferior.

(Q. 1333.) On the question whether there was ground for the suggestion that insured persons were supplied with inferior medicines, the witnesses said there was no foundation at all for it. The department has repeatedly drawn attention to the fact that all drugs and appliances should be made available to insured persons which, on a liberal view, may be considered to be reasonably necessary for the efficient treatment of sick persons, and that full scope should be afforded for the exercise by practitioners of proper independence of judgment in the treatment of their patients. In a circular of May, 1924, the Minister deprecated any cheese-paring economy or the stereotyping of methods of prescribing, while at the same time pointing out the importance of avoiding waste and extravagance.

(Q. 1353-5.) As to stock mixtures, most Panel Committees now draw up formulæ of preparations that they believe the doctors will frequently want to supply, and which are not likely to deteriorate with keeping if made up in bulk; and chemists are encouraged to keep those ready made up in stock for reasons of economy. This has given rise to the suggestion, quite unfounded, that insured persons are less well treated than private patients. It is a practice probably adopted in every hospital in the country and by all private practitioners who do their own dispensing.

(Q. 1339-46.) With regard to the chemists, purchases have been made from time to time with test prescriptions and analyses made. This action, however, has not been as systematic and widespread as it might have been, and the department now has under consideration with the Retail Pharmacists' Union

a uniform system of investigation throughout the country.

A Limited List of Appliances.

(Q. 1312-1332.) The Acts provide that only such appliances are to be supplied as the department may prescribe by regulation. Such common appliances as spectacles, trusses, and artificial limbs are not included in the list, and the evidence goes to show that the main ground for limiting the list is the ground of cost, but also that a distinction would appear to have been drawn between things which are required in order to enable the process of medical treatment to be properly carried out and things which are required to remedy physical impairments in every-day life.

Special Arrangements for Obtaining Medical Treatment.

Very few questions were asked as to the system under which certain persons may make their own arrangements for getting treatment instead of getting it under the panel system, or as to the arrangements for getting treatment through certain approved institutions. (Q. 1375.) With regard to the first class it was stated that there was no considerable demand at the present time by insured persons to be allowed to make their own arrangements and to receive a contribution towards the cost. The main deterrent is probably the fact that the insured person may have to pay some part of his doctor's bill himself. (Q. 1379.) As to the approved institutions, it was felt that the arrangements for the investigation of complaints have not been generally satisfactory, and that some institutions have been very lax in inquiring into complaints.

Payments to Doctors.

(App. C. 125.) The Minister, after consultation with the Government Actuary, determines for each year, partly on the basis of the number of insurance stamps sold, together with any other information available, the number of insured persons in the country who would be entitled to medical benefit in that year. This number, multiplied by the agreed capitation fee, makes a central pool. The distribution of this central pool among Insurance Committees is made by the Minister after considering the recommendations of a Committee, called the Distribution Committee, set up for this purpose. The insurance practitioners are represented on this Committee. The sum allotted to each Insurance Committee area is divided locally among the doctors in such way as they themselves determine. The almost universal system is the capitation system—that is, a distribution according to the number of persons on each doctor's list. (Q. 1383.) In Manchester and Salford the distribution is on the basis of the number of services rendered, but the doctors themselves have had to devise so many checks and safeguards against the risk of unnecessary attendances that by now the result differs very little from the capitation system. It has probably survived hitherto because of the strong feeling in both those cities in favour of free choice of doctor by the patient at any time. Now that free choice at any time is allowable everywhere, it is probably only a question of time for payment by attendance to disappear both in Manchester and Salford.

The central pool for the whole country is itself based on a capitation payment as stated. (Q. 1412-14.) This has varied from 7s. a head of the insured population at the beginning, up to a maximum of 11s. in 1920, falling to 9s. 6d. in 1922, and then in 1924 to its present figure of 9s. (Q. 1388.) The witnesses were asked what was the equivalent of the 9s. expressed in terms of services rendered. They stated in reply that it was calculated that the average payment per service was about 2s. 7d. Stated otherwise, it worked out at 2s. 3d. per surgery attendance and 3s. 4½d. for each domiciliary visit. These figures, it was suggested—

would compare very favourably with the return from private practice among comparable classes, when you allow for the fact that, in the case of the insurance payment, it is a net

payment. There is no cost of collection and there are no bad debts. There is also the important difference that the doctor does not dispense for his insurance patient, whereas in industrial practice he ordinarily has to provide medicine for his private patient, and his fee in the case of the private patient, therefore, covers that as well as the attendance.

Persons Who Do Not Choose a Doctor.

The number of persons for whom the doctors collectively are paid depends, it will be seen, upon an estimate of the whole insured population made by the Government Actuary, and not on the number who actually get on to doctors' lists. (Q. 1452.) The doctors are paid for all such persons because they are at risk in respect of them, and have to give them treatment when they fall ill. For this reason no great importance is attached to the question of the actual number of such persons, which probably corresponds very closely with the number of fresh persons (about half a million) entering insurance each year. In the case of younger entrants particularly there is a tendency not to take any steps in the direction of getting on the list of a doctor until his services are needed.

Mileage Payment for Country Doctors.

(Q. 1463.) I see that the mileage grants have increased from £26,000 for England in 1913 to £250,000 in 1924, though apparently the latter figure covers Wales also. Can you indicate why such a large increase was made?—A. Because the whole basis on which mileage was calculated had to be revised. We started on the assumption that it was only necessary to make provision for areas of very special sparsity and difficulties of locomotion. . . . It was agreed at the beginning of 1920 that a mileage fund should be set up in order to pay the rural practitioner both for his expense in getting to the patient and also for the time spent in travelling over and above the time that would on the average be spent by the town doctor. The mileage fund, as from the beginning of 1920, had therefore to provide additional payments for all rural practitioners, and not only, as in 1913, for those practising in exceptionally difficult districts.

(Q. 1465.) In the distribution of the Central Mileage Fund between areas the Minister has the advice of the Distribution Committee referred to above. The distribution of the local pool is based mainly on the number of persons on the lists of the doctors who claim mileage, and their distances from those doctors, with extra provisions for areas in which there are special difficulties—for example, where a man lives in the middle of a moor and has to be reached by footpath instead of by car.

Town v. Country.

(Q. 1514-17.) Questions elicited the general view from the witnesses that the town doctor has profited more by the Insurance Acts than the country doctor. The country doctor is less well off—

partly because now he only gets the insurance capitation rate in respect of a number of people—indoor and outdoor servants of the squire, for instance—for whom before the Insurance Act he used to be paid at a pretty liberal rate. It is difficult to say how far that is due to the Act or how far the doctor is suffering from the impoverishment of the class that used to keep up big country places.

Also the country doctor is suffering from the increased mobility of the town doctor.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 301.)

THE Commission resumed its sittings on Monday, Feb. 9th, when Mr. Montgomery Parker continued his evidence, speaking on behalf of the National Society for Lunacy Reform. He said that when patients were too poor to pay for the services of medical men from outside, the Society considered that financial assistance should be granted, perhaps annually. As to the discharge of lunatics, it was thought by his Society that the petitioner's arbitrary power to either discharge or not led to frequent abuse; sometimes members of the family shrank from the

trouble attendant on the return of the patient, and occasionally there was a fear of legal action being taken. Additional power of discharge, he insisted, should be vested in a judicial authority, without the right of veto now enjoyed by individual authorities; for licensed houses and hospitals the judicial authority should have the right of discharge. Licensed houses, Mr. Parker thought, should not be conducted with the object of making profit; some of them made larger profits than the public had any knowledge of. Their number should not be increased, and in that he was opposed to the British Medical Association. There might be a financial motive for detaining patients in these institutions. He also objected to what he termed the autocratic powers of medical superintendents of mental hospitals; he stated that long periods sometimes intervened without a patient seeing the medical superintendent at all. He agreed with the suggestion contained in a question by Lord Russell, that the appointment of a medical superintendent should not be permanent until he had occupied the post three years.

Allegations of Physical Violence.

Mr. Parker said numerous statements which his Society had received from patients did not allow of any doubt that on occasions physical violence was practised on patients. It was, he said, a feature of the age to substitute chemical violence for physical, and that was more difficult of detection. Some explanation of the use in these institutions of hyoscine was, he submitted, called for; also croton oil, the most painful and powerful purgative known. The Commission should inform itself of the purchases of croton oil over a definite period at all mental institutions. The Board of Control could demand this.

Mr. Parker was again in the witness-chair on Tuesday, when he continued his statements concerning the use of drugs in asylums, his main contention being that the disciplinary measures now usual were cruel. Environment, he said, had the greatest influence in the progress of a patient towards normal health, and so should receive close scrutiny. He alleged, in regard to treatment, that often the controlling factor was not the interest of the patient, but finance. It was a pity that the Board of Control had only recently pressed for a more extended use of open-air treatment; and there should be freer facilities for exercise. Private asylums should be required to render returns of recoveries to the Board of Control. It was not now necessary.

A further point which Mr. Parker made was that the medical staffs in these institutions must be considerably augmented. In some asylums there was practically no trained nursing staff. He pleaded also for more facilities for recreation and amusement, and the use of small libraries.

The meeting was adjourned to Feb. 24th.

NOTES FROM INDIA.

(BY AN OCCASIONAL CORRESPONDENT.)

Medical Relief in Rural Areas.

THE problem of bringing medical relief within easy reach of the rural population has been engaging the attention of the authorities for some time. The existing facilities in this respect are extremely inadequate. The great mass of the village populations have hitherto had no opportunity of coming into intimate daily touch with qualified doctors and have had to be content to a great extent with the services of unqualified men. Schemes for dealing with the difficult situation have been drafted by both the Bombay and Madras Governments. In the latter the only solution possible with the funds at present at the disposal of the Government seems to be on one of the three following alternative lines—namely, (1) the opening of a large number of Ayurvedic and Unani dispensaries, (2) the starting of a large number of itinerating or travelling dispensaries, and (3) the encouragement of

private medical practitioners (allopathic) to settle down in villages for practice by the grant of money subsidies and supply of medicines from public funds. The first alternative, though it is likely to find favour with the public, is impracticable and unrealisable at present on account of the lack of a sufficient number of duly qualified and accredited practitioners of the indigenous systems of medicine. As regards the second alternative, the starting of itinerating dispensaries has been tried on a small scale but the results have not been encouraging. The third alternative—namely, that of subsidising private practitioners who agree to settle down in villages—appears to be the cheapest and at the same time the best from many points of view. The idea is to divert to the villages the large number of unemployed medical men who now congregate in the towns for private practice. This third scheme is put forward as a practical proposition by the Government, and its working is outlined in a recent order.¹ For the present, only registered medical practitioners will be admitted to the benefits of this scheme. The subsidy to be given will be low enough to compel the medical men to exert themselves and earn the confidence of their neighbours and high enough to serve as an attraction in the initial stage until they are able to build up a practice. The grant of the subsidy will be subject to the condition that the recipients agree to settle down in specified villages and treat the necessitous poor free. They will otherwise have complete liberty to accept such fees for medical attendance and treatment as they can get. The actual working out of the scheme will be entrusted to the respective local boards; the villages will be selected by them and the medical men by their presidents. The cost of the subsidies will be met entirely by the Government and will be paid as a contribution to the local boards concerned, and they will be disbursed monthly by the presidents concerned. The subsidy of medical men in order to induce them to settle in rural areas is a somewhat novel experiment and is one of the results of which will be watched with great interest by those who believe that the real people of India are the great masses of agriculturists who never leave their fields.

King Institute of Preventive Medicine, Madras.

The report of the King Institute for 1923-24 is a document full of interest to all medical men in the Presidency, and it contains material which should attract the attention of many who are working in the tropics. In spite of the cessation of routine vaccination for four months during the hot weather, the number of cases of vaccine lymph issued rose from 2,079,915 to 2,184,590, the largest issue on record since the Institute was founded. Concurrent with this increase in issue there was a decrease of 25 per cent. in the amount of lymph unaccounted for. The new arrangements made with the Public Health Department for the distribution of lymph to vaccinators have also ensured the use of fresh lymph and effected considerable saving in the cost of packing. In their review of this part of the report the Government emphasise that success in combating the factors which combine to keep the standard of successful vaccination on a low level will hereafter depend upon the vigilance of the district health staffs.

The field of scientific research has been widely explored by Colonel J. Cunningham and his staff during the year. Interesting and important results are reported to have been achieved by research into various aspects of relapsing fever. The scheme of travelling laboratories for examination of water-supplies at railway stations in the Presidency has been dropped for the present, but the appointment of a travelling inspectorate for examination of water-supplies in the Presidency is under the consideration of Government. The question of experiments on sewage disposal plant at the Engineering College, Guindy, depends on the budget proposals for 1925-26.

¹ Government of Madras Local Self-Government Department (Public Health), Order, No. 1522, P.H., Oct. 22nd, 1924.

The staff of the Institute took a very active part in public health propaganda by preparing the material issued by the Madras Health Council for the Health and Baby Week, and by preparing and delivering lectures. In notes such as these it is difficult to give any detailed description of a report so full of excellent material, and the Government rightly congratulate Colonel Cunningham and his staff on the excellent achievements of the year and on the high standard of efficiency maintained in the Institute.

The Services.

ROYAL ARMY MEDICAL CORPS.

Cpts. to be Maj.s.: H. N. Sealy, A. Jackson (Prov.), E. C. Beddows, J. Rowe (Prov.), W. P. Croker (Prov.), A. B. H. Bridges, A. G. Brown, and R. Hemphill.

Capt. T. Parr and Lt. T. W. Davidson are secd. for duty with Sudan Defence Force.

Lt. (on prob.) M. A. Graham-Yooll resigns his commn.

TERRITORIAL ARMY.

Lt.-Col. D. J. Graham to be Bt. Col.

Maj. T. A. Hindmarsh to be Lt.-Col. and to command 50th (1st Northern) Casualty Clearing Station.

Lt. D. Ross to be Capt.

INDIAN MEDICAL SERVICE.

W. Aitchison and R. W. H. Miller to be Cpts.

D. McD. Fraser to be Lt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers for three years on the active list: C. G. J. Nicholls and B. Pollard.

DEATHS IN THE SERVICES.

Col. Robert Isaac Dalby Hackett, C.B.E., M.A., M.D. R.U.L., died on Feb. 15th at Cheltenham in his sixty-eighth year. He was a son of W. Thomas Hackett, J.P., of Castletown, King's County, Ireland, and a younger brother of the present Dean of Limerick, the Very Rev. T. Aylmer P. Hackett D.D. Born in 1857, he was educated at Chesterfield College and Queen's University of Ireland, where he graduated M.A. and M.D., with honours. He joined the R.A.M.C. in 1881, was promoted surgeon-major in 1893, lieutenant-colonel in 1901, and colonel in 1911, retiring at the end of 1912. In 1914 he rejoined the army for the period of the late war and served to its close. Early in his army career he served in Cyprus and Egypt, and took part in the Sudan Campaign of 1885, for which he received the medal and clasp and the Khedive's Star. The following year he was transferred to Nova Scotia, but went to South Africa in 1888 to serve in the Zululand operations against Dinizulu. He was again in South Africa for the war of 1899 to 1902 as principal medical officer of the General Hospital, and was with the expedition that relieved Ladysmith, subsequently serving in later operations in Natal and Cape Colony. For these services he had the Queen's medal and clasp, and the King's medal with two clasps. After the war was over he had further periods of service at the Cape, and during 1911-12 was in India as administrative officer of the Sialkote and Abbotabad Brigades. For his services in the late war he received the C.B.E. In 1895 he married Miss Evelyn Mary Wynne-Jones, by whom he had one son and one daughter.

JOHNS HOPKINS HOSPITAL, BALTIMORE: MEMORIAL TO THE LATE SIR WILLIAM OSLER.—A large memorial plaque showing the late Sir William Osler at work in his laboratory was recently unveiled and dedicated in the medical amphitheatre of Johns Hopkins Hospital. The plaque was modelled by Dr. R. Tait Mackenzie, of Philadelphia, and was presented on behalf of a group of former associates and friends of Dr. Osler by another Philadelphia physician, Dr. Thomas McCrae. The amphitheatre was crowded to overflowing when Mrs. McCrae, a niece of Dr. Osler, unveiled the tablet. Dr. William H. Welch gave his recollections of early association with Dr. Osler in the early days of the hospital. Other speakers were Dr. Rufus Cole, director of the hospital of the Rockefeller Institute of New York, who spoke of Sir William Osler as not merely a great teacher but also "learned historian, classicist, wise counsellor and able physician," and Dr. Henry M. Hurd, who was introduced as having known Sir William Osler probably before anyone else there present. A message was sent from the meeting to Lady Osler in Oxford informing her of the memorial.

Correspondence.

"Audi alteram partem."

REX v. BATEMAN.

To the Editor of THE LANCET.

SIR,—I can only say thank you deeply for the help, moral and material, which you extended to me during my terrible period of anxiety. If I wrote pages I could not say more.

I am, Sir, yours faithfully,

New Cross-road, S.E., Feb. 16th, 1925. P. BATEMAN.

THE DIAGNOSIS OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Every abdominal surgeon, if not indeed the profession generally, cannot but be interested in the articles which you have published on appendicitis by Mr. Rendle Short. Whilst it appears to me that there are many points upon which even Mr. Short will hardly expect agreement, the most important of these is referred to in THE LANCET of Feb. 7th by Mr. Whitehouse Parkes. The main difficulty in a minority of cases lies in the question of diagnosis. With an early diagnosis the decision for operation follows naturally, and no question of its desirability can arise when the diagnosis of appendicitis is made within 48 hours of the onset of symptoms.

Mr. Parkes's letter refers to the case of his wife, in whom the early onset of pain was absent. Judging by the records this does occur in a very small proportion of cases. Your correspondent has thus raised a very interesting point, but he has stopped short of giving us any useful clue as to its explanation. Provided that his wife had no pain 36 hours before her vomiting, the case must be placed in the category of those in whom pain as an initial symptom is completely absent. If Mr. Parkes would let us know what the anatomical position of the appendix was at the time of operation he would be increasing our knowledge of the subject and conferring a benefit on operating surgeons.

In a case of mine in whom pain was present but tenderness absent until after the appendix had perforated, it was explained by the fact that until then no part of the diseased organ had come into contact with parietal peritoneum, and hence there was no irritation of somatic nerves until after perforation had taken place. This, I think, affords one explanation of the absence of tenderness in these cases. I have never come across a patient in whom pain as an initial symptom was completely absent. The ordinary explanation of some such cases arises from the fact of there having been an interval between the generalised colicky pain and the localised pain and tenderness, and of this interval having blotted out of the patient's recollection the generalised pain which is so characteristic as the initial symptom of the disease.

Might I ask Mr. Parkes to let us know the anatomical position of the appendix, and also its pathological condition at the time of operation?

I am, Sir, yours faithfully,

Belfast, Feb. 9th, 1925. S. T. IRWIN.

To the Editor of THE LANCET.

SIR,—In his clinical lecture on the subject in your issue of Jan. 31st, Mr. Rendle Short alludes to two well-known difficulties in the diagnosis of appendicitis—namely, abdominal tuberculous adenitis and lobar pneumonia. In both of these conditions histological examination of the blood is of considerable value.

As regards the former, for the last two years or thereabouts, Mr. H. H. Greenwood, my surgical colleague at the Great Western Railway clinic,

Swindon, has sent me films from every case diagnosed as appendicitis that was not a surgical emergency. In about 20 the signs—i.e., leucopenia with relative lymphocytosis—pointed to tuberculous adenitis and operation was averted. As regards pneumonia, the degree of polynuclear leucocytosis is frequently about the same as that found in appendicitis, but in the latter condition eosinophilia is conspicuously absent, while in pneumonia it is almost always excessive.

In my view it is as essential to examine the blood in acute illness as it is to take the temperature, and it is difficult to understand why this procedure is so often omitted. No hæmatologist would claim that the blood picture should override a clinical diagnosis, but it is certainly a valuable aid in doubtful cases.

I am, Sir, yours faithfully,

A. KNYVETT GORDON, M.B.

Bedford-square, W.C., Feb. 5th, 1925.

REVACCINATION AND THE PRESENT SMALL-POX EPIDEMICS.

To the Editor of THE LANCET.

SIR,—Since last July we have had an epidemic in this institution which at first we labelled chicken-pox. Reading Dr. R. P. Garrod's lucid article in THE LANCET of Jan. 31st, entitled Para-smallpox, we found that he exactly described our cases and accordingly the Ministry of Health was communicated with. The diagnosis of small-pox was made.

While vaccinating all the resident population here we purposely included 24 cases who had suffered from the disease. Of this 24, eight reacted positively to vaccination. One of them was amongst the most severely affected and had his attack in October last. Of the remainder, three occurred in July, three in August, and one last December. All were exactly the same type of case as we have at present, and it is highly improbable that we have two different epidemics running concurrently.

It would be interesting to hear if others have had similar or diverse experiences and also to read the opinions of those qualified to give them as to the probable relation of our epidemic with small-pox proper, in view of the above facts. One of the mildest of our present cases is that of a female who has never been vaccinated in her life, and one of the worst has a vaccinia running concurrently.

I am, Sir, yours faithfully,

A. T. W. FORRESTER,

Medical Superintendent, Hatton Mental Hospital.

Feb. 14th, 1925.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—Sabouraud, in his work on "Séborrhée, Acnés, Calvitie" (published in 1902), pointed out that the urine of seborrhœics was characterised almost constantly by *hyperacidity*, *hyperexcretion of chlorides*, and *hypoexcretion of phosphates*. He did not, however, grasp the importance of his observations; he did not apparently realise that the hyperacidity was not due to uric acid; and he was misled, like Dr. Whitfield, by the fact that on testing the urine of seborrhœics it may sometimes be found even hypoacid. And yet Sabouraud's observations might have given him the clue to the proper understanding of seborrhœa and the seborrhœic eruptions, to which he has devoted so much patient and invaluable study. I was, I believe, the first to coin the term "seborrhœic state," and, in conjunction with Dr. Semon, to insist on the value of alkalis in the treatment of seborrhœic manifestations. I hope shortly to publish fully the results of my observations since the war, but the subject is one of such great importance, not only to the dermatologist, but also to the general

physician, that, in view of Dr. Whitfield's letter, I should be obliged if you would allow me space to set forth a résumé of my conclusions.

Shortly after the war, in conversation with Dr. Whitfield, I learned that he was unable to confirm my findings, and, having a very high regard for his opinion and critical faculties, I set myself to investigate my civilian patients, with the aid of some of my colleagues. Apart from certain biochemical investigations carried out for me by Dr. Ryffel and others at Guy's, and by Dr. Broughton Alcock, I, like Dr. Whitfield, have relied chiefly on litmus paper in testing urinary acidity, and I still insist that the *alkaline tolerance* of seborrhœic patients is high, sometimes to an astounding degree. Very early in my post-war investigations I recognised the fact that when the urine of a person, even with severe seborrhœic manifestations, is first examined it may be only faintly acid, neutral, or very occasionally even alkaline, but I have found—and have verified the fact in many such cases—that when alkali is administered the urine for a time becomes progressively more acid. This apparently contradictory observation is explicable if my view of the aetiology of the seborrhœic state be accepted. To cite but one recent case—a severe acne: The patient was the son of a doctor, extremely self-conscious, and most conscientious in carrying out the treatment advised. His urine at the first examination was acid but not intensely so. He took for a fortnight never less than three doses per diem of 1 drachm of sodium bicarbonate and 30 gr. of potassium citrate, yet his urine was still strongly acid to litmus on the fifteenth day. I have had other cases in hospital, where the administration of alkali could be controlled and the urine tested daily, in which larger doses of alkali were taken over a long period without producing an alkaline urine.

Apart from the urine, I have tested the saliva (being careful to avoid the fallacy of possible acid-production from food-fermentation in the mouth) and the sweat of the palms, where, of course, there are no sebaceous glands. Having believed, since my physiological days, that the saliva was alkaline and that ptyalin was inactive in an acid medium, I was surprised to find how many people have definitely acid saliva; for the past few months I have tested this point on nearly all my private patients, and I have found that, in seborrhœic persons, the saliva usually gives an acid reaction to litmus, the acidity being sometimes as marked as that of a fairly acid urine. Some degree of the seborrhœic state is so common that many of its slighter manifestations are not considered, even by dermatologists, as abnormal, but one does meet with absolutely normal people, and it is interesting that, just as there exist seborrhœic families, so the normal non-seborrhœic state tends to have a familial incidence. My own family is a case in point. I am the youngest of six, and not one of us has ever had any seborrhœic disorders, except that I became for a while slightly seborrhœic in Mesopotamia. I have used myself and others, with no trace of seborrhœa, as controls; our saliva is always alkaline and our alkaline tolerance is low.

It was soon established by my colleagues at Guy's that the blood in seborrhœic cases showed no evidence of acidosis, but Dr. Ryffel, who has investigated a number of my patients, found that in several, usually inveterate seborrhœics the ammonia-ratio was high, sometimes strikingly so, and also the acid ratio. He also confirmed the high alkaline tolerance of some of my cases. Prof. Haldane has suggested to me that the explanation of the high alkaline tolerance, with no evidence of acidosis in the blood, might be that these persons produce a relatively insoluble acid or acids, which are with difficulty excreted by the kidney, unless the requisite quantity of alkaline bases are available, but more easily by the sebaceous and sweat glands. He advised me to try the effect of sodium phosphate, since acids are normally excreted in the urine as acid sodium

phosphate. This I did, but was not convinced that better results were obtained than with my original combination of sodium bicarbonate and potassium citrate. Recently I have prescribed a mixture of magnesium and calcium phosphate in combination with bicarbonates, but have not yet had time to draw any conclusions.

The excessive excretion of sebum (seborrhœa) and of sweat (hyperidrosis oleosa) that obtains in seborrhœic persons I believe to be due to the excretion via the sebaceous and sweat glands of acid by-products of metabolism (*not* uric acid, but probably, as some observations of Dr. Broughton Alcock would suggest, volatile fatty acids), an insufficient quantity of alkaline bases being available for their excretion via the kidneys. It is also likely that, apart from the sebaceous and sweat glands, the whole epidermis takes part in this vicarious acid excretion, and this accounts for the slight epidermal thickening, and the hypertrophy of the horny layer, with the modification of its fat-content, noted by Darier. The mucous membranes and salivary glands appear also to share in this process. It is the excretion of these acids via the skin and mucous membranes that would seem to favour the growth in them of the micro-organisms on which the complications of the seborrhœic state depend—namely, in the skin, the so-called "bottle-bacillus" (probably a yeast), the micro-bacillus of acne, which swarms in the sebaceous follicles of the seborrhœic, and various strains of staphylococci, and in the mouth and nasopharynx, streptococci and other organisms. The chronic seborrhœic is not only liable to pityriasis, seborrhœic dermatitis, acne, sycosis, boils, carbuncles, chronic blepharitis with styes, rosacea, infectious eczematoid dermatitis, miliaria rubra, and hydrosadenitis, but also to chronic nasopharyngeal catarrh, conjunctivitis, gingivitis, pyorrhœa, and balanitis.

There also may occur in the seborrhœic state a true eczema, distinct from seborrhœic dermatitis in that the inflammatory changes are not primarily due to bacterial infection, but in all probability to the actual excretion of acid by the sweat and sebaceous glands. When occurring on the palms and soles this constitutes one form of cheiropompholyx or dysidrosis. Hyperidrosis of highly acid sweat is a notable symptom. In this condition the administration of alkali in sufficient quantity is absolutely specific, and will cut short an attack without any local treatment. I do not, however, agree with Dr. Dobie that all cases of cheiropompholyx (eczematoid ringworm is, of course, excluded) are of this nature. When once an infection with micro-organisms has become established, the factors of sensitisation and specific lowered resistance to definite strains of bacteria come into play, and the administration of alkalies alone is not sufficient to cure; it is, however, a very valuable aid.

In the aetiology of the seborrhœic state, which is appallingly common, I believe the following are the chief factors responsible:—

(a) *Heredity*.—Darier, in his description of "la kérose," which corresponds clinically to my "seborrhœic state," stresses the influence of heredity. In this he is right, as it is undoubtedly a predisposing factor of importance (cp. hereditary diabetes), but, given the necessary abnormal conditions of life, the seborrhœic state may supervene even in the healthiest person. Hereditary cases, however, are much more susceptible to the influence of an unsuitable diet and a sedentary life than normal persons.

(b) *Diet and Exercise*.—The abnormal acid production that characterises the seborrhœic state is obviously an indication of deficient metabolism with the accumulation of incompletely oxidised acid by-products. A disproportion between the amount and quality of food taken and the physical energy expended is clearly, therefore, one important factor. One frequently sees the seborrhœic state develop *de novo* in trained athletes, when they abandon their games and adopt a sedentary life, without at the

same time restricting their diet. Conversely, the most confined seborrhoeic will become normal if he diets wisely and adopts a vigorous out-of-door life; the greasy skin becomes dry and clear, and the secondary infections disappear. The most important factors, then, predisposing to the development of the seborrhoeic state are an excessive dietary, particularly of soft starchy and concentrated sweet foods, an insufficient intake of alkaline salts and water, a sedentary life in over-heated, badly-aired surroundings, and lack of exercise.

(c) *Overclothing*.—The influence of overclothing is so obvious that it need not be considered. The extraordinary effect on the seborrhoeic skin of exposure of the whole body to sunlight and air can be seen by anyone who cares to visit Dr. Rollier's clinic at Leysin.

(d) *Constipation*, and dyspepsia of the fermentative type. It is useless to attempt to cure the various seborrhoeic manifestations by local treatment alone; they invariably relapse or new ones develop. The secret of success lies in the initial administration of alkalies, a physiological dietary, regular physical exercise, correction of constipation and other sources of toxæmia, and, when chronic secondary infection is present, the raising of the patient's resistance by every available means. As to the value of alkalies, which Dr. Whitfield and others deny, there is not the slightest doubt. I have kept in touch with a large number of patients, some of them medical men and students, and they find that as long as they take a sufficient quantity of alkali they keep free from active seborrhoeic manifestations. That some of them were very sceptical at the outset is sufficient to exclude an element of suggestion.

I am, Sir, yours faithfully,

H. W. BARBER.

Devonshire-place, W., Feb. 16th, 1925.

POST-OPERATIVE PULMONARY AFFECTIONS.

To the Editor of THE LANCET.

SIR.—In your report (Feb. 14th) of the discussion on the prevention and treatment of post-operative pulmonary affections, a full abstract is given of my remarks upon bronchitis, but no reference is made—probably from want of space—to the explanation which I offered of the causation of the more important complication (from the anaesthetist's point of view)—viz., pneumonia. May I be allowed to add to your report?

After stating my belief that bronchitis following abdominal operation under ether anaesthesia is chiefly due to the irritating effect of high concentrations of ether vapour, particularly in certain subjects, I proceeded to argue that there are two factors at work in the causation of surgical pneumonia—one being bronchitis, whether pre-operative or anaesthetic, or possibly due to prolonged exposure during nerve-blocking; the other being collapse, usually partial, of the lung, which as the result of this bronchitis becomes inflamed. Collapse of the lung is probably of nervous origin. That the site of operation has especial influence is proved, I held, by the very slight liability to pneumonia after non-abdominal operation, even though ether be given and the patient be bronchitic; and the fairly frequent occurrence of pneumonia after abdominal operation under a local and, occasionally, after a spinal anaesthetic—I took the view, therefore, that the selection of the anaesthetic was still an important part of the duties of the anaesthetist and that everything possible should be done to prevent the onset of bronchitis and to counteract the tendency to pulmonary stasis.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

York-terrace, N.W., Feb. 14th, 1925.

TINCTURE OF IODINE (PH. FR.).

To the Editor of THE LANCET.

SIR.—In recent years many physicians in this country have been in the habit of prescribing for internal administration tincture of iodine, French Codex; from my own observations I have formed the opinion that during the last two or three years the frequency of prescribing this product is increasing. I also have a very firm conviction that when tincture of iodine, French Codex, is prescribed, the physician has in mind the tincture of iodine of the Codex 1908, which does not contain any potassium iodide, but is prepared by dissolving 10 g. of iodine in 90 g. of alcohol 95 per cent.

A preparation introduced in the first supplement of the Codex (1920) as "teinture d'iodure iodurée" contains 4 g. potassium iodide in addition to 10 g. of iodine in 136 g. of alcohol 90 per cent., and in the second supplement to the French Codex (1922) the tincture of iodine of the Codex 1908 was suppressed, and the title "official tincture of iodine" now applies to the "teinture d'iodure iodurée" of the 1920 supplement.

From these facts you will realise that when now physicians prescribe tincture of iodine, French Codex, they will not get (what I think they really intend) the tincture of the 1908 Codex, containing no potassium iodide, but the preparation containing potassium iodide which is now official. No indication of the changes appears to have been published in medical literature as far as I know.

I am, Sir, yours faithfully,

P. C. BRETT, M.B., B.S. Lond.

Queux-road, West Hampstead, Feb. 9th, 1925.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR.—In view of the recent articles that have been appearing about 86, Brook-street in the *Daily News*, I feel compelled to ask you to be good enough to publish this brief note, in which I would desire to emphatically dissociate either myself or any of my colleagues with the ætiology of those articles.

I may just add that our united disapproval has found expression not only in an attempt on my part to suppress the publication of the last two articles, but also in a letter repudiating all knowledge and responsibility of them, written to the General Medical Council.—I am, Sir, yours faithfully.

DRURY PENNINGTON,

86, Brook-street, W., Feb. 16th, 1925. Medical Director.

* * * The abuses that may arise from articles signed by medical men and appearing in the lay press are obvious, and so is the good that may be done by wise and authoritative pronouncements through the same medium. Of what may lie beneath unsigned contributions there can be no definite opinion in the absence of any clue to personal bias. We publish Dr. Pennington's disclaimer with pleasure, and take the opportunity of adding that a complimentary reference to THE LANCET in a Sunday newspaper last week, crediting us with views that are only half correct, was not inspired by any member of our staff.—ED. L.

METROPOLITAN (QUEEN'S) NURSING ASSOCIATION JUBILEE.—This association, which has its headquarters at 23, Bloomsbury-square, London, W.C., will celebrate the 50 years of work it has done among the poor of central London by a service of thanksgiving to be held at the Church of St. Martin-in-the-Fields on Wednesday, March 18th, at 2.15 P.M. The association provides trained district nurses for treating the poor in their own homes, and was founded by Florence Nightingale in 1875. The association was the forerunner of Queen Victoria's Jubilee Institute to which it is now affiliated.

Public Health Services.

HOSPITAL NOTES.

THE SCOTTISH HOSPITAL INQUIRY.

THE Hospital Services Committee, appointed by the late Government to inquire into the adequacy or otherwise of the existing hospital facilities in Scotland, has now, so far at all events as at present arranged, concluded its public sittings for the taking of evidence. The Committee has held 15 sessions extending over five weeks, and has examined about 50 witnesses.

Dr. William Robertson, M.O.H. for Edinburgh, said that the general provision of hospitals for the isolation of infectious diseases was ample. As preventive medicine progressed and housing improved the demands upon isolation hospitals would probably be reduced. If real and lasting benefit was to be secured, children convalescing from measles and whooping-cough ought to be removed from the acute wards to others, where fresh-air treatment could be provided, but during acute epidemics of these infections the scarcity of beds made this impossible, and patients had to be discharged just after they had recovered from the acute stage. He held, speaking of Scotland as a whole, that the provision of institutions for the treatment of tuberculosis is unequal and that accommodation for the advanced type is insufficient. There are long waiting lists which compel premature discharge from sanatoriums. Nor is there enough hospital accommodation for the treatment of venereal diseases, more especially of the congenital form. There were no insuperable difficulties in the way of coöperation between the Voluntary, the Public Health, and the Poor-law hospitals.

Dr. G. H. Stevenson, of Glasgow, a member of the Massage Board of Scotland, claimed that by adequate organisation of massage work it might be possible to save beds in general hospitals, shorten the period of incapacity, prevent many cases of chronic invalidism and crippling, and help those already crippled. There is only one training school in Scotland, that at the Western Infirmary in Glasgow. The trained workers in other hospitals are numerically hopelessly inadequate. Nor are there any special orthopaedic hospitals on a large scale in Scotland, or comprehensive schemes for the treatment of disablements after discharge from hospitals, with the result that patients usually went back, he said, to their state on admission. A district masseuse service on the lines of the district nurse would liberate many beds and would be of more value than short periods of hospital treatment.

Dr. Alexander Shearer, a medical officer of the Scottish Board of Health, gave evidence regarding hospital and ancillary services in the Highlands and Islands, with particular reference to the application of the Highlands and Islands Medical Service Fund, which amounts to £42,000 a year. The need for specialist assistance in surgery in Highland hospitals was more urgent than the need for medical consultants, and would be even more heartily welcomed by hospital superintendents and medical practitioners generally. There was need for having at Inverness a thoroughly up-to-date hospital equipped and staffed so as to be able to provide services far beyond the boundaries of Inverness burgh. The Board had already, as an experiment, assisted in the establishment of surgeons at Lerwick, Stornoway, and Lewis. The experiment promised excellently, and it was worth considering whether it should not be extended to other areas in the Highlands, where the problem was severe. If a multiplicity of organisations were to come into being, each with its separate appeal for hospitals, ambulances, specialists, and so forth, there would be an unseemly competition for

financial and other assistance, with much waste of effort and damage to essential services. If a unifying organisation on a voluntary basis was not adopted, the inevitable alternative was the organisation of the services under a local authority as general supervisors. The general hospital accommodation in the Highlands and Islands was reasonably adequate, and in medical cases the work done was highly satisfactory; the nursing services were also adequate at present. Dentistry was one of the services which did not operate at all in the Highlands.

Mr. James Hay, Director of Aberdeen Royal Infirmary, said the voluntary system had risen to the occasion in the North of Scotland in a wonderful way. At Aberdeen Infirmary, with 320 beds, the normal waiting list was about 300; 400 beds would meet its needs. If the Health Insurance Societies were to pay even one-half of the out-of-pocket expenses the infirmary incurred on behalf of their members, £6000 would be realised. The contribution from workmen amounted last year to £3842.

THE METROPOLITAN HOSPITALS.—The deficiency in the accounts of King's College Hospital, which a year ago was £67,000, has been reduced by one-half. The King's Fund contributed £16,000 and Lord Hambleden cancelled a loan of £20,000.—Mr. A. J. H. Carlil has offered to contribute £20,000 towards the cost of establishing a Unit of Pathology at Westminster Hospital.—Princess Mary has opened extensions to the West London Hospital, which brings the number of beds up to 220, and include a badly-needed accident ward. Hitherto accident cases have had to be placed on couches. A paying wing containing 22 private rooms is among the additions.—It is hoped to enlarge the Elizabeth Garrett Anderson Hospital for Women by building a children's ward and a new maternity ward, and extending the out-patients' department at a total cost of £75,000. It is suggested that the money should be raised, in the main, by 10,000 tea-parties given by women of all classes and occupations, each guest being asked to give a donation. Such a tea-party, given by the women of the Central Telegraph Office, produced £236.—The average cost of maintaining a patient in the London Fever Hospital has fallen during the past year from £34 4s. 9d. to £24 8s. 7d.—St. Mark's Hospital is to be extended to provide better accommodation for out-patients and a larger laboratory for cancer research.

GLASGOW ROYAL INFIRMARY.—The annual report of this great hospital shows that it is suffering seriously from the increasing demands upon its resources. Nearly 14,000 in-patients and nearly 52,000 out-patients were treated during the year, the first figure being an increase of just over 1200 and the second of 3261. The receipts in 1924 reached the "record" total of £243,000. The infirmary normally accommodates 664 patients daily, but the beds occupied numbered 727. A new biochemical department is proposed. At the annual meeting Dr. James Macfarlane, chairman of the board of management, suggested, as means of relieving the pressure, the erection of an auxiliary or convalescent hospital to which many cases could be removed after short treatment in the infirmary, and the establishment of a fully-equipped nursing home or hospital for paying patients. When the new nurses' home is ready for occupation in June or July the erection of additional accommodation for out-patients will be begun. The infirmary was entirely reconstructed and the accommodation increased by 50 per cent. as recently as 1914.

QUEEN'S HOSPITAL, BIRMINGHAM.—For many years past the work of this hospital has been carried on with increasing difficulty owing to the inadequacy of the accommodation—the surgical work, for instance, is done in the same building as when the hospital was established 85 years ago. The Birmingham

Hospital Council has now approved a comprehensive scheme of enlargement, to cost £120,000. A new block behind the existing buildings will contain six new surgical wards of 20 beds each; there will be three large operating theatres with their accessories, and a large X ray department. When the surgical block has been completed a new nursing home will be provided, and other enlargements will include departments for the diseases of women, and of the ear, nose, and throat. The out-patients' and pathological departments will be entirely remodelled, and there will be a new electrical and mechanical therapeutics department. The scarcity of beds in the Birmingham hospitals is so acute that the city is said to be worse off than any other large town in the country.

ANNUAL SUBSCRIPTIONS AT LEEDS.—The effort begun last year to extend the system of annual subscriptions towards the maintenance of the four principal hospitals of Leeds is making good progress. Upon the basis of a contribution of 2s. per employee per annum 700 subscribers are giving £7000 a year. In addition, the Workpeople's Hospital Committee is collecting over £30,000 a year. To organise the extension of the system of annual subscriptions the city has been divided into 20 blocks, each with its own subcommittee which, in friendly consultation, assesses every firm separately. The waiting-list for the Leeds Hospitals is said to number 1900.

HOSPITALS IN SOMERSET.—The Somerset Voluntary Hospitals Committee has come to the conclusion, after three years' careful study of the position, that the voluntary system as hitherto worked is "not giving to the nation that full, complete, satisfactory and universal service which it needs," and that some form of co-ordinate national service is required which would preserve the valuable elements of the system. With the exception of Bath, all the hospitals are paying their way, but "the county is well able to maintain all its voluntary hospitals, provided that there be some equitable method of distributing the burden."—In addition to building the Bristol Homeopathic Hospital and providing the site at a cost exceeding £100,000, Mr. and Mrs. Melville Wills have now given £15,000 for equipment.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 7TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—small-pox, 138; scarlet fever, 1747; diphtheria, 1096; enteric fever, 25; pneumonia, 1778; puerperal fever, 51; cerebro-spinal fever, 12; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 61; dysentery, 4; ophthalmia neonatorum, 127. There were no cases of cholera, plague or typhus fever notified during the week. The number of small-pox cases showed a decrease of 18 from the number for the preceding week. Ten cases were notified from Derbyshire, 15 from Northumberland, 29 from Notts, and 71 from Yorks, North Riding (Middlesbrough C.B.).

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, none from small-pox, 73 from measles, 17 from scarlet fever, 50 from diphtheria, 133 from whooping-cough, and 291 from influenza, as compared with 202, 195, 142, and 124 in the four preceding weeks.

In London itself the deaths from diphtheria numbered 18 and from whooping-cough 55.

OPHTHALMOLOGICAL RESEARCH IN THE U.S.A.—It is announced that a fund of \$3,000,000 (£600,000) has been raised for the establishment at Johns Hopkins University, Baltimore, of a centre for ophthalmological research. The new centre will be called the Wilmer Institute, in honour of Dr. William Holland Wilmer, of Washington, whose friends and patients subscribed half the total of the fund. The remainder was given by the General Education Board of the United States. Dr. Wilmer will assume direction of the institute. Lord Grey of Falloden, a former patient of Dr. Wilmer, is one of the contributors. In addition to laboratories, the Wilmer Institute will comprise a hospital with 60 beds, of which 40 will be for non-paying patients. It is expected that the institute will be completed by September of this year.

Obituary.

EDWARD EMANUEL KLEIN, M.D., F.R.S.

WE regret to announce the death of Dr. Klein, the famous pioneer in histological and bacteriological research, which occurred at his residence in Hove Sussex, on Feb. 9th, in his eighty-first year.

Born in 1844 at Ersec, he was educated in Vienna, and from an early age showed a marked leaning towards minute anatomy at a time when histology as a branch of science was in its infancy. At the age of 24 he reached the position of professor in the University, by which time he had published an important monograph on the arrangement of the muscles of the oesophagus, and in other ways had shown his mastery of microscopical technique. In 1871, on the invitation of Sir John Simon, then principal medical officer to the Local Government Board, he came to London to carry on some bacteriological investigations for the Board and thus gained an introduction to scientific circles in this country. During the long period in which he was associated with the Local Government Board he published in the reports of the Medical Department a series of valuable observations on numerous pathological and bacteriological subjects. At different times most of the great infective processes came under his investigation, and our knowledge of typhoid fever, epidemic diarrhoea, small-pox, and cholera have all been enlarged by his untiring researches. He reported in this way on the concurrent inoculations of different infections, on the antagonisms of microbes, on the life of pathogenic microbes in water, on protective inoculations generally and the prophylaxis of diphtheria, on oyster culture in relation to disease, on the possible association of microbes with various fevers, on the differentiation of anaerobic microbes present in the human intestine—to mention some of the general researches; while in association with Houston he reported inter alia on the bacteriological evidence of the sewage pollution of water, and on the behaviour of specific microbes in relation to cereal products. The mass of work executed for the Local Government Board during some 15 years was, it will be seen, very large, for only that with a wide range has been mentioned here, and in all of the reports his technical skill was displayed.

Shortly after joining the Local Government Board he was invited to join the staff of St. Bartholomew's Hospital Medical School, where he was first assistant lecturer on anatomy and physiology, and later director of the bacteriological department. At St. Bartholomew's Hospital he made a great reputation as a teacher, and some of our leading physicians and pathologists to-day would admit their profound debt to his instruction and personal help. He became associate editor of the *Quarterly Journal of Microscopical Science* at its outset, and in 1873 an important monograph on the anatomy of the lymphatic system appeared in that paper, which received warm notice in our columns, and sufficiently accounted to those who were unfamiliar with his work for his early election to the Royal Society. Two years later appeared his work on the lymphatic system of the lungs, in which attention was drawn to the manner in which tubercle might spread through the tissues, and about the same time he published a handbook for the physiological laboratory, in which he collaborated with Sir Lauder Brunton.

In 1879 he brought out an "Atlas of Histology" which purported to give a pictorial and literal representation of tissues of the vertebrates, and was a practical compendium of the histology of the day. The book was furnished, from preparations and specimens made by the author, with illustrations drawn and executed by the late Noble Smith, a well-known orthopaedist who was also a remarkable draughtsman. In this book Klein incorporated his previous work on the anatomy of the lymphatic system. The work was published in 13 parts, which appeared at brief intervals

and few text-books can ever have more exactly met the immediate needs of medicine than this vast Atlas. The greater portion of the illustrations and nearly the whole of the text were original, and of the latter it may be said that the form was remarkable in that the author's meaning was always perfectly clear, although his English was a comparatively recent acquisition. Five years later came the work which brought together his researches into normal histology with those into bacteriology, and his "Introduction to the Study of Specific Micro-organisms" remained for many years the classical authority on its subject. The text-book entitled "Elements of Histology" which he wrote in collaboration with Dr. J. S. Edkins also earned justly a large circulation. It went through more than one edition and was steadily revised and rewritten where necessary. The introduction given by this text-book to an understanding of the architecture and life of the individual cell, especially as regards the minute structure of the nervous system, were of the greatest educational value, especially as the text contained illustrations of the latest staining processes; in the last edition photography was introduced, when the results, if less distinct than the older semi-diagrammatic drawings, corresponded more closely with the preparations which the student had to examine for himself.

Klein's later work, such as his researches into plague and cholera, comes more readily to the mind than does his consistent labour in welding normal histology with bacteriological research. For example, he made, some 20 years ago, for the Local Government Board an elaborate study of the different methods by which rats may become infected by plague. As a result of experimental work undertaken by himself and others he was led to attribute to infected food a greater measure than had formerly been regarded as likely. He found that although fresh cultures of plague bacillus failed to induce plague when ingested by the rat, cultures which had undergone a certain amount of drying, and around which there had been formed, as it were, a protective envelope capable of resisting influences of the gastric juices, led to plague in the rodent, when after death Peyer's patches in the lower ileum were found swollen, necrosed, and packed with plague bacilli. Much of such work has remained only suggestive, and in the history of science Klein will mainly be remembered as a great cytologist.

Klein saw during his 80 years of life the rise and development of bacteriology and all which that science means to practical medicine and surgery. At the time of his birth bacteria could be described as microscopical curiosities interesting only to a few experts, while the investigation of vital phenomena under the heading of physiology was also in its early stages as far as the knowledge of to-day is concerned. Our familiarity with the structure of organisms has become infinitely larger in scope and more precise in details since his time, but it will not be forgotten that Klein was one of the first men of science to insist on the importance of studying the relation between normal cytology and bacteriology.

Dr. Klein married in 1877 Mrs. S. A. Mawley, who predeceased him, and leaves a son, Dr. Bernard Klein.

CECIL CLARKE, M.D. LOND.

By the death at Montana of Cecil Clarke, assistant physician at the Bristol General Hospital, an enthusiastic worker has been lost to the medical profession, and a man whose courage in the face of persistent ill-health was of a high order.

Clarke was born in Bristol in 1885 and was educated at Westminster and the Bristol Medical School. His clinical appointments were held at the General Hospital. While there he gained the Henry Marshall Prize, the Clarke Surgical Scholarship, and the Martyn Memorial Scholarship in 1908, and the Sanders Scholarship in 1909. He qualified M.B., B.S. Lond. in 1908, having previously obtained the Diploma

of the Conjoint Board, and having held the appointments at the institution undertook a voyage to the Far East. Later he held the appointments of resident medical officer and assistant in the pathological department at Brompton Hospital, where he had a bad attack of pleurisy, which was his first experience of the broken health which troubled him during the remainder of his life. After recovering from this illness he took up post-graduate work at University College Hospital and the London Hospital and on the outbreak of the second Balkan war joined the British Red Cross Unit which served with the Balkan army. He distinguished himself in this campaign and gained several British and Bulgarian decorations. In 1913 he took his M.R.C.P. Lond. and proceeded to Germany for further post-graduate studies. In Dresden he spent a long time in the pathological department under Prof. Schmorl; then he went to Vienna and was there when the war broke out. He hurried back to Dresden, and being unable to obtain his release he escaped through Holland, relying upon his great familiarity with the language. On his arrival in London he took a commission in the R.A.M.C. He was sent out to France to work as bacteriologist at a large military hospital dealing with civilian cases of typhoid fever. At this time there was an extensive outbreak of typhoid fever among the civil population and the refugees concentrated in the Ypres neighbourhood. Later he was transferred to Salonica, where he worked with Prof. L. S. Dudgeon and carried out some valuable researches into the morbid histology of malaria. While with the field laboratory in Macedonia he became infected with bacillary dysentery. However, he remained at his post until 1917, when he was invalided home. He then went to France again, and in spite of his ill-health insisted on taking service with a battalion. He was posted to the Sherwood Foresters and served with them through much strenuous fighting in Flanders.

In 1919 he returned to Bristol to take up the medical registrarship at the General Hospital, and a little later he was appointed assistant physician to the hospital and physician to the Queen Victoria Jubilee Convalescent Home. In 1922 his health broke down again, and lung trouble became seriously active. Throughout his long illness he adopted an entirely philosophical and professional attitude to his symptoms. His mind remained active and he wrote and read a great deal. Although he had spent such a long apprenticeship at pathological and bacteriological work he regarded this all as a preparation for clinical medicine, and it was to clinical medicine that he hoped to devote his life. His published medical papers include: a Report on a Series of Relapses in an Epidemic of Enteric Fever (*Jl. R.A.M.C.*, 1915); Search for Typhoid Carriers among 800 Convalescents (jointly), *THE LANCET*, 1916, i., 566; Cultivation of the Malarial Parasite (jointly), *ibid.*, 1917, i., 530; Investigations on Fatal Cases of Pernicious Malaria Caused by *Plasmodium falciparum* in Macedonia (jointly) (*Quar. Jl. Med.*, 1919); Congenital Disease of Pancreas with Infantilism (jointly), (*ibid.*, 1924); Renal Efficiency (*Bristol Med. Clin. Jl.*, 1922). All of these communications were stamped by the care and accuracy which were so prominent a feature of his work and character.

A friend writes of him as follows:—"To him pathology was always the foundation of medicine; medicine without pathology was unsound, and pathology without medicine, fruitless. . . . He was never known to complain about his lot, and although with his knowledge of medicine and pathology he must have been fully aware of his poor outlook, he always spoke hopefully and seemed to believe that he would become strong enough to return to some kind of medical employment."

Another writes: "Cecil Clarke was a good friend, a wise physician, a helpful colleague, and an able critic. To those who were fortunate enough to know him intimately, his friendship will always remain a treasured memory."

Dr. Clarke is survived by his widow.

J. H. MONTGOMERIE BELL, M.D., F.R.C.S. EDIN.

John Henry Montgomerie Bell, of Lowestoft, died recently at Harrogate in his forty-eighth year, after a long and painful illness patiently endured. He graduated M.B., Ch.B., at Edinburgh University in 1901, and gained the M.D. in 1907. In the same year he was admitted a Fellow of the Royal College of Surgeons of Edinburgh. He held successively the appointments of house surgeon to the Deaconess Hospital, Edinburgh, of house surgeon to the Ophthalmic Department, Edinburgh Royal Infirmary, and senior house surgeon to Rotherham Hospital. Dr. Bell was practising in Canada when war was declared, and he immediately joined the Canadian Army Medical Corps, where he gained the rank of Major. He served throughout the war, and there is little doubt that the hardships he endured when on active service had much to do with his fatal illness. Dr. Bell was an accomplished linguist and scholar.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—

The following lectures will be delivered at the College, Pall Mall East, London, on the following Tuesdays and Thursdays, at 5 o'clock. Milroy lectures: Dr. Salusbury MacNalty on Epidemic Diseases of the Central Nervous System, March 5th, 10th, 12th. Goulstonian lectures: Dr. John Alfred Ryle on the Study of Gastric Function in Health and Disease, March 17th, 19th, 24th. Lumleian lectures: Dr. Hector Cameron on Some Forms of Vomiting in Infancy, March 26th, 31st, April 2nd. Oliver-Sharpey lectures: Dr. E. D. Adrian on the Interpretation of the Electromyogram, May 5th, 7th. Croonian lectures: Dr. S. A. K. Wilson on Disorders of Motility and of Muscle Tone, with special reference to the Corpus Striatum, June 9th, 11th, 16th, 18th. Any member of the medical profession is admitted to any of the lectures on presentation of card.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Board, held from Jan. 13th to Feb. 3rd, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

Medicine.—G. N. M. Aitkens, Charing Cross; R. G. Anderson, St. Bart.'s; R. Armsden, Univ. Coll.; H. I. C. Balfour, St. Bart.'s; C. W. Bamford and R. M. Bates, London; J. R. Beagley, St. Bart.'s; P. R. T. Becker, Guy's; Kathleen Blake, King's Coll.; W. R. Bonner-Morgan, St. Bart.'s; Margaret Bowstead, Royal Free; Elsie Boyton and J. L. Brown, King's Coll.; Eleanor G. Burdett, St. Mary's; M. F. Butler, Guy's; Mary E. Campbell, Charing Cross; A. G. Chamberlain, St. Bart.'s; R. J. K. Chattey, Middlesex; L. M. Clark, King's Coll.; D. R. T. Clendon, Univ. Coll.; Ella J. Cockram, King's Coll.; Hilda A. Cohen, Cardiff; P. V. Crameri and B. R. Crossley, Univ. Coll.; R. N. Curnow, St. Bart.'s; Evelyn J. Curtis, King's Coll.; H. E. Daniel, St. Bart.'s; A. E. de Founeska, King's Coll.; J. V. Dockray, Middlesex; J. Ewing, Leeds; Christabel S. Eyre, Charing Cross; C. R. Fielding, Manchester; Barbara Finch, Royal Free; Winifrede M. Fish, King's Coll.; W. Flowers, Leeds; F. J. T. Focnander, Middlesex; W. F. Gaisford and A. W. Gardner, St. Bart.'s; R. C. Gernond, Lausanne and London; Winifrede M. Gibson, Charing Cross; G. D. Gillbard, Middlesex; W. L. Gopsill, St. Thomas's; Sarah P. M. Griffiths, Westminster; G. S. Hale, St. Bart.'s; P. M. D. Hart, Univ. Coll.; Lynette Hemmamt, King's Coll.; J. U. Human, Guy's; L. E. Jones, St. Thomas's; W. H. M. Jones, Cardiff; P. N. Kapur, London; Frances M. Kenyon, King's Coll.; Kathleen M. Lankester, Royal Free; S. Lerner, Univ. Coll.; H. M. O. Lester, St. Thomas's; S. Levy, Middlesex; Leonora M. K. Lines, Charing Cross; D. A. Lubbock, Univ. Coll.; S. B. Malik, Charing Cross; Dorothy G. Medway, Royal Free; A. L. Moorby, King's Coll.; W. Murphy, Leeds; L. J. McGregor, St. Thomas's; C. C. Mackinnon, Middlesex and Bristol; Margaret C. Malone, King's Coll.; D. R. Martin, Guy's; J. P. Monkhouse, St. Mary's; E. W. Morgan, St. Bart.'s; Josephine W. Nagel, Royal Free; H. A. Nicholls, St. Bart.'s; Kathleen G. Norton, St. Mary's; D. Oliver, St. George's; S. G. Pandit, Bombay; Edith G. Peacock, Charing Cross; S. M. Power, London; E. P. Pratt, St. George's; Fanny Rabinowitz, Charing Cross; M. P. S. Rau, Madras and Middlesex; D. I. Rees, St. Thomas's; Nellie H. Reynolds, King's Coll.; F. E. Roberts, Birmingham; Janet M. Robertson, St. Mary's; E. A. Rucker, Middlesex; K. Samaan, Manchester; H. H. E. Schultz, St. Thomas's; G. Simon, St. Bart.'s; Constance G. Sloan, St. Mary's; Beatrice M. Smithies, Charing Cross; K. A. Soutar, St. Thomas's; A. A. Spiro, Manchester; J. M. Stirling, Charing Cross; K. R. Stokes, St. Bart.'s; Sylvia Sworn, Univ. Coll.; J. E. Swyer and

J. S. Symons, London; K. H. Tan, Middlesex; Catherine F. Taylor and Jean S. Thomson, Royal Free; F. S. Thornton, St. Thomas's; J. N. J. L. Uys, St. Thomas's; W. A. Vickers, Liverpool; Iris V. I. Ward, Royal Free; R. L. Waterfield, Guy's; Helen D. Watson and Violet M. Weston, Royal Free; W. S. Whimster, Guy's; J. D. V. Wijeyaratne, King's Coll.; D. P. Williams, Middlesex; Ada R. Winter, Univ. Coll.; and Joan Worsfold, Royal Free.

Midwifery.—N. Ahmed, Bombay and Edinburgh; R. D. Aiyar, London; C. R. Alderson, Univ. Coll.; C. B. Andree, Guy's; L. Appell, Charing Cross; G. S. Aston, Birmingham; Kathleen A. M. Ayton, Durham; J. C. H. Baird and W. A. Barnes, St. Bart.'s; Sybil K. Batley, Royal Free; W. T. E. Blackmore, London; E. Bowen-Jones, Guy's; Janet M. Breakwell and R. N. Bullock, Birmingham; F. Bunie, St. Mary's; Olive K. Burnett, Royal Free; J. T. Cahill, Middlesex and London; F. F. R. Carreck and F. Carroll, St. Mary's; R. T. Chadwick, St. Bart.'s; J. H. T. Challis, London; M. Chandra, St. George's; Eileen M. Clarke, Royal Free; Kathleen D. Clay-Beckett, Manchester; H. N. Collier, Guy's; P. V. Crameri, Univ. Coll.; K. J. J. Cursetji, Bombay and St. Bart.'s; N. Das, London; S. T. Davies, Univ. Coll.; Mirabel G. Davis, King's Coll.; Winifrede de Kok, Royal Free; G. Dietrich, St. Bart.'s; F. R. Dingle, Guy's; Dorothy Durance, Royal Free; R. P. S. Edden, St. Mary's; N. L. Edwards, Manchester; I. A. Evans, Cardiff; J. Evans, Guy's; J. Familton, Durham; W. H. Fernando, Ceylon; A. J. Foote, Sydney and London; R. A. Foucar, St. Bart.'s; E. A. Gerrard, Manchester; J. Goldberg, London; M. Gottfried, St. Mary's; A. S. Gough, Guy's; Gladys Goumont, St. Mary's; A. W. T. Green, Middlesex; Margaret K. Green, St. Mary's; H. R. Griffin, Middlesex; Sarah P. M. Griffiths, Westminster; J. L. Groom, Guy's; H. L. Gulati, Charing Cross; L. C. Gunasekara, King's Coll.; Emily M. Hall, St. Mary's; Nellie M. E. Hallinan, Charing Cross; T. S. Hanlin and Z. Hanna, Manchester; Dorothy M. Hanson, Liverpool; T. J. Hargest, Cardiff; M. J. Harker, St. Bart.'s; P. M. D. Hart, Univ. Coll.; A. R. Hill, St. Bart.'s; C. H. Ho, St. Thomas's; D. P. Holmes, Westminster; E. F. Hottinger, St. Mary's; L. E. Houghton, Guy's; G. E. Hughes and J. H. Humphris, St. Bart.'s; N. H. Ibrahim, Durham; A. O. Jacob, Madras; J. N. Jacobson, St. Thomas's; Elvy I. Johnstone, Liverpool; B. P. Jones, Manchester; R. Jones, Charing Cross; T. S. L. Jones and G. F. Kinder, Liverpool; B. Kornblum, Guy's; C. K. Lakshmanan, St. Bart.'s; Kathleen M. Lankester, Royal Free; S. Lerner, Univ. Coll.; C. A. Levy and G. L. M. McElligott, St. Thomas's; H. A. McGregor, St. Bart.'s; W. K. McKinstry, Cambridge and St. Bart.'s; A. C. Macleod and A. J. McMillan, Middlesex; Joan Malleson, Charing Cross; W. N. Maple, St. Thomas's; F. G. Martin, Charing Cross; R. C. May, Guy's; Dorothy G. Medway, Royal Free; P. B. P. Mellows, St. Bart.'s; R. H. Metcalfe, St. Thomas's; H. M. Mikhail, Univ. Coll.; A. K. Miller and N. A. Miller, St. Thomas's; Ruth L. Milne, Royal Free; D. Mitra, Charing Cross; F. E. Montague, St. Thomas's; Florence I. R. Moore, Royal Free; J. L. Morgan, St. Thomas's; W. S. Morgan, St. Bart.'s; W. Murphy, Leeds; A. N. Nanda, Dundee; Elizabeth H. R. Newbould, Royal Free; Kathleen G. Norton, St. Mary's; E. R. Owen, Liverpool; C. F. Parry and H. L. Peake, Guy's; A. P. Pearce, London; B. Perchman, Charing Cross; J. D. L. Perera, Ceylon and Sheffield; P. H. Perkins, London; R. K. Phillips, Bristol; A. Pierce, Birmingham; W. G. Platt, Leeds; C. C. Po. Guy's; E. P. Pratt, St. George's; Nellie L. Pyman, Charing Cross; M. P. S. Rau, Madras and Middlesex; T. Rees, J. L. Reeve, and D. R. Reynolds, St. Bart.'s; F. T. Ridley, Birmingham; C. E. Roberts, London; K. E. R. Robertson, St. Mary's; V. E. Robinson, Oxford and St. Bart.'s; C. J. Rozario, St. Thomas's; M. Schwartz and J. Shepherd, Univ. Coll.; D. G. Shields, St. Bart.'s; B. S. Singh, Leeds; E. G. Snallbone, Guy's; J. R. Smith, St. Bart.'s; E. F. Stead, London; Lois Stent and Mary Stirk, Manchester; S. V. Strong and A. C. Taylor, Guy's; T. H. Taylor, Leeds; G. A. J. Teasdale, Middlesex; L. Teskey, Toronto and London; D. W. R. Thomas and E. D. Thomas, Middlesex; Jean S. Thomson, Royal Free; Dorothy Tims, Charing Cross; R. S. Tooth, St. Bart.'s; Mary C. Tugman, St. Mary's; N. A. A. van Buuren, Univ. Coll.; A. B. W. van Zyl, Middlesex; J. Viljoen, Manchester; W. F. Waudby-Smith, St. Bart.'s; Iris V. I. Ward and Violet M. Weston, Royal Free; J. D. V. Wijeyaratne, King's Coll.; H. J. Williams, Birmingham; D. B. Wilson, Cambridge and Birmingham; Jessie Wiltshire, Univ. Coll.; R. M. Windeyer, St. Bart.'s; H. Winstanley, Liverpool; F. G. Winterton, St. Bart.'s; K. K. Wood, Manchester; and J. Woolf, St. Thomas's.

Surgery.—R. D. Aiyar, Madras and London; R. G. Anderson, St. Bart.'s; N. A. Arnold and H. M. H. Ashwin, Guy's; A. Ashworth, Liverpool; A. A. Atkins, London; H. M. Ayres, St. Thomas's; R. M. Bates, London; I. C. P. Beauchamp, Guy's; S. A. Belshaw, Middlesex; H. S. Bell, Liverpool; E. E. Benson, Bristol; A. T. Bettinson, St. Bart.'s; W. T. E. Blackmore, London; W. R. Blunt, St. Thomas's; N. W. Bolton, Manchester; G. M. Brooks, Birmingham; J. A. S. Brown, London; O. W. B. Browning, Univ. Coll.; H. Bruce, Leeds; Enid A. Ceiriog-Cadle, Royal Free; M. Chandra, St. George's; Gwendolen S. Chataway, St. Mary's; G. C. W. Clarke, Sheffield; Marian B. Coleman and Victoria M. Crosse, Royal Free; R. W. Cumingham, Guy's; A. J. Daly, London; G. Davies, Guy's; V. H. G. Davies, Middlesex; N. A. Dickinson and N. L. Edwards, Manchester; I. Evans, St. Thomas's; Helen E. Fergusson, Charing Cross; A. K. J. Finch, St. Mary's; A. H. W. Fleming, Manchester; F. J. T. Focnander,

Middlesex; A. J. Foote, Sydney and London; E. A. Gerrard, Manchester; R. Glasser, Liverpool; J. G. Goodman and A. S. Gough, Guy's; R. Green, St. Bart's; C. J. Grosch, Middlesex; G. T. Hankey, Guy's; C. G. Harper, Middlesex; S. Harris, St. Thomas's; J. P. Hellwell, St. Mary's; Catherine M. Hext, London; C. H. Highfield, Guy's; J. D. Hindley-Smith, St. George's; G. S. Hirst, Leeds; R. St. J. Honner, Sydney and Middlesex; W. Hughes, Middlesex; D. Imber and F. F. Inianitoff, St. Bart's; S. W. Innes-Smith, Sheffield; J. N. Jacobson, St. Thomas's; I. H. Jones, Charing Cross; T. S. L. Jones, Liverpool; G. W. Keele, Univ. Coll.; R. St. J. Kemm, Bristol; H. Kessel, Guy's; G. M. King, King's Coll.; O. F. A. Krause, Guy's; D. F. Lawson, St. Thomas's; W. E. Lishman, Liverpool; J. B. Lloyd, St. Bart's; T. J. Lloyd, Cardiff; Aileen I. McMahon, Charing Cross; D. H. Macleod, Middlesex; C. H. Mason, St. Mary's; J. A. A. Meckelburg, Guy's; A. K. Miller and N. A. Miller, St. Thomas's; V. S. Mitcheson, Cambridge and Birmingham; S. K. Montgomery, Univ. Coll.; Florence I. R. Moore, Royal Free; H. Moore, Guy's; W. G. R. Morris, Bristol; Marjorie Murrell and Elizabeth H. R. Newbould, Royal Free; B. V. O'Connor, Middlesex; W. Ogden, St. Bart's; Gwynedd M. E. Olive, Royal Free; R. W. L. Pearson, Liverpool; K. R. T. Peiris, King's Coll.; R. A. M. Pennington, Liverpool; S. M. Power, London; A. B. Plant, Guy's; T. B. Prys-Jones, Middlesex; P. E. Pym and W. E. H. Quennell, St. Bart's; J. Raisman, Leeds; R. J. Rankin, Cardiff; J. R. Ratcliffe, Guy's; E. W. Riches, Middlesex; A. W. Riddolls, Guy's; T. W. E. Royden, St. Bart's; C. J. Rozario, St. Thomas's; H. J. Selby, Guy's; S. Q. Servante, Middlesex; C. F. J. Smith, St. Mary's; J. R. Smith, Cambridge and St. Bart's; R. K. Smith and J. S. Spickett, St. Bart's; G. H. Steele, Univ. Coll.; Lois Stent, Manchester; Catherine E. Stephen, Univ. Coll.; W. K. Targett, Guy's; J. L. Thomas, Middlesex; O. C. Tobin, London; H. Trafford, Guy's; K. A. Turner, Leeds; L. G. W. Ulrich and A. B. W. van Zyl, Middlesex; J. Viljoen, Manchester; T. E. Walsh, St. Thomas's; E. C. Warner, Guy's; Helen D. Watson, Royal Free; R. A. K. Wiener, St. Thomas's; E. C. P. Williams, Middlesex; H. G. Wimbush, Guy's; R. M. Windeyer, St. Bart's; K. K. Wood, Manchester; H. M. Woodman, King's Coll.; and E. W. C. Wouterz, St. Mary's.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council of the Royal College of Surgeons held on Feb. 12th, Sir John Bland-Sutton, President, in the chair, Mr. Arthur Percy Dodds-Parker, surgeon to Radcliffe Infirmary, Oxford, was elected a member of the Court of Examiners in Surgery in the vacancy caused by the retirement of Mr. John Murray, surgeon to Middlesex Hospital. Mr. James Sherren was appointed Bradshaw Lecturer, and Prof. William Wright, F.R.S., was appointed Thomas Vicary Lecturer for the ensuing year.—The best thanks of the Council were given to Mr. H. H. Hope-Pinker for his presentation of the plaster model of his bust of the late Sir George M. Humphry.—The President reported that a meeting of Fellows would be held at the College on Thursday, July 2nd, at 2.30 P.M., for the election of three Fellows into the Council in the vacancies occasioned by the retirement in rotation of Mr. V. Warren Low, Mr. James Sherren, and Sir John Lynn-Thomas; that notice of the meeting would be given to the Fellows by advertisement and by circular on March 6th; that March 16th would be the last day for the nomination of candidates; and that a voting paper would be sent on March 31st to every Fellow of the College whose address is registered at the College.

Diplomas of Member were conferred upon 208 candidates who have passed the requisite examinations and have complied with the by-laws. The following are the names and medical schools of the successful candidates:—

M. Abse, Cardiff and Univ. Coll.; J. D. Allen, Cape and St. Bart's; G. T. Allerton, London; C. A. Amesur, St. Thomas's; Kathleen J. Atkinson, King's Coll.; Margaret A. Bannerman, Royal Free; W. D. Beck, Birmingham; C. E. G. Beveridge, Oxford and St. Bart's; O. P. Bewers, St. George's; Anna M. V. Bonhote, King's Coll.; V. H. Boobyer, St. Mary's; W. A. Bourne, Cambridge and St. Bart's; R. N. Brandwood, Guy's; S. Brest, H. F. Brewer, D. A. Brigg and D. J. Brims, St. Bart's; R. J. Brocklehurst, Oxford and St. Bart's; T. H. P. Brooks, London; Margaret H. Brown, Charing Cross; W. A. Browne, Madras and St. Mary's; Olive B. Buckley, King's Coll.; W. H. Cameron, Toronto and Middlesex; A. F. Chalkley, Leeds; Gwendoline Chave, Royal Free and St. Mary's; H. F. Chillingworth, St. Bart's; G. F. Chissell, Middlesex; L. Chodorsky, St. George's; J. Chronnell, Manchester; H. A. Clegg, Cambridge and St. Bart's; A. V. Clemmey, Oxford and Guy's; Doris M. Collins, Royal Free; L. N. R. Comty, London; L. C. Cook, Cambridge and St. Thomas's; W. H. M. Cowper, Middlesex; G. P. Craggs, Durham and St. Bart's; Dorothy E. Crellin, Bristol; J. Currie, St. Bart's; M. Cutner, St. Mary's; Gweneth M. Daniel and Annie E. C. Davies, Westminster; A. L. Davies, Oxford and St. Thomas's; J. R. Davies, St. Thomas's; W. H. Davies, Westminster; A. R. Davison, Cape and St. Thomas's; M. S. Dawhurst, Cambridge and Univ. Coll.; Charlotte D. N. de Wilde, Royal Free and London; G. E. Ellis, St. Bart's; O. M. Ellis, Cardiff; C. W. Evans, Univ. Coll.; J. Evans, Cardiff and Charing Cross; N. B. Farman, Charing Cross; J. T. Fathi, London; L. Fatti and C. F. Fernandez, Univ. Coll.; M. G. Fitzgerald, Cambridge and

St. Bart's; Dorothea C. Forbes, Royal Free and St. Mary's; G. R. Ford, Guy's; W. S. Fricker, Cardiff and King's Coll.; T. M. Frupp, Guy's; O. P. Giles, Birmingham; G. D. Gordon, Cambridge and St. Thomas's; H. W. Gordon, Cambridge and St. George's; R. A. Grant, Guy's; F. N. Green, Cambridge and Liverpool; A. L. Greenway, Calcutta and King's Coll.; D. L. Greig, Middlesex; J. M. Hall, King's Coll.; Constance I. Ham, Bristol; G. Hamada, Birmingham; J. E. S. Hamilton, Bristol; C. H. Hampshire, Univ. Coll.; A. W. Hanlon, Liverpool; Hans Raj, King's Coll.; Irene D. F. C. Hastlow, Birmingham; N. H. R. Hatfield, Cambridge and St. Mary's; C. W. Healey, Liverpool; S. Melberg, Zurich and London; A. Helmi, Cairo and St. Thomas's; Freda K. Herbert, King's Coll.; E. Herzberg, Heidelberg and Univ. Coll.; A. E. Hill, Guy's; C. H. Hilliard, Cambridge and St. George's; Minnie E. Hope, Royal Free; E. C. Hudson and D. B. Hughes, London; Katharine E. W. Hulse, Charing Cross; O. R. Humphreys, Cardiff and London; F. S. Hunter, Birmingham, Guy's, and Bristol; O. L. Hutchinson, St. Andrews and London; Joy Hwa, Birmingham; S. Hyman, Leeds; Elizabeth Jacobs, St. Mary's; Kate D. James, Royal Free and St. Mary's; E. J. Jenkins, Birmingham; C. W. W. Jeremiah, Cardiff and Middlesex; D. F. Johnstone, Ceylon and King's Coll.; L. A. Key, Cambridge and St. Thomas's; Caroline B. Kibble, Royal Free; C. T. Kitching, Cape and St. Thomas's; W. R. Kusel, St. Thomas's; Marjorie A. M. Lambert, Royal Free; G. S. Landon, Guy's; M. C. Lavin, London; H. Levy, Cape and St. Bart's; H. Lewis, Guy's; A. C. Liesching, St. Bart's; L. A. N. Line, Birmingham; W. H. G. M. Ling, Edinburgh and St. Mary's; Madeline R. Lockwood, Univ. Coll.; A. C. Lysaght, Bristol and Guy's; Catherine B. McArthur, Roy. Free; S. McClements, King's Coll.; F. G. Macdonald, St. Thomas's; Dorothy F. McIntosh, Charing Cross; J. H. Macpherson, King's Coll.; Helena M. J. McQuaid, St. Mary's; R. G. Malphaut, Univ. Coll.; J. P. Marsden, Cambridge and St. Thomas's; G. R. Marshall, St. Mary's; E. L. Martin, Charing Cross; A. W. C. Mellor, Cambridge and St. Bart's; C. P. Miller, St. George's; F. C. Miller, Guy's; G. J. Morris, Cardiff and Middlesex; C. F. Morrison, Guy's; A. M. Murray, Middlesex; W. R. Nash, Cardiff and St. Bart's; Margaret I. Neal, London; E. L. Newell, Oxford and St. Thomas's; R. A. Newsom, King's Coll.; H. W. Nicholson, Cambridge and St. Thomas's; J. A. Noot, Cardiff; R. A. Norman and J. N. D. O'Rafferty, Guy's; J. V. O'Sullivan, Galway and London; Evelyn D. Owen, Cardiff and Charing Cross; G. W. C. Parker, Cardiff and St. Bart's; A. E. Parkes, St. Bart's; W. Parry-Jones, London; R. Paton, Cardiff and Middlesex; V. Patrick, Manchester; F. L. Patterson, London; Gladys L. Pearson, Royal Free; A. D. Pegg, St. Thomas's; Gwyneth M. Pennant, Cardiff and King's Coll.; H. C. Pierce, Cambridge and Liverpool; C. P. Pinckney, Cambridge and St. George's; L. W. Proger, Middlesex; D. C. Prowse, Bristol; R. S. Pyrah, Leeds; V. I. Raman, Madras and London; C. Rankin, Liverpool; M. D. Rawkins, St. Bart's; J. T. Rees, Cardiff; Olwen M. Richards, Cardiff and Charing Cross; J. T. C. Roberts, Liverpool; J. J. R. Robinson, St. Thomas's; Wemyss C. Robinson, King's Coll.; G. F. Rowbotham, Manchester; Alysoun H. Rowntree, Royal Free; A. B. Rufail, Cairo and King's Coll.; K. G. W. Saunders, St. Thomas's; S. D. Schultz, Manitoba and Middlesex; C. E. Sharp, McGill and Univ. Coll.; T. A. Shaw, Guy's; Frances E. Smith, Charing Cross; S. M. T. Smith, Bristol; A. D. Soares, Bombay; K. H. Southall, Univ. Coll.; I. P. Spurrell, Guy's; Ethel L. A. Stamborg, Royal Free; B. G. Staniland, London; R. O. Stern, Charing Cross; D. D. S. Stewart, King's Coll.; P. Subbaramayya, Madras and London; A. F. Taylor, St. Bart's; E. J. Thomas, Cardiff and St. Thomas's; J. D. S. Thomas, Guy's; W. S. Thomas, Univ. Coll.; E. Thompson, St. Thomas's; W. R. Thrower, St. Bart's; T. G. Tresidder, Guy's; E. A. Trim, Cambridge and St. Thomas's; V. C. Tughan, Univ. Coll.; Beatrice M. Upshohn, Madras and Royal Free; L. C. D. van der Borgh, Ghent and Univ. Coll.; H. Van der Post, Guy's; G. B. W. Walker, Cambridge and St. Mary's; R. A. Walsh and L. B. Ward, St. Bart's; Catherine Waterson, Univ. Coll.; H. V. Wells, Charing Cross; J. Whillis, Durham; F. L. White, London; C. R. Williams, Leeds and London; D. G. Williams, Cardiff and King's Coll.; E. R. Williams, Cardiff; H. H. Williams, Liverpool; D. A. Wilson, Middlesex; Emily A. C. Wilson, Charing Cross; H. M. Worth and C. L. Worthington, Guy's; Annie Yoffa, Cornell and Royal Free; G. C. Young, St. George's; and J. C. Young, Guy's.

The diploma of Fellow was also conferred upon Frederick H. Scotson, Manchester University and St. Bartholomew's Hospital, and Clement Sturton, Cambridge University and St. Bartholomew's Hospital, who have previously passed the requisite examinations and have now attained the age of 25 years.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE: APPOINTMENT OF RHODESIAN RESEARCH FELLOW.—In connexion with the arrangements recently entered into by the London School of Hygiene and Tropical Medicine with the Government of Southern Rhodesia for the development of research work in that country, the London School has appointed for a term of three years Dr. G. R. Ross, M.B., Ch.B., D.P.H., Ph.D., to be Rhodesian Research Fellow.

UNIVERSITY OF LONDON.—A lecture entitled the Relation of Paralysis Agitans to the Parkinsonian Syndrome of Epidemic Encephalitis will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W., by Prof. R. Cruchet, professor of pathology and general therapeutics in the University of Bordeaux, at 5 P.M., on Wednesday, Feb. 25th. The chair will be taken by Sir Humphry Rolleston. The lecture, which will be delivered in English and illustrated with lantern slides, is addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.

Three lectures on the History of Medicine will be delivered at University College Hospital Medical School by Dr. Charles Singer, on Thursdays, March 5th, 12th, and 19th, at 4.15 P.M. The subjects of the lectures are: (1) History of Influenza; (2) History of Diphtheria; (3) History of Typhoid Fever. The lectures are open to all medical students of the University of London.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Special attention is directed to the informal discussion on post-graduate study, open to all members of the medical profession in London, including, of course, Members of the Fellowship of Medicine from the Provinces and Overseas, on March 18th, at 6 P.M., at 1, Wimpole-street, London, W.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The seventeenth meeting of the Commission was held at the Home Office, Whitehall, on Feb. 12th, Lord Lawrence of Kingsgate in the chair. Mr. C. H. Waring, representing the group of Catholic Approved Societies, gave evidence on questions of additional benefits and insurance of married women. Thereafter the examination of Mr. F. W. Daniels, chairman, and Mr. P. Rockliff, secretary of the Joint Committee of Approved Societies, was continued and concluded. The National Insurance Beneficent Society, represented by Mr. G. W. Canter and Mr. Rockliff, was then heard on the question of its administration of treatment benefits. Proof copies of the oral evidence and the relative statement submitted at the meeting of Jan. 29th, are now on sale at H.M. Stationery Office (2s. 3d.).

HUNTERIAN SOCIETY: ANNUAL DINNER.—The annual dinner of this society was held on Feb. 12th at the Hotel Victoria, London. Mr. W. H. Carson, the President, was in the chair, and about 150 Fellows and their guests were present. "The Memory of John Hunter" was proposed by the President, and Sir Francis Newbolt gave the toast of "The Hunterian Society," to which the President responded. Sir Bruce Bruce-Porter paid a tribute to the Lord Mayor and the Corporation of London, and the Lord Mayor replied. The toast of "The Guests and Sister Societies" was proposed by Dr. W. Langdon Brown, and was acknowledged by Lord Carson, the Lord Bishop of London, and Sir St. Clair Thomson. Dr. Ernest Young proposed "The Chairman." During the evening a pleasant programme of songs was given by Mr. A. Rosenörn-Lamg, accompanied by Miss Marion Farr.

PUBLIC HEALTH ADMINISTRATION IN LIVERPOOL.—At a meeting of the Liverpool Medical Institution on Feb. 12th Dr. E. W. Hope gave a sketch of the sanitary advances of Liverpool, and of the measures taken to ameliorate the conditions resulting from the singularly rapid growth of the city at a time when sanitation was very imperfectly understood and when no legislative powers existed to check or remove the rapidly growing evils. Much of the earlier local legislation had formed the basis of the Public Health Acts of the country, but the sanitary necessities of Liverpool had made necessary many applications to Parliament. The great housing operations, both within the city and in its outskirts, were illustrated, as well as the measures which led to the present unstinted water-supply; transported from the purest sources 60 miles away, it was now, he said, available for delivery to every floor in every house at the moderate cost of 1½d. a ton. The measures which lead to the establishment of the present efficient hospital and sanatorium system were traced, and it was pointed out that the term "Infectious Hospital," as applied to properly spaced institutions upon an area of some 200 acres, was of very different significance to the term as applied to hospitals of half a century ago. An account was also given of the development of the individual and as well as the environment. Hygiene, uses of health visitors, antenatal and postnatal centres, maternity homes, infant welfare centres, control of food-supplies, and other important accessories were dealt with. It was with a view to making sanitary problems intelligible and interesting to the general public that the University School of Hygiene was established.

The sum raised on Poppy Day, 1924 (Earl Haig's Appeal for Ex-Service Men of all Ranks), was, up to the end of December last, £314,598.

SOCIETY OF M.O.H.'s: MATERNITY AND CHILD WELFARE GROUP.—Attention is drawn to the date and time of the meeting of this society, as announced in our Medical Diary of this week. The customary date and time of these meetings have been changed in the hope that the new arrangement will prove more convenient to the members.

DONATIONS AND BEQUESTS.—By the will of the late Dr. Herbert Williamson, of Queen Anne-street, Cavendish-square, W., the testator left £1000 to the endowment fund of the Medical College of St. Bartholomew's Hospital; and £200, his medical books, and surgical instruments to his colleague, Dr. John Davis Barris.

PUBLIC HEALTH (PRESERVATIVES, &c., IN FOOD) REGULATIONS, 1925.—The Minister of Health has caused draft Regulations to be prepared to give effect to the principal recommendations of the recent Departmental Committee on the Use of Preservatives and Colouring Matters in Food. Copies of the draft Regulations entitled "Draft, dated Feb. 17th, 1925, of the Public Health (Preservatives, &c., in Food) Regulations, 1925, proposed to be made by the Minister of Health" may be purchased directly or through any bookseller from H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2. Any representations on the draft Regulations should be sent to the Secretary to the Ministry within a period of 40 days from this date. The Regulations to be made by the Minister of Health will apply in England and Wales. Regulations in similar terms applying to Scotland will be made by the Scottish Board of Health. Copies of the draft of these Regulations may be purchased from H.M. Stationery Office, 120, George-street, Edinburgh.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 20 cases were considered and £378 voted to 16 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 47, L.M.S.S.A. Lond. who practised in Wales and died in 1921. Since husband's death applicant has tried to support herself and children by keeping a boarding house, but this failed, and she is likely to obtain a post as music mistress in a school on the South Coast when she can have her small daughter, aged 4, with her. Applicant asks for £12 to cover three weeks' board and lodging in London, fares for self and child to settle up her affairs in the Midlands before taking the post. Voted £20.

Widow, aged 37, of M.B. Glasg. who practised in Lancashire and died in 1922. Applicant is left with three children, aged 10, 8, 6½. Her total income is 30s. a week and she has been only able to earn very little by needlework. The small house they live in is too small to let in any way. Applicant was in hospital during the autumn to undergo an operation. Has run into debt, and school fees are owing for autumn term. Voted £5 and £20 in four instalments.

Widow, aged 87, of M.R.C.S. Eng. who practised in Bristol and died in 1885. Applicant is bedridden and has now to have a nurse to look after her at night as the daughter, aged 57, is only able to do so during the day. Applicant's total income is £100 and the rent is £39 per annum. Circumstances do not permit sufficient food at times and very little firing, as there is not enough money to buy coal. Voted £5 and £26 in four instalments.

Widow, aged 71, of L.R.C.P. Edin. who practised in London and died in 1918. Applicant has cataract and she is only able to do a little knitting by which she earned £3. Her youngest daughter has to look after her mother and she is only able to do a little spinning. The applicant's income is £84 a year from property and the daughter's £10. Rent 12s. a week for three rooms. Voted £18 in 12 instalments.

Daughter, aged 41, of M.B. Edin. who practised in Australia and died in 1883. Applicant is a trained singer and until she was taken ill earned quite a good income as a singer. The Fund have helped her mother from time to time and who now has an Epsom Pension. As applicant is suffering from chest trouble the doctor has ordered her to Switzerland and she is asking the Fund to help her with her expenses out there. Voted £20.

M.R.C.S. Eng., 1893, aged 53. Dependent on locomotens work entirely. Nearly two years resident in hospital for abscess of rectum. Brothers and sisters allowed him 12s. a week while in hospital. Brother is unable to keep applicant, and a small fund raised for him enables applicant to pay his brother £1 for board and lodging. Applicant asks for grant to buy dressings and to pay for colotomy belt and travelling expenses to and from hospital. Voted £5 and £26 in 12 instalments.

Daughters, aged 79 and 78, of L.A.H., 1836 who practised in London and died when applicants were quite young. The two sisters lived in a free cottage for 14 years and their income amounted to £66 a year each, including the Old Age Pension. The youngest one suffers from loss of memory and the elder from Bright's disease and paresis of both legs. These ladies have had to be removed to the Cottage Hospital at a cost of 2 guineas a week. Voted £26 in 12 instalments each.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., M.S., at 11, Chandos-street, Cavendish-square, London, W.1.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

New Bills Presented.

THE following new private Members' Bills were introduced and read a first time in the House of Commons on Friday, Feb. 13th: Lieut.-Col. Lambert Ward: A Bill to provide for the permanent adoption of Summer time. Sir Geoffrey Butler: A Bill to make further provision for the adoption of Children by suitable persons. Mr. Rennie Smith: A Bill to provide for the abolition of capital punishment and to substitute other punishments therefor. Mr. Womersley: A Bill to amend the Public Health Acts 1875 to 1907 and the Baths and Washhouses Acts 1846 to 1899 in respect of matters for which provision is commonly made in local Acts and for other purposes relating to the public health. Mr. Young: A Bill to amend the Blind Persons Act 1920. Major George Davies: A Bill to amend the Sale of Food and Drugs Act 1875 by regulating the liability of milk sellers in respect of milk adulteration. Capt. Bowyer: A Bill to amend the Bastardy Laws.

The following Government measures were also introduced and read a first time: Sir W. Joynson-Hicks (Home Secretary): A Bill to amend the law with respect to guardianship and marriage of infants: Sir J. Gilmour (Secretary for Scotland): A Bill to extend further the duration of the Poor Law Emergency Provisions (Scotland) Act 1921 and to amend certain provisions of that Act as amended by the Local Authorities (Emergency Provisions) Act 1923 and the Poor Law Emergency Provisions Continuance (Scotland) Act 1924; and Bill to authorise local authorities under the Public Health (Scotland) Act 1897 to make arrangements for providing medicines and treatment to persons suffering from diabetes.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 11TH.

Progress in Housing.

MR. TREVELYAN THOMSON asked the Minister of Health the number of houses at present in course of construction under the various State-assisted schemes and the number under construction in February last.—Sir KINGSLEY WOOD (Parliamentary Secretary for Ministry of Health) replied: Particulars are not yet available as to the number of houses in course of construction on February last, but the following table shows the position on Jan. 1st, 1924 and 1925:—

Scheme.	Jan. 1st.	
	1924.	1925.
Housing, Town Planning, &c., Act, 1919	4,873	1,658
Housing, &c., Act, 1923	14,102	49,196
Housing (Financial Provisions) Act, 1924	—	3,173
Totals	18,975	54,027

New Factory Legislation.

MR. RAINE asked the Home Secretary whether it was the intention of the Government to introduce a Bill to consolidate the enactments relating to factories during the present Session: and, if so, whether the Bill would differ materially from the Bill introduced for that purpose in the last Session of Parliament.—Sir WILLIAM JOYNSON-HICKS replied: It is hoped, as announced in the King's Speech, to introduce a Bill this Session to amend and consolidate the Factory and Workshop Acts, but I am not in a position to make any statement as to the provisions of the Bill, which have not yet been settled.

THURSDAY, FEB. 12TH.

Experimental Houses.

The House went into Committee of Supply on a Supplementary vote of £10 for the Salaries and Expenses of the Ministry of Health, including grants and other expenses in connection with housing, Capt. FITZROY in the chair.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) referred to the grant towards the cost of demonstration houses. He said that so far as arrangements had already been made it was proposed that the local authorities should erect three kinds of specimen houses—first, the Weir house made by G. & J. Weir, Ltd., of Glasgow; secondly, the Telford type of house made by Messrs. Braithwaite & Co., of West Bromwich, and thirdly, the type made by Messrs. James Wild & Co., of Manchester. These tests were being made as a result of the recommendation of the expert committee presided over by Sir Ernest Moir and set up by the late Minister of Health. That report contained the signature of George Hicks, General Secretary of the Amalgamated Building Trade Workers. The cost to the local authorities in relation to these experiments had been

fixed at a flat price. The price of the Weir houses to each local authority was £400, the authority themselves providing the foundations, paths, drainage roads, &c.; the price of the Telford house was £150, the local authority providing the foundations, &c., outside the concrete foundations. The price of the Wild house had yet to be fixed. The Minister of Health was to contribute to the cost of these experimental Weir houses the sum of £200, the "all in" cost being about £525. None of these experimental houses would come under the special contributions laid down in the 1924 Housing Act. In a very short time now 25 local authorities up and down the country would be erecting these houses, which were regarded by the Minister of Health as a temporary and valuable contribution to the housing problem. At the present there were some 199,000 houses authorised, of which 52,000 were completed at the beginning of the year. That left 150,000 authorised houses to be built. These would take, looking at the matter in the most favourable light, until the autumn of 1926 to complete. Under these circumstances very few people would say that these experiments ought not to be made.

MR. A. GREENWOOD (who was Parliamentary Secretary to the Ministry of Health in the Labour Government) complained that the Government had been too precipitate in giving an advertisement to the Weir type of house over other types.

MR. VIANI, another Labour Member, said that the steel house could never be vermin proof, and the result of their erection would be that there would speedily be more slum areas than existed at present.

LT.-COL. FREMANTLE said that if those who criticised the proposed experiments in new methods of house construction had had the control of scientific research in the last 50 years there would have been no progress in medical science. It was because researchers, whether in science or practical life, were prepared to take risks that they were able to get an advance. He agreed with many of the critics of steel houses that on the face of them they were not likely to be a permanent solution of the housing problem. In his experience both as a medical officer and on the London County Council he had been face to face with experiments of almost every kind and the result almost always was that he, like the Persian philosopher, "Came out by the same door as in I went." But they must go on with the experiments. The steel house was only one experiment out of many, but it was one which on the face of it must stand as offering a golden opportunity for meeting the present housing need.

The debate was adjourned till the following day when the vote was agreed to without a division.

Ex-Service Men in Mental Hospitals.

COL. SIR ARTHUR HOLBROOK asked the Minister of Pensions, whether his attention had been called to the fact that the London County Council were contemplating proceedings to enforce payment by boards of guardians who had refused payment hitherto for the maintenance in mental hospitals of ex-Service patients who had become chargeable to the boards; and whether he would consider taking such steps as might be necessary to ensure that ex-Service patients mentally affected as the result of service in the war should be maintained at the expense of the nation.—Major G. C. TRYON replied: The cost of maintenance in Mental Hospitals of ex-Service Men, whose condition was caused by their war service, is, and always has been, borne by my Department. If, however, as I gather the cases which my hon. and gallant friend has in mind, are certain cases in which the men's unfortunate condition has been ascertained not to be due in any way to war service, the suggestion made is not one that concerns my Department.

Medical Men and Overseas Military Service.

Sir ARTHUR HOLBROOK asked the Minister of Pensions whether he would consider the desirability of conceding the principle that temporary full-time medical men in the service of the Ministry of Pensions who served overseas during the late war, and especially if they were invalided or disabled in consequence of their service, should be retained when it was found necessary to reduce the numbers serving, in preference to those temporary full-time medical men who did not serve overseas.—Major G. C. TRYON replied: The chief considerations in determining the continued employment of medical officers in the Ministry of Pensions are efficiency and the possession of the necessary qualifications for the duties required to be performed. Subject to those considerations, preference is given to an officer with overseas service, more especially if he has a war disability, over one with home service only.

Polycythæmia and Workmen's Compensation.

Colonel WEDGWOOD asked the Home Secretary whether the occurrence of the comparatively rare disease of polycythæmia in direct connection with workers in ammonium sulphate production constituted this disease an industrial disease; and, if so, would he have the disease scheduled as

such under the Workmen's Compensation Act, 1906, so that these very painful cases could receive some compensation.—Sir W. JOYNSON-HICKS replied: I have only heard of one case of this disease the cause of which is obscure, and there is no information at present before me which would justify its being classed as an industrial disease.

Child Adoption.

Lieut.-Col. HEADLAM asked the Secretary of State for the Home Department whether the Departmental Committee on Child Adoption, presided over by Mr. Justice Tomlin, had presented a report; and, if not, when such Report might be expected.—Sir W. JOYNSON-HICKS replied: The Committee has not yet presented a report and I am unable to say when the Report may be expected. I understand that the committee has not yet finished taking evidence.

Legitimacy Bill.

Capt. BOWYER asked the Prime Minister whether he would introduce as soon as possible the Legitimacy Bill.—Sir W. JOYNSON-HICKS (Home Secretary) replied: I hope that it may be possible to introduce this Bill in another place at an early date.

Dwelling-Houses Used as Factories.

Capt. GARRO-JONES asked the Minister of Health what steps he proposed to take to meet the representations of local authorities in London urging the passage of a Bill to prevent the user of dwelling-houses as factories or workshops.—Mr. NEVILLE CHAMBERLAIN replied: I have had under consideration the representations referred to. One effect of the Rent Restriction Acts is that conversions of this kind are strictly limited. It would appear, therefore, that the matter is not of urgency, but I should be prepared to look into it further on receipt of evidence to the contrary.

Preservatives in Food.

Capt. GARRO-JONES asked the Minister of Health whether in view of the widespread support which the Report of the Departmental Committee on the use of preservatives and colouring matter in food had received, and in view of the specific nature of the committee's conclusions, he could tell the House if he would introduce legislation at an early date to give effect to those conclusions.—Mr. NEVILLE CHAMBERLAIN replied: I am proposing to publish at an early date draft regulations designed to give effect to the majority of the committee's recommendations which, I am advised, can be carried out without legislation.

Unemployment Benefit for Small-pox Patients.

Miss WILKINSON asked the Minister of Labour whether he was aware that the Middlesbrough labour exchange had refused to pay unemployment benefit to two men suspected of having been in contact with small-pox cases, in spite of the offer of the local sanitary authority to provide proper safeguards; and whether he would give instructions for the benefit and arrears to be paid to these men.—Sir ARTHUR STEEL-MAITLAND replied: In the cases referred to it was necessary to obtain a decision from the Chief Insurance Officer as to whether benefit was payable and there was also some difficulty about attendance at the Exchange, owing to possible risk of infection. The decision was in favour of the two applicants and arrangements were made for all outstanding benefit to be paid last Tuesday.

London Street Accidents.

Mr. NAYLOR asked the Minister of Transport whether the Traffic Advisory Committee was considering measures for the prevention of fatal and other accidents in the streets of London.—Col. W. ASHLEY replied: My Department is now being furnished with particulars of all street accidents in the London Traffic Area, in which vehicles are involved or which are alleged to be due to the condition of the road. All practicable steps are, and will be, taken to remove avoidable causes of risk. All the measures recommended by the London Traffic Advisory Committee for the improvement of traffic conditions in London will, I hope, tend to make the streets safer both for pedestrians and for vehicles.

Insurance Patients and Payments to Hospitals.

Mr. FORREST asked the Minister of Health whether he was aware that insured persons with no dependants were enabled at the present time to enter hospitals for treatment and then at the end to receive lump sums from friendly societies in respect of benefit, and that very often these sums were not employed to any profitable purpose, while the hospital received nothing; and whether under the circumstances he would consider an alteration of the law which would enable societies who have insured men on their books to deduct a portion of the lump sum payment due to them in these cases and make a payment from it to the hospitals for the services rendered.—Mr. NEVILLE CHAMBERLAIN replied: Except in the case of institutions main-

tained out of public funds, an Approved Society has power under the existing law to make a payment to a hospital out of the amount of benefit accruing in respect of a member, having no dependants, who receives treatment in the hospital. I have no information as to the extent to which payments are in fact made under this power, but considerable sums are paid to hospitals by Approved Societies every year out of their National Health Insurance funds, and the whole question of the relation of the hospitals to the National Health Insurance scheme is one which will no doubt be considered by the Royal Commission on National Health Insurance which is now sitting.

MONDAY, FEB. 16TH.

Medical Facilities in Palestine.

Lord COLUM CRICHTON-STUART asked the Secretary of State for the Colonies what European medical assistance was available for the families of British officials employed in the mandated territory of Palestine; and whether facilities could be given to one or more of the Government medical officers to accept as patients members of the families of such officials.—Mr. AMERY replied: The medical practitioners licensed by the Palestine Government include 30 British doctors and some 150 others of European and American extraction. I therefore see no need for any special action on the lines suggested in the second part of the question.

TUESDAY, FEB. 17TH.

Tuberculosis Statistics.

Mr. NAYLOR asked the Minister of Health the total number of cases of tuberculosis notified to local municipal dispensaries; the number of cases notified receiving institutional treatment; and the number of beds available for the cases reported during the last three years for which returns were available.—Mr. NEVILLE CHAMBERLAIN replied: As regards the first part of the question, I may point out that formal notifications of tuberculosis are made to the medical officers of health of sanitary districts, and that although the medical officers of tuberculosis dispensaries receive lists of the notifications, only a proportion of the notified cases are applicants for treatment by local authorities. The number of cases of tuberculosis notified in England and Wales during each of the last three years for which returns are available is as follows: 1921, 71,702; 1922, 69,259; 1923, 79,388. The last figure includes cases of which the medical officers of health became aware otherwise than by formal notification and is not, therefore, strictly comparable with the figures for 1921 and 1922. As regards the remaining parts of the question, the following table shows as regards England and Wales (a) the number of tuberculous persons receiving treatment in residential institutions from local authorities, and (b) the number of beds in approved residential institutions, on the dates shown:—

	(a) Persons.	(b) Beds.
Jan. 1st, 1923	15,563	20,629
" 1924	16,918	21,419
" 1925	18,158	22,086

Death-rates per 1000.

Mr. NAYLOR asked the Minister of Health the death-rate from all causes per 1000 persons for the last year for which returns were available; and the death-rate from tuberculosis per 1000 persons for the same period.—Mr. NEVILLE CHAMBERLAIN replied: For 1923, the last year for which both rates are as yet available, the figures are as follows: Death-rate from all causes per 1000 persons, 11.582; death-rate from tuberculosis (all forms) per 1000 persons, 1.062.

FOREIGN DECORATIONS.—The King has given to Dr. Alexander Jeremiah Orenstein, C.M.G., His Majesty's Royal licence and authority to wear the Cross of Chevalier de l'Ordre de la Couronne, which decoration has been conferred upon him by His Majesty the King of the Belgians in recognition of valuable services rendered by him in combating malaria in the Katanga province of the Belgian Congo.

THE IVORY CROSS: NATIONAL DENTAL AID FUND.—To mark the tenth anniversary of the organisation of the Ivory Cross a special effort is being made to enrol 10,000 new members, and an appeal has been issued signed by the Duchess of Portland and the Marquess of Salisbury who are respectively President and Chairman of the Council. The organisation provides skilled dental treatment for poor people, and since its foundation in 1914 over 100,000 patients have been treated, while there is now a waiting list of some 2000. The average administrative cost is only about 8 per cent. per annum of the income collected. Subscriptions and applications for membership should be addressed, The Marquess of Salisbury, 10, Henrietta-street, London, W.1.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, Piccadilly, W.
 THURSDAY, Feb. 26th.—4.30 P.M. *Papers to be read:*
 Prof. E. H. Starling and E. B. Verney: The Secretion of Urine, as Studied on the Isolated Kidney.
 F. Eichholst and Prof. E. H. Starling: The Action of Inorganic Salts on the Secretion of the Isolated Kidney.
 G. V. Anrep: A New Method of Crossed Circulation. (Communicated by Prof. E. H. Starling.)
 G. V. Anrep and I. de B. Daly: The Output of Adrenalin in Cerebral Anæmia, as Studied by Means of Crossed Circulation. (Communicated by Prof. E. H. Starling.)
 G. V. Anrep and Prof. E. H. Starling: Central and Reflex Regulation of the Circulation.
 K. Furusawa: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen. Part IX. Muscular Activity and Carbohydrate Metabolism in the Normal Individual. (Communicated by Prof. A. V. Hill.)
Papers to be read in Title only: A. Hunter and J. A. Dauphinee: Quantitative Studies Concerning the Distribution of Arginase in Fishes and other Animals. (Communicated by Dr. H. H. Dale.)
 A. Hunter and J. A. Dauphinee: An Approximative Colorimetric Method for the Determination of Urea with an Application to the Detection and Quantitative Estimation of Arginase. (Communicated by Dr. H. H. Dale.)
 J. J. R. Macleod and N. A. McCormick: The Effect on the Blood-sugar of Fish of Various Conditions, including Removal of the Principal Islets (Isletectomy).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 23rd.

ODONTOLOGY: at 8 P.M.

Paper:

Mr. F. N. Doubleday: A Report upon Some Drugs and Solutions Used in Local Anæsthesia.
 Experimental evidence will be shown at 7.30 P.M.

Tuesday, Feb. 24th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
 Ballot for Election to the Fellowship (names already circulated).

MEDICINE: at 5.30 P.M.

Clinical Meeting at the Westminster Hospital.
 Tea will be served at 5 P.M.

Wednesday, Feb. 25th.

COMPARATIVE MEDICINE: at 5 P.M.

Paper:

Dr. Nathan Raw: Immunisation against Tuberculosis in Man and Animals.

Thursday, Feb. 26th.

EPIDEMIOLOGY AND STATE MEDICINE: at 5.30 P.M.

Paper:

Dr. William Robertson (M.O.H. Edinburgh): The Preventive Control of Diphtheria.

UROLOGY: at 8.30 P.M.

Papers:

Dr. Archer and Dr. Robb: The Tolerance of the Body for Urea in Health and Disease.
 To be followed by a Discussion in which Dr. Hugh MacLean, Dr. G. A. Harrison, and Dr. de Wesselow will take part.
 Mr. K. McFarlane Walker: A New Diathermy Punch Operation for Prostatic Obstruction.

Friday, Feb. 27th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)

Cases will be shown by Dr. W. M. Feldman, Dr. Bernard Myers and others.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 23rd.—8.30 P.M., Sir G. Lenthal Cheatle: The Early Stages of Pathological Hyperplasia in the Breast, with special reference to Cysts and Their Danger.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Feb. 27th.—8.30 P.M., Continuation of Discussion on The Vaccine Therapy of Gonococcal Infections.
 Papers by Prof. J. W. H. Eyre and Dr. David Thomson.

SOCIETY OF MEDICAL OFFICERS OF HEALTH (MATERNITY AND CHILD WELFARE GROUP), 1, Upper Montague-street, Russell-square, W.C.

FRIDAY, Feb. 27th.—5.30 P.M., Mr. Somerville Hastings: Measures to Prevent Aural Defects.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 23rd.—5 P.M., Dr. G. W. De P. Nicholson: The Nature of Tumour Formation.

WEDNESDAY.—5 P.M., Second Lecture.

FRIDAY.—5 P.M., Third Lecture.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 23rd, to SATURDAY, Feb. 28th.—NORTH EASTERN POST-GRADUATE COLLEGE (Prince of Wales's General Hospital, Tottenham, N.). Intensive Course in Medicine, Surgery, and the Special Departments. Second week. With the exception of Saturday, work will begin at 10.30 A.M. and continue until 5.30 P.M., and will include Demonstrations, Medical and Surgical Clinics, Operations, and opportunity for study in the Special Departments.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Comprehensive Course, Clinical work daily, and Lectures.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Demonstrations daily in the various departments. Pathological Demonstrations arranged for, and Tuesday and Thursday Special Lectures. Tickets for this particular Course from the Fellowship.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, 2 P.M., Clinical Demonstrations by Dr. G. C. Low and Dr. Manson-Bahr.

UNIVERSITY OF LONDON.

WEDNESDAY, Feb. 25th.—5 P.M. (in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W.). Dr. R. Cruchet, Professor of Pathology and General Therapeutics in the University of Bordeaux: The Relation of Paralysis Agitans to the Parkinsonian Syndrome of Epidemic Encephalitis. (In English.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients.

THURSDAY.—11 A.M., Sir Henry Simson: Gynaecological Wards. 12 noon, Mr. Sinclair: Abdominal Surgery (lecture). 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Viasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 P.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: FEB.—MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Feb. 23rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Myasthenia Gravis: Dr. Riddoch.

TUESDAY, Feb. 24th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Symptomatology of Cerebral Tumours: Dr. Grainger Stewart.

THURSDAY, Feb. 26th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the Eighth Nerve (in O.P. Department): Mr. Just.

FRIDAY, Feb. 27th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Common Causes of Recurrent Vertigo: Mr. Sydney Scott.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Feb. 26th.—12 noon, The Cerebro-Spinal Fluid Physiology and Pathology: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Feb. 23rd.—12 noon, Motor System, Pyramidal and Extra-Pyramidal: Dr. Hinds Howell.
 The Fee for this Course will be £2 2s.

Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, Feb. 25th.—3.30 P.M., The Optic Nerve: Mr. Leslie Paton.

Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M. or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 26th.—4 P.M., Dr. Poynton: Arthritis in Childhood.

NORTH-EAST LONDON POST-GRADUATE COLLEGE

Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 23rd.—4.30 p.m., Dr. H. W. Barber :

Principles of Treatment of Skin Disease.

TUESDAY.—4.30 p.m., Dr. J. Metcalfe : X Ray Findings in

Disease of the Heart and Aorta (lantern).

WEDNESDAY.—4.30 p.m., Dr. P. Manson-Bahr, D.S.O. :

The Diagnosis of the Dysenteries.

THURSDAY.—4.30 p.m., Mr. A. E. Giles : Sterility.

FRIDAY.—4.30 p.m., Mr. H. D. Gillies, C.B.E. : The Role

of Plastic Surgery in Civil Practice (lantern).

Daily : Special Post-Graduate Course : Demonstrations,

Cliniques, Operations.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-

GRADUATE LECTURES, Marylebone-road, N.W.

THURSDAY, Feb. 26th.—5 p.m., Mr. L. C. Rivett : Albumin-

uria in Pregnancy.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Feb. 24th.—5 p.m., Dr. S. E. Dore : Alopecia.

THURSDAY.—5 p.m., Dr. Haldin Davis : Leukemia Cutis.

Mycosis Fungoides.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADU-

ATE LECTURE (at Whitworth-street West Branch).

FRIDAY, Feb. 27th.—4.30 p.m., Dr. Fletcher Shaw : Con-

tracted Pelvis.

ROYAL INSTITUTION, Albemarle-street, W.

THURSDAY, Feb. 26th.—5.15 p.m., Sir Arthur S. Woodward :

First of Two Lectures on Dinosaurs.

FRIDAY.—9 p.m., Sir James Irvine : Sugars from Standpoint

of the Organic Chemist.

SATURDAY.—3 p.m., Sir Ernest Rutherford : First of Four

Lectures on the Counting of Atoms.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.

TUESDAY, Feb. 24th.—4 p.m., Prof. Price : Renal Insuffici-

ency and Surgical Procedure. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical

Society of London, 11, Chandos-street, W.

WEDNESDAY, Feb. 25th.—6 p.m., Prof. R. H. A. Plimmer :

Diseases Caused by Badly Chosen Diets.

Appointments.

BENN, E. C., M.B., Ch.B. Liverp., has been appointed House

Physician at St. Luke's Hospital, Bradford.

St. Thomas's Hospital: PATRICK, C. V., M.B., B.Ch. Cantab.,

F.R.C.S. Eng., Surgical Registrar: ARCHER, E. C.,

M.R.C.S., L.R.C.P. Lond., SIMS, T. H., M.B., B.Ch. Cantab.,

REA, R. H. T., M.B., B.Ch. Cantab., ALEXANDER, R. D., M.B.,

B.Ch. Cantab., MARKS, D. P., M.R.C.S., L.R.C.P. Lond.,

BOGGO, R. H., M.R.C.S., L.R.C.P. Lond., ROBINSON, A. B.,

M.R.C.S., L.R.C.P. Lond., BATTSON, A. A., M.B., B.S. Lond.,

Casualty Officers and Resident Anaesthetists: COOKE, A. M.,

M.B., B.Ch. Oxon., TURNER, H. F., M.B., B.Ch. Oxon.,

WALKER, E. G. L., M.R.C.S., L.R.C.P. Lond., MCLEAN, W. W.,

M.R.C.S., L.R.C.P. Lond., HOPE-SIMPSON, J. W., M.B.,

B.Ch. Cantab., Resident House Physicians: THWAITES,

W. G., M.R.C.S., L.R.C.P. Lond., GERVIS, W. H.,

M.B., B.Ch. Cantab., HUDSON, M. W. P., M.R.C.S., L.R.C.P.

Lond., STARKEY, R. S., M.R.C.S., L.R.C.P. Lond., JEFFERY,

A. L. P., M.B., B.S. Lond., ALLAN, F. G., M.R.C.S., L.R.C.P.

Lond., BARRON, R. McG., M.R.C.S., L.R.C.P. Lond.,

DARLINGTON, A. F. D., M.R.C.S., L.R.C.P. Lond., REES,

E. J., M.R.C.S., L.R.C.P. Lond., HEATH, W. E., M.R.C.S.,

L.R.C.P. Lond., GORDON, G. D., M.R.C.S., L.R.C.P. Lond.,

House Surgeons: NEILSON, D. F. A., F.R.C.S. Eng.,

CAVENAGH, J. B., M.B., B.Ch. Oxon., PILOT, R., M.R.C.S.,

L.R.C.P. Lond., COOPER, G. K., M.B., B.Ch. Cantab.,

YATES, H., M.B., B.Ch. Cantab., BARRON, H. T.,

M.D. Lond., REES, W. E., M.R.C.S., L.R.C.P. Lond.,

MACDONALD, F. G., M.R.C.S., L.R.C.P. Lond., MARRINER,

H. I., F.R.C.S. Edin., PEGG, A. D., M.R.C.S., L.R.C.P. Lond.,

THOMAS, E. W. P., M.R.C.S., L.R.C.P. Lond., LLOYD

WILLIAMS, P., M.R.C.S., L.R.C.P., L.D.S., MILLS, J. D.,

M.B., B.Ch. Oxon., MARSDEN, J. P., M.R.C.S.,

L.R.C.P. Lond., TRIM, E. A., M.R.C.S., L.R.C.P. Lond.,

Cook, L. C., M.R.C.S., L.R.C.P. Lond., RILEY, D.,

M.R.C.S., L.R.C.P. Lond., DE JERSEY, G. W. S.,

M.R.C.S., L.R.C.P. Lond., NICHOLSON, H. W., M.R.C.S.,

L.R.C.P. Lond., TOMPSON, B. E., M.B., B.Ch. Oxon.,

SHIRES, B., M.B., Ch.B. Edin., RICKMAN, J., M.B., B.Ch.

Cantab., MACDONALD, F. G., M.R.C.S., L.R.C.P. Lond.,

MARCANO, G. R., M.R.C.S., L.R.C.P. Lond., ROBINSON,

J. J. R., M.R.C.S., L.R.C.P. Lond., BAUWENS, P., M.R.C.S.,

L.R.C.P. Lond., SAUNDERS, K. G. W., M.R.C.S., L.R.C.P.

Lond., Chief Assistants and Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—Hon. Anesth.

Brighton, New Sussex Hospital.—H.S. £50.

Bristol General Hospital.—House Appts. All at rate of £80.

Bristol Royal Infirmary.—Obstet. and Cas. H.S.'s. Each £100.

H.P.'s and H.S.'s. Each £80. Also Dent. H.S. £116.

British Hospital for Mental Disorders, &c., 72, Camden-road,

N.W.—Hon. Phys.

Bury and District Joint Hospital Board.—Res. Asst. Med. Supt.

£400.

Rury Infirmary.—Jun. H.S. £150.

Cairo Egyptian Government, Dept. of Public Health.—Health

Expert and Director of Public Health Labs. Each L.E. 1450.

Also First Bacteriologist in Pub. Health Labs. L.E. 900.

Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.

Cardiff, Welsh National School of Medicine.—Asst. Lecturer in

Dept. of Phys. £400.

Croydon General Hospital.—Jun. H.S. £150.

Ealing Borough.—Asst. M.O.H. £600.

Hampstead, New End Hospital.—Sen. and Jun. Res. Asst. M.O.'s

at rate of £250 and £150 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg.

£300.

Hospital for Women, Soho-square, W.—Res. M.O. £100.

Leicester Royal Infirmary.—Two Surg. Dressers. 10s. 6d. per

week.

London Temperance Hospital, Hampstead-road, N.W.—Dermato-

logist.

Manchester, Ancoats Hospital.—Res. M.O. and Pathological

Reg. at rate of £175 and £100 respectively.

Manchester, Christie Hospital.—Cancer Research Worker. £500.

Manchester City.—Asst. Tub. O. £620 19s. 9d.

Manchester Royal Infirmary.—R.M.O. and Asst. M.O. at rate of

£200 and £100 respectively.

Manchester, Royal Manchester Children's Hospital.—Asst. M.O.

at rate of £150. Also Res. Surg. O. at rate of £80.

Manchester, Salford Royal Hospital.—H.S. and Cas. H.S. Each

at rate of £150.

National Hospital for the Paralyzed and Epileptic, Queen-square,

W.C.—Asst. Ophth. S.

Newcastle-upon-Tyne, Hospital for Sick Children.—Sen. and Jun.

R.M.O.'s at rate of £120 and £100 respectively.

Newcastle-upon-Tyne, Princess Mary Maternity Hospital,

Jubilee-road, City-road.—Asst. Res. M.O. at rate of £40.

Newport Education Committee.—Asst. Sch. M.O., &c. £600.

Nottingham General Hospital.—Pathologist. £350 and private

fees allowed.

Portsmouth Royal Hospital.—Sen. H.S. at rate of £200.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—

Two Asst. Res. M.O.'s. Also Sen. Res. M.O. At rate of £80

and £100 respectively.

Royal Chest Hospital, City-road, E.C.—Phys. Also Hon.

Radiologist.

Royal National Orthopaedic Hospital.—H.S. at rate of £150.

Royal Northern Hospital, Holloway, N.—Asst. Radiologist. £150.

St. Stephen's Hospital, 369, Fulham-road, S.W.—Third Asst.

M.O. £300.

Salford Union Infirmary, Hope, Pendleton, near Manchester.—

Asst. Res. M.O. at rate £275.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—

S. to In-patients and S. to Out-patients.

Sheffield, Jessop Hospital for Women.—Gynaecol. and Mat.

Dept., Hon. Gen. P.

Southampton County Borough.—Asst. M.O.H. £600.

Stoke-on-Trent, North Staffordshire Infirmary.—H.P. £150.

University College Hospital, Gower-street, W.C.—Obstet. Phys.

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £100.

Western Ophthalmic Hospital, Marylebone, N.W.—Sen. and Jun.

H.S.'s at rate of £150 and £100 respectively. Also Hon.

Dental S.

Wilkesden General Hospital, Harlesden-road, N.W.—Hon.

Radiologist.

Yorkshire Orthopaedic Hospital, Kirbymoorside.—Res. Orthop. S.

£500.

Births, Marriages, and Deaths.

BIRTHS.

SPARROW.—On Feb. 8th, at Wayside, Watford, the wife of

E. C. Sparrow, M.B., B.Ch., of a son.

STARKIE.—On Feb. 14th, at St. George's-road, S.W., the wife

of Dr. Richard P. Starkie, of a son.

STEPHENS.—On Feb. 8th, at Terrace-houses, Richmond, Surrey,

Celia Mary Colquhoun Macneil, M.B., Ch.B., the wife of

Cromwell A. Stephens, of a daughter.

MARRIAGES.

MACWATT—SKETCHLEY.—On Feb. 14th, at Holy Trinity Church,

Exmouth, John Macwatt, M.B., Morelands, Duns, Berwick-

shire, to Dorothy Gertrude Powys, younger daughter of the

Rev. and Mrs. E. Powys Sketchley, of Exmouth.

DEATHS.

DUGON.—On Feb. 12th, at the School of Tropical Medicine,

Endleigh-gardens, N.W., Thomas Henderson Dugon,

M.R.C.S., L.R.C.P., Assistant Director of Medical Services,

Nigeria.

JONES.—On Feb. 16th, at Hyde Park-gate, passed away peace-

fully in his sleep, Dr. Evan Jones, J.P., late of Aberdare,

aged 88.

KLEIN.—On Feb. 9th, at Wilbury-villas, Hove, Prof. E. E. Klein,

M.D., F.R.S., formerly of Bart.'s, aged 80.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of

Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Notes, Comments, and Abstracts.

THE TRAINING OF HEALTH VISITORS.

A TRANSFERENCE of the authority for the payment of exchequer grants in aid of the training of health visitors from the Board of Education to the Ministry of Health takes place on April 1st, and a Memorandum (101/M.C.W.) issued from the Ministry explains certain changes which will be made in the regulations. It has been decided to approve for the payment of a grant of £15 a whole-time course of training in public health work lasting for a minimum period of six months, provided the student is a trained nurse who has either obtained, or declared her intention of obtaining, the certificate of the Central Midwives Board.

Students who are not trained nurses must attend courses of training of two years' duration at recognised institutions, and a grant of £20 each year will be payable in respect of students who have obtained, or intend to obtain, not less than six months' training in a hospital, and also the certificate of the Central Midwives Board.

Students who receive grants will be required to enter for an oral and written examination conducted by a body approved for this purpose; successful candidates will be given a health visitor's certificate. The course must include theoretical instruction in: (1) Elementary physiology and the structure of the body; (2) personal and domestic hygiene, general hygiene and sanitation; (3) infectious and communicable diseases, including tuberculosis and venereal diseases; (4) maternity, infant and child welfare; (5) school medical service; (6) sanitary law and government, elementary economics, and social problems; (7) the principal legal enactments and regulations connected with the above-mentioned subjects. The corresponding practical instruction must be conducted, so far as practicable, in coöperation with the Public Health Department of the local authority for the area in which the course is given.

This examination will also be open to women who have given satisfactory service as whole-time health visitors for a period of five years without any special course of instruction. After April 1st, 1928, the appointment of a woman for the first time as a whole-time officer of a local authority with health visiting duties will not be approved unless she has obtained a health visitor's certificate.

In a letter (Circular 557) dated Feb. 9th, addressed to local authorities carrying out maternity and child welfare schemes, the Minister calls attention to these regulations and also to the desirability of providing occasional "refresher" courses for those who are already engaged in health visiting. He is prepared to approve the payment by local authorities of the reasonable expenses of their health visitors (including fees, maintenance, and travelling expenses) in attending whole-time courses lasting from two to four weeks and designed with a view to extending both their practical and theoretical knowledge. Reasonable expenditure incurred in respect of short part-time courses will also be eligible for grant. It is pointed out that, since new entrants to the profession of health visiting will be required to devote 3½ or 4 years to their training for this work, the salaries offered should be sufficient to attract and retain efficient qualified women.

INTOLERANCE TO A DENTURE.

To the Editor of THE LANCET.

SIR,—The letter from "Medico" concerning his denture which appears in your issue of Jan. 10th, has been brought to my notice. I would advise him to take a small pellet of wool in a pair of ordinary dressing forceps and gently rub it against every spot on his palate which the denture covers. He may find one which is hypersensitive and induces retching when touched. If so, the denture should be so constructed as not to touch the spot or its immediate neighbourhood. I have had such cases. The remedy is simple.

I am, Sir, yours faithfully,

Devonshire-place, W., Feb. 10th.

PERCY EDGELOW.

THE CRIPPLES' JOURNAL.

THE third number of the interesting quarterly entitled the *Cripples' Journal* fulfils the promise of the previous issues. One of the chief objects of the publication is to arouse and keep awake a sense of the duty of the public to provide adequately for the cure and care of all the cripples in this country. We agree with most of the views set out in the editorial note on "Converting the Public" with which this issue opens, but we cannot subscribe to the statement that "the ancients knew considerably more about massage, cleanliness, exercise and sunlight than we do." The Rev. Ratcliffe Barnett and Mr. W. A. Cochrane, of Edinburgh, contribute an informing article on the Cripple Child in Scotland. We deprecate the use of the substantive "Cripple" as an adjective throughout this and

other articles; crippled is the correct epithet and the substitution of "cripple" is likely to cause a sensitive reader to have what these writers would presumably call a "trouble" mind. Mr. Archibald Irwin, of Belfast, writes an article on the Crippled Children of Ireland, which deals exclusively with conditions in the north of Ireland. Mr. Rocyn Jones's first instalment of *An Historical Review of Orthopaedic Surgery* promises well for the interest of the second part in the next number. Titania's Palace is described by Sir Neville Wilkinson. Miss A. G. Hunt continues her humorous history of Boschurch and the secretary of the Royal National Orthopaedic Hospital gives an account of the history of that institution with interesting photographs of its country branch at Brockley Hill. Leasowe Hospital for Children is described by its senior medical officer and the Codrville Institute by Mrs. Hey-Groves. The number ends with a useful report of the Central Committee for the Care of Cripples, giving the results of inquiries made in 40 counties as to the provision that is or soon will be available in them. With few exceptions the counties and provincial cities seem to be awaking to their responsibilities in this matter.

A WIRELESS MAGAZINE.

WIRELESS entertainments are being increasingly used as a means of modifying the monotony of convalescence, and, in some cases, as aids to medical treatment, consequently among our hospital populations there are many who take an interest in wireless publications. From Messrs. Hiffe and Sons, Ltd., Dorset House, Tudor-street, London, E.C., we have received a copy of the *Wireless World and Radio Review*, described as a paper for every wireless amateur. This publication, which was established over 12 years ago, has now been taken over by Messrs. Hiffe and Sons and has been issued in an enlarged and more attractive form. In addition to articles of a practical nature for the beginner and the advanced amateur the present issue (Feb. 11th), beginning a new volume, contains a talk by Dr. J. A. Fleming, F.R.S., the inventor of the wireless valve, on the training of the radio engineer.

AN APPEAL FOR BLIND DEFECTIVES.

AT the present time no provision exists for the indigent blind who come under the category of defectives. To remedy this state of things the Ministry of Health specially asked the Braille and "Servers of the Blind" League, of which Her Highness Princess Marie Louise is Patroness and Dame Ellen Terry is President, to help in the matter, and the first "Ellen Terry" National Home in Reigate for blind defective children up to the age of 10 years is almost ready for occupation. A second home for older children is in contemplation. In order that the work may be successfully and quickly accomplished a "Daffodil Day" is being organised throughout the Metropolitan area next Saturday (Feb. 28th), and an appeal is being made for helpers, for the loan of motor-cars, and for donations. Offers of assistance should be addressed to Mr. Clifford Newton, the organising secretary, 3, Upper Woburn Place, London, W.C. 1.

PREVENTIVE MEDICINE AND BUSINESS PROSPERITY.

RECOGNISING the importance of good health to its business, the Metropolitan Life Insurance Company has long been a generous supporter of public health work in Canada and the United States. Its latest benevolent act is the giving of 15,000 dollars to the Canadian Social Hygiene Council for the extension of its child welfare and educational activities. This Council, of which Dr. Gordon Bates is the general secretary and founder in Canada, will now be able to extend its fight against venereal diseases to the rural as well as the urban communities in Canada and to put an expert in charge of the educational policy of the Council who will coöperate with a voluntary advisory committee of physiologists, psychologists, biologists, hygienists, and educationists, to work out an educational scheme for the young which will be national in scope and acceptable in all parts of the Dominion. Two appointments have been already made. Mr. A. D. Hardie, an English headmaster of wide experience, will take charge of some of the work of the educational department of the Council, and Dr. L. A. Pequegnat will become organiser for the eastern provinces.

ERRATUM.—In THE LANCET of Feb. 7th, p. 318, we announced that Glasgow University students in a carnival on Jan. 17th in aid of local infirmaries and charities collected over £700. A Glasgow correspondent points out that the figure should be £7000, not £700, and adds the amusing comment that the lesser sum could not possibly have been reported to us by any citizen who fell into the persuasive hands of the student "highwaymen" on that day. Such was the energy of the collectors' methods that even the very large total of £7000 need not have surprised us.

Lettsomian Lectures

ON

WOUNDS AND OTHER INJURIES IN THEIR MEDICO-LEGAL ASPECT.

Delivered before the Medical Society of London

By SIR BERNARD H. SPILSBURY, M.B.,
B.Ch. Oxf., M.R.C.P. Lond.,

LECTURER IN MORBID ANATOMY AND HISTOLOGY, ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE; HON. PATHOLOGIST TO HOME OFFICE.

LECTURE I.

As it is, I fear, impossible to deal comprehensively with this subject I propose to give an account of my own experience of the last 20 years, and I have endeavoured to extract from the material at my disposal especially those facts and conclusions which seem to have a general application to medico-legal problems, although I realise the disjointed effect entailed by this method of treatment.

I have collected about 600 cases, grouped for convenience of treatment under headings representing the different varieties of injury.

An apology may be thought necessary for dealing with a subject so elementary, in some of its aspects, as bruises, but medical evidence in these cases is so often based on a misunderstanding of the nature of the processes entailed, that I consider it advisable to apply physiological principles to the problem presented by their formation.

BRUISES.

A contusion, or as it is commonly called, a bruise, is a crushing injury produced either by excessive pressure upon the surface of the body, or by violent contact with an object which is relatively incompressible, and which is of such a form as to produce no gross injury to the surface. The crushing force damages the fat in the skin and subcutaneous tissue rather than the dense fibrous tissue of the cutis vera, tearing the capillaries and veins in the crushed tissue. As soon as the force ceases to act the pressure within the blood-vessels causes blood to issue from the torn ends, and forces it slowly between the elements of the damaged tissue, producing a diffuse infiltration which extends into surrounding parts. Loose cellular connective tissues, muscles and viscera lying beneath the crushed area may be the seat of similar hæmorrhagic infiltration. In parts, such as the eyelids and vulva, where the skin has a loose texture, infiltration of the damaged tissue by blood occurs more readily, and bruising develops rapidly; where the deeper part of the skin is more densely fibrous, and fat is scanty or absent, as in the palm of the hand, greater violence is required to produce a contusion, and the amount of blood effused is small.

When the local application of violence is extreme, the soft tissues beneath the skin may be pulped and completely disorganised, and blood-vessels of larger size, including arteries, are torn across. The resulting hæmorrhage is more rapid and profuse, and instead of infiltrating it pushes aside the crushed tissue to form a cavity filled with blood—a hæmatoma. A very similar effect is produced by a foreign body such as a bullet tearing its way through the tissues; if its progress is arrested by the skin a bruise speedily forms in the subcutaneous tissues around it. It is the causative agent—violence—which differentiates contusions from other conditions of hæmorrhage into the tissues, due to excessive pressure within the blood-vessels, or to disease of the blood-vessels and tissues.

It is unnecessary here to describe the changes which take place in contusions, and the processes of absorption and restitution in the injured areas. If the violence is maintained until death, and for a

short time afterwards, there may be no escape of blood from the torn blood-vessels, the only effects of the crushing force being some pitting of the skin, and perhaps slight softening of the damaged area; usually, however, a little blood escapes at the margin of the crushed area and the hæmorrhage becomes more evident if the compressing object alters its position. This explains the slight amount of bruising which may result from the pressure of the fingers of an assailant upon the neck of the victim in a fatal case of throttling, although the violence may have been so great as to have led to the production of hæmorrhage in the loose cellular tissue between the larynx and the spine.

There are persons who bruise very readily as the result of pressure which in others would have no effect. A peculiar fragility of the blood-vessels has been advanced in order to explain this condition, but a more likely explanation is that these persons take insufficient exercise and consume in their food a large amount of fats having a low melting-point, such as butter; as a result the fat deposited in the subcutaneous tissues has a melting-point lower than the average, and at the body temperature the fat would be more fluid and the tissues more easily crushed. A lady who was unable to play tennis owing to the ease with which she bruised and who, during the war, led a more active life, lost the condition. The changes in diet under war conditions may have contributed to this result. The trained athlete can receive fairly severe blows without developing bruises, and the designation "hard" may well be applicable to his skin as well as to his muscles.

A bruise inflicted shortly before death which is not visible on the surface of the body may become apparent a few hours or several days after death. This is due not to any appreciable addition to the blood in the contused area after death, but to a more rapid hæmolysis in the stagnant blood as a part of post-mortem changes; there is no circulation to carry away the pigment, and the tissues are dead and cannot deal with it. The pigment diffuses locally, producing a stain in the surface, dark red at first, but changing sometimes to a bright red colour from absorption of oxygen through the skin; or an area of dark green putrefactive discoloration appears over a deep bruise before the skin around it is changed.

Since the development of a contusion is dependent upon the maintenance of the circulation it follows that as soon as the heart's action is arrested in death the arterial pressure falls, and the circulation slows down and is soon completely arrested. The production of a contusion then becomes impossible.

Observations¹ upon the circulation in the retina at the time of death have shown that the fall of arterial pressure is so rapid that within half a minute of the heart ceasing to beat the blood-stream may be reversed in the arteries, flowing backwards more readily than it passes through the capillaries. This phenomenon is probably peculiar to the eyeball and is accounted for by the ocular tension, but the observations demonstrate the rapidity with which the circulation runs down after death, and render it certain that 5 or 6 minutes after the heart has ceased to function the circulation will be at an end, and the pressure will be the same in the blood-vessels and tissues. Two minutes after death no appreciable bruising occurs and the amount of blood effused, when death follows immediately upon the infliction of the injury, will be slight in comparison with the amount when the injured person survives.

I have seen several cases in which death resulted from the shock of multiple contusions.

In one, a woman about 45 years of age, who had been brutally assaulted and who was found dead in her apartment, six bruises were found on examination of the body; three of these situated on the face and head were of large size and were caused by severe crushing. There were no open wounds upon the body, little blood had been lost, and there was no disease to account for the death.

¹ C. H. Usher: *Ophthalmic Review*, 1896, xv., 339.

CRUSHING INJURIES OF THE CHEST AND ABDOMEN.

The data upon which this section of the lecture is based have been obtained by analysis of the post-mortem records of 184 cases of this nature. These cases, taken mainly from my hospital records from 1905 onwards, include many street accidents from the time when motor vehicles began to predominate, and they therefore indicate the serious character of the injuries produced by fast and heavy traffic. The injuries were so grave that many were dead or at the point of death on reaching hospital, and in over 40 per cent. the nature of the accident is not recorded: of the remaining 103 cases 60 per cent. were street accidents. Other causes include falls from a height, crushes by falling debris, by railway trains, and in lift accidents, and by severe blows on the chest and abdomen by cart-poles, kicks by horses, &c.

An examination of the results shows that in one-half of the cases no external injury—not even a bruise or the mark of a wheel—was present at death on the surface of the chest or abdomen; in a large proportion death was due solely to injuries of the organs in these regions, and ribs were fractured in 75 per cent. of the cases. Recorded cases of injury of the chest and abdomen include many in which no external injuries were seen, and I was surprised to find that they occurred in so many of the cases in this series.

Crushing Injuries of the Chest.

The *lungs* give the highest figure of all the organs, being lacerated or severely bruised in 104 cases; in most of them the injury was caused by the penetration of fractured ribs, but serious injuries had been produced in several instances by extreme flattening of the chest without fractures in some of the younger subjects; in three of these cases one lung had been completely torn away from its attachments.

In contrast with the lungs, the injuries of the *heart* and great vessels in the chest were found only in 40 cases; this figure corresponds closely with that of fractures of the sternum (42 cases), although the two occur together only 14 times in these records. The injuries of the heart range from bruising to extensive laceration, and in two cases the heart had been completely torn away, and was lying free in one of the pleural cavities.

The *main blood-vessels* were injured in several other cases, rupture of the aorta being found in four.

One of these was in an elderly lady who fell down the steps at a railway station, and who, although severely shaken, was able to return home alone, where she died suddenly an hour afterwards. She was found to have a laceration three-quarters of an inch long through the whole thickness of the aorta, immediately above the valve, where the artery was slightly thinner than the normal; the blood which escaped from the vessel had forced its way slowly through the epicardial fat and into the pericardial cavity at the level of the auriculo-ventricular groove. As in some other cases the laceration strikingly resembled a clean cut in the vessel wall, the only difference being that the tunica adventitia was dissected away by the issuing blood rather than cut.

Crushing Injuries of the Abdomen.

Of the abdominal viscera the *liver* is the organ which is most frequently damaged. Injuries ranging from severe bruising to extreme laceration were found in 84 cases; in several the organ was torn into two halves, or a large piece completely separated. The injuries were as frequent on the left as on the right side, but the more serious were usually in the right lobe, many being situated near the falciform ligament or at the right extremity of the organ. The frequency with which the liver suffers when the abdomen is compressed is due to its large bulk and to its position—lying across the spine, against which it is crushed when the pressure is from the front. In none of the cases was the liver softened by disease, but on two occasions cirrhosis was found.

The *spleen* is next in order of frequency, and it suffered in 46 cases. Situated under the left ribs, it is poorly protected when the abdomen is severely crushed or is struck upon the left side. In none of

the cases was there a condition of enlargement of the organ such as accounts for the frequency of rupture in tropical countries.

There are only 30 cases of injury to the *kidneys* in this series; in two only were both organs involved. Their protected position no doubt accounts for the less frequent damage, which occurs chiefly in persons who have been run over, one kidney being crushed against the spine as the wheel mounts the abdomen, the other escaping as the wheel passes off. The direction in which the wheel crosses the body may thus be indicated.

The *stomach*, *duodenum*, and *pancreas* can with advantage be considered together. Owing to their close anatomical relations these organs are likely to suffer in the same class of injury, especially when the compressing force acts over a comparatively small area, as, for example, the pole of a cart crushing these structures against the spine. In other crushes the liver protects these organs to some extent, but the stomach is occasionally lacerated when the abdominal contents are forcibly pressed to one side in those who are run over. Lacerations were found in the stomach in 16 cases, in the duodenum in 12, and in the pancreas in 18 cases. In only one case of pancreatic injury did the patient survive long enough for fat-necrosis to develop.

The *intestines* and *mesentery* are represented in the series by 34 cases, 23 tears in the intestine and 11 in the mesentery. A large proportion of the lacerations in the small intestine are situated at or just below the duodeno-jejunal junction, and their frequency in this area is due probably to the fixed position of this part of the intestine, causing it to be more readily crushed against the spine, or to its being torn when the intestines are pushed bodily over to the right side of the abdomen; several of the wounds had the appearance of tears rather than crushes, the muscular coat being lacerated over a larger area than the mucous membrane. It was noted in a number of these cases that the contents of the intestine had not escaped in appreciable amount into the peritoneal cavity, and it is probable that peristalsis was arrested by the shock resulting from compression of the abdomen.

Lastly, laceration of the *diaphragm* was found in 13 cases in the series, the injury being met with in association with other serious abdominal injuries, the liver having been crushed in almost all of them. In the majority the tear was extensive and in six cases abdominal viscera had passed into the pleural cavity, the stomach and spleen being the organs most commonly found there.

WOUNDS PRODUCED BY PROJECTILES.

Wounds produced by projectiles discharged from firearms present the characters of lacerated wounds, but their appearances are very varied, depending upon the class of weapon, whether modern rifle, shotgun, or short-barrelled pistol; and in any one of these classes the penetrative power of the projectile and the extent of the damage produced depend upon its weight, shape, and composition, on the length of the barrel of the weapon, and on the amount and nature of the charge. Thus the penetrative power of a bullet fired from a small automatic pistol is far less than that of a larger and longer-barrelled service revolver. I have collected 32 cases of gunshot injuries; most of them occurred in London, and the weapon, at any rate before the war, was generally a small revolver, and was used at short range.

Effects Produced by Passage of Projectiles Through the Tissues.

This class of injury affords an interesting study, both of the effects produced by the passage of projectiles through the tissues, and of the circumstances in which the injuries have been inflicted. If discharged within a short distance of the body there may be surface indications from which the distance of the weapon can be accurately determined, and the path of the projectile through the body enables the exact position of the weapon in relation to the victim to be deter-

mined, and may give valuable information as to the medico-legal significance of the wound. When the projectile penetrates another object after traversing the body it may be possible to reconstruct exactly the circumstances in which the weapon was discharged, whilst the firm grasp of the weapon in the hand of the victim after death gives a clear indication of a self-inflicted injury.

When a weapon is discharged near the body the external markings are seen principally upon the skin and clothing around the entrance wound. They vary with the type of cartridge and the nature and amount of the charge and are less distinct when smokeless powder is used. The changes produced by black powder are due to flame when the discharge is very close, to smoke for a rather longer distance, and to unconsumed powder at a still greater range. Flame may singe or set fire to clothing, singeing the hair and slightly burning the skin, with the formation of a glazed, brown, parchment-like area after death. Smoke, when the discharge is fairly close, produces a uniform black deposit, and grains of unconsumed powder expelled from the weapon behind the projectile are carried for a distance possibly of several feet, spreading like small shot, and with such force that they are embedded in the skin and clothing, and produce characteristic tattooing. The pattern produced round an entrance wound in a given case may be reproduced by experiment, using the same weapon and cartridges of the same manufacture; the distance at which the weapon has been discharged may thus be estimated with a fair degree of accuracy.

In cases of self-inflicted injury blackening and splashes of blood may be found upon the hand used to steady the weapon at the muzzle end. The external indications of a near discharge may be absent when the muzzle of the weapon is pressed firmly against the skin, the gases of the discharge, the flame, smoke, and powder grains all following the track of the bullet into the body. In one case there were no external marks excepting a slight blackening of the edge of the wound on the right temple, but the skin was separated from the pericranium round the entrance wound over an area measuring 2 by 1½ in. There was smoke-blackening of the wall of the cavity and of the outer surface of the dura mater where it had been detached from the skull; along the track of the bullet in the right cerebral hemisphere powder grains were embedded and the track was blackened by smoke. In another case the escaping gases had stripped up the skin, blackening its deep surface, and had produced four splits radiating from the edge of the wound; the exposed surface of the dura mater was also blackened.

Apart from splitting of the skin produced by the gases of the discharge the wound of entrance is generally small, circular when the weapon is discharged at right angles, and oval in shape when the bullet has entered obliquely; the margin of the wound may be inverted, though this is by no means constant.

The wound of exit is often larger and more irregular, especially when the bullet has passed through bone; this is due to deformation of the bullet or to laceration of the skin by fragments of bone expelled by the projectile. Multiple exit wounds may be so produced—and this is more frequently seen when the projectile is large and travels at high velocity, splintering the bone at some distance from the skin. The skin at the margin of the exit wound is often everted.

Bullet Wounds in the Head.

Suicidal bullet wounds in the head are most frequently found in the temple. I have examined six cases in which the entrance wound was in the right temple, another in which the bullet entered above and behind the right ear, running somewhat forwards—an unusual direction for a suicidal injury—and another where the entrance wound was on the forehead close to the middle line. In every case the bullet passed through the cranial cavity, producing openings in the bone in which the edges were distinctly bevelled as the result of more extensive fracturing of the table

on the side on which the bullet emerged; the only exceptions were those in which the skull was so thin that the tables merged into a single compact shell.

In all but one of the cases the skull also showed *bursting effects*, due to the passage of a projectile of high velocity through a closed cavity. The most usual manifestation of this effect was in the orbital plates of the frontal bones and the cribriform plate, which were extensively fractured even when the bullet had not passed near them. Injury of the orbital fat consequent upon these fractures led to the appearance of bruises in the upper eyelids of those who survived for a few hours. Less frequently the roof of the tympanum was fractured. The bursting effect was also shown by the presence of fissured fractures partly encircling the head.

In one case a fracture extended from the entrance wound on the forehead round the right side of the head above the ear to the exit wound in the right occipital region. In another case the bullet had passed across the skull high up and a fracture at a lower level extended horizontally round the head on each side from a point above and behind each ear, traversing in front the anterior ends of the orbital plates. In a third case the entrance wound was above and behind the right ear, and the exit wound immediately above the left ear; three fissured fractures extended from the entrance wound, one running directly backwards and around the back of the head to the left side, a second crossing the top of the head to the exit wound, and a third running forwards and downwards along the right side of the skull, crossing the front ends of both orbital plates. The skull was encircled by fractures in three-quarters of its circumference. An interesting feature in this case was the wide separation up to a quarter of an inch of the fractures; beneath these fractures the brain was marked by lines of superficial bruising where it had been forced into the gaps by increased intracranial pressure.

None of the cases showed such marked bursting effects as have been recorded, where the skull has been smashed into many fragments.

A most remarkable case, and I believe a very rare one, was related to me by a medical friend, who during the retreat from Mons saw a guardsman lying at full length with the top of his skull raised and turned backwards, almost as clean as if it had been sawn through in the post-mortem room, and with the cranial cavity completely empty; the brain, which appeared to be uninjured, was lying a short distance away. He had been struck by a bullet in the middle of the forehead just above the root of the nose.

One suicide fired a revolver below his chin, the bullet passing through the floor of the mouth, the tongue, and the nose, and lodging beneath the skin at the inner end of the eyebrow. The weapon had also been fired into the chest, the bullet traversing the left lung and leading to a fatal result 12 days later from empyema and broncho-pneumonia.

In three cases the weapon was discharged through the roof of the mouth, the bullet passing through the palate; two were clearly suicidal cases, and in one of them two bullets had been fired, one lodging in the antrum of Highmore, the other penetrating the base of the skull and traversing the brain. The third was an example of self-inflicted injury very similar to the last two, but the coroner recorded a verdict of accidental death. A young man was found lying on his back on the floor of his bedroom, dead, the sound of the discharge of a firearm having been heard a few minutes previously. He lay opposite a looking-glass, his left hand was in his pocket, and the revolver containing one empty cartridge case was found in a closed drawer. He had shot himself through the roof of the mouth, the bullet passing through the hard palate in the middle line and vertically upwards, smashing the nasal septum and the cribriform plate, passing through the cranial cavity between the frontal lobes; the bullet was embedded in the fractured vault at the end of the track, the only injury of the brain being a linear bruise on the mesial aspect of each frontal lobe along the course taken by the bullet. The mucous membrane of the palate was blackened by smoke behind the wound. The front of the chin had been injured, probably by the kick of the revolver, and the lips were bruised and slightly lacerated from the sudden escape of gases at the moment of discharge. Asphyxia was the cause of death, blood having run from the nose into the air passages as he lay unconscious.

This was more probably a suicidal act, though it is just possible that he was imitating a suicide, not suspecting that the revolver was loaded. From the slight amount of injury of the brain by the bullet it is possible that he retained consciousness long enough to

enable him to place the revolver in the drawer, at some distance from the spot where he was found, and to close the drawer afterwards.

A Reconstruction of a Murder.

The best example in my experience of the reconstruction of a murder was that of a soldier in camp at Aldershot, who was found dead in a hut at night, shortly after the sound of a shot had been heard. The other occupant of the hut, a soldier, was afterwards charged with murder. The death was at first thought to be a suicide, the coroner was informed; an inquest was held without a post-mortem examination and a verdict of suicide was recorded, the body then being buried. Several suspicious circumstances, however, led to the arrest of the other occupant of the hut, and at the time of my investigation he was awaiting his trial at the assizes.

When he was discovered the dead man was lying on his back, covered with bed-clothes up to the chest, and clothed in underwear and socks; his face, turned to the right, was at the edge of the bed. There was a bullet wound on the left cheek immediately below the malar bone which was not fractured, and the characters of the wound and the changes around it were carefully noted by the medical officer. On turning the head the exit wound was found immediately behind the right mastoid process. The weapon, a service rifle, was on the floor close to the bed and between the outstretched arms of the dead man, but was not grasped, nor were the hands blackened. The cartridge was a Mark 303. After leaving the head the bullet traversed the bedding and a pillow consisting of a bag containing uniform, and an examination of these showed that no metal or other hard object had been struck; the bullet had then passed through the wall of the hut, constructed of two layers of three-ply wood with a space between. In this part of its course the trajectory formed an angle of 35° with the horizontal; it had undergone no deflection in its passage through the wall, and a furrow produced by its striking the path outside was in the same line.

On plotting out upon a skull the line joining the entrance and exit wounds it was found to cross the central nervous system at the junction of brain and spinal cord; the passage of the bullet must have resulted in instant paralysis, and probably instant death. To bring the track of the bullet through the head into line with the track in the wall the head must have been resting on the pillow in a half lateral position when the weapon was fired, and must have rolled completely to the right immediately afterwards. The weapon must have been pointed in a downward direction at an angle of 35° .

To ascertain its distance from the head experiments were made with the weapon, using cartridges of the same pattern, and the blackening seen around the wound in the cheek was found to correspond with a muzzle distance of more than 2 in., and probably about 5 in. The weapon was $3\frac{1}{2}$ ft. long from muzzle to trigger. The dead man was 5 ft. $7\frac{1}{2}$ in. in height; and it was impossible for a man of that height to have touched the trigger with his finger, with the muzzle 2 in. from his cheek, when lying in bed. The weapon could not have been discharged by his foot, as paralysis would have prevented him from replacing his foot beneath the bed-clothes after the weapon was discharged. The wound, therefore, could not have been self-inflicted, and the prisoner was the only other person who was in the hut at the time. He was found guilty.

Bullet Wound of the Abdomen.

The only bullet wound of the abdomen in my series was a suicidal injury by a middle-aged woman who shot herself with a revolver, the entrance wound being $1\frac{1}{2}$ in. below the ensiform cartilage.

The weapon had probably been pressed against the abdominal wall, the skin around the bullet wound being scorched, but not blackened or tattooed. Both these changes, however, were found on dissection upon the front surface of the anterior sheath of the rectus muscle, which had been separated from the superficial tissues for some distance round the track. The bullet passed directly backwards and was found beneath the skin in the middle line of the back at the same level; it had passed through the left lobe of the liver and the upper part of the stomach close to the pylorus, producing only one opening in the mucous membrane; these wounds had been sewn up. The bullet then passed through the head of the pancreas, dividing the pancreatic duct, between the abdominal aorta and the vena cava, without injuring either vessel; it then traversed the body of the first lumbar vertebra, crossing the spinal canal without injuring the cord or its membranes.

This is a good example of the passing of a bullet between yielding structures such as blood-vessels without injury.

Bullet Wounds of the Chest.

In every case in the series of suicidal wounds of the chest the entrance wound was situated in the upper part of the front of the left chest in the area between the sternum and the vertical nipple line. The weapon in several of the cases was fired through the clothing, suicidal injuries by firearms differing in this respect from incised wounds and stabs. In these cases the bullet passed directly backwards, deviating but little from the horizontal, and only slightly to one side or the other; the left lung, the heart, the aorta, and the pulmonary artery being damaged by bullets.

One suicidal injury was produced by a shot-gun. The entrance wound was a single opening, circular, and only slightly larger than those produced by a bullet, with a ring of blackening around its margin, but a large hole had been blown in the chest wall, three ribs were smashed, one comminuted, and the heart wall, excepting the right auricle, was torn and the muscle was in strips; the descending thoracic aorta was shredded for a distance of about 3 in. None of the pellets had left the body. This injury was quite unlike a bullet wound when its course in the chest was examined.

Homicide by Firearms.

In cases of homicide by firearms multiple injuries are more frequent than in suicides. If an injury in a vital area is associated with one in the hand or arm it is a strong presumption of homicide. The two injuries may have been caused by one bullet, the arm having been raised to cover the body, and in such a case the arm can be placed in a position so that the two wounds come into the same line. Injuries in the limbs may be produced by the rapid emptying of a revolver, some of the bullets missing their main objective. An injury such as one passing through the calf of the leg from behind, forwards and downwards, associated with a wound in a vital area is strong evidence in favour of homicide.

In homicidal cases the distinction of wounds of entry and of exit is often a matter of considerable difficulty, especially when the weapon is a service revolver or a modern rifle. Discharged at a range of more than five or six feet from the body, there will probably be no mark on the clothing or skin around the wound to indicate the wound of entry, and in size and shape the two wounds may be very similar, especially with the more pointed type of bullet, though the exit wound tends to be more slit-like, and the entrance wound circular. It may be impossible by examination of the injuries to say in which direction a bullet has traversed the body, but when an examination is made before the body is moved, or the clothing disturbed, a bullet may be found lodged against a metal object in the clothing, such as a watch or spectacle case, lying between that object and the exit wound on the body. I have had cases in which valuable information has been lost by failure to search for bullets in the clothing when the body was first inspected, the bullets afterwards falling from the clothing during removal, or during the stripping of the body for post-mortem examination. Homicidal bullet wounds in the chest are only situated in the area usual in suicides in a small proportion of cases.

In one case a husband shot his wife with a service revolver when he was in bed with her. The wound both in position and direction through the chest was indistinguishable from a suicidal injury.

In another case a bullet had entered within the suicidal area, passing backwards and slightly to the right, opening the arch of the aorta; another wound below and to the outside of this one had passed very obliquely across the chest, from left to right and slightly backwards, traversing the apex of the heart, opening the left ventricle, and passing through the right lung. A wound in the left upper arm could be brought into line with this injury. Another bullet had passed through the neck from before backwards, another through the head, from forehead to occiput, completely destroying the upper part of the pons, whilst yet another through the right forearm could not be placed in line with any

of the other injuries. This man had therefore been struck by at least five bullets, and apart from the distinctive characters of the wounds on the arms the three vital injuries through the heart, aorta, and brain placed its homicidal causation beyond doubt.

In other cases of homicidal chest injury the site of the entrance wound and the direction taken by the bullet were such as to make it very difficult, if not impossible, for the injury to have been self-inflicted.

In one case the bullet entered the upper part of the front of the left chest and ran very obliquely downwards and to the right at an angle of 45°, traversing the left lung and the descending thoracic aorta.

In another case where the entrance wound was on the upper part of the front of the right chest wall the wound ran so obliquely to the left that it could have been self-inflicted only with difficulty with the weapon, a revolver, held in the right hand, whilst another wound passing through the inner part of the right upper arm could only have been self-inflicted with the left hand. In this case the victim was in bed when the shots were fired, and several other bullets fired at the same time were embedded in two adjacent walls. The trajectory of these bullets, judged by their tracks in the wall, showed that they had all been fired from a position in the centre of the room about 4 feet from the bed, and they could not all have been fired by the person in bed. The absence of tattooing and blackening on the pyjama suit and on the skin about the entrance wounds also established that the weapon had been discharged more than 3 feet away.

In another case the bullet entered high up in the right axilla, smashing the fourth rib, crossing the right lung at its root, passing through the descending thoracic aorta, and traversing both lobes of the left lung. Fragments of bone from the smashed right rib had been carried through the right lung and aorta, and were deposited in the track of the bullet in the left lung. The bullet had then smashed the left fifth rib and left the body at the back of the left shoulder, where there were three small wounds close together, one produced by the bullet and the other two by fragments of bone.

In another case in which the victim was shot whilst entering his house, two persons were charged with murder, each being in possession of a revolver. The assailants stood some distance away and on opposite sides of the house, and the question might have been raised at the trial whether the fatal injuries might have been caused by one only of the assailants. Five bullet wounds were found in different parts of the body, one of which had entered the left axilla, crossed the upper part of both lungs, and was found embedded in the head of the right humerus, and a second bullet entered in the right axilla, traversed both lungs at a slightly lower level, and was found lodged in the left axilla. These two fatal injuries were inflicted from opposite sides, and both assailants were equally implicated in the death.

Another homicidal injury afforded a proof of the ease with which a bullet may have its course in the body altered.

A woman was shot from above as she ran downstairs, two bullets passing through her chest. One of these entered on the front of the left shoulder, where slight scorching and blackening and a little tattooing of the surrounding skin showed that the weapon had been fired at short range. The bullet passed downwards and to the right, just missing the anterior border of the left lung, ploughing a furrow across the front of the heart, which opened into the right ventricle; the bullet then penetrated the right chest wall and was found under the skin. The penetrative power of this bullet was insufficient to carry it completely through the body, although it had struck no bone in its course. The second bullet entered the front of the right chest immediately internal to the nipple; there were no marks on the skin around, and this injury was probably inflicted after the other. The bullet passed downwards and somewhat inwards, and struck the upper border of the fifth right costal cartilage. The cartilage had been crushed and softened at the point of impact. From this point the bullet had rebounded very much like a billiard ball from the cushion, and its course was then upwards, backwards, and to the left, bruising the anterior border of the right lung, traversing both ventricles of the heart, and crossing the upper lobe of the left lung, to leave the body at the back of the left shoulder. The two bullets, although their direction when they entered the body was at right angles to one another, had taken such closely parallel courses in the chest as to render it a difficult matter to follow their separate courses. The assailant then shot himself with the same weapon, which was a short-barrelled revolver of small bore.

One other case is an example of an unusual complication of a bullet wound in the lung.

A girl was shot in the street, the bullet entering at the back of the left chest 1½ in. from the middle line. It traversed the left lung, passing through both lobes. She was admitted into hospital in a state of collapse; a large quantity of blood was removed from the left pleural cavity, but she died 24 hours after admission. At the post-mortem examination another collection of blood was present in the pleural cavity; in the lower third of the ileum there were six areas of early gangrene of the bowel wall with peritonitis over them; nothing was found locally to account for the gangrene. On opening the heart, however, the left auricle contained a clot spherical in shape and about the size of a marble, which was unattached and floated when placed in water. When it was incised it consisted of a thin layer of blood-clot enclosing a cavity filled with air. The air had reached the auricle from the wound in the lung, and the gangrene of the intestine was presumably the result of air embolism.

Finally, only two of my cases of bullet wounds were undoubted accidents.

In one of these a man was shot by a friend who was examining a revolver, not knowing it was loaded. The bullet entered the neck in front, immediately to the right of the larynx, crossed the oesophagus, and passed through the body of the sixth cervical vertebra and through the spinal cord. The victim fell to the ground and was found to be paralysed, dying some hours later.

In the other case a trooper was shot by a comrade whom he was teaching to fire a Colt's revolver, the weapon being presumed to be unloaded. The bullet had entered the front of the left chest in the area common in suicidal cases, and had taken a course somewhat similar to that of suicidal injuries, backwards and somewhat to the right. It passed through the right ventricle, aorta, and left auricle, in addition to the two lungs. Unconsciousness supervened in a few seconds.

RUPTURE AND AVULSION OF THE UTERUS AT THE TIME OF LABOUR.

CASES WHICH RECOVERED WITHOUT OPERATION.

By HERBERT R. SPENCER, M.D., B.S.,
F.R.C.P. LOND.,

OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

RUPTURE and avulsion of the uterus at the time of labour is a very rare accident. A recent case of the kind in which the medical man in attendance was convicted of manslaughter—the conviction being happily quashed by the Court of Appeal—raises questions of great importance and concern to medical men who practise midwifery, and especially those who are called in by midwives, as regards their responsibility for the rupture, for the avulsion, and for the subsequent treatment.

With regard to the rupture it is well known to obstetricians that the uterus or vagina may rupture spontaneously even in cases with normal pelves and apparently normal tissues. (I have seen two cases.) The vagina is a fragile tube which I have known to be ruptured in four cases during the act of coitus. The uterine (or vaginal) laceration, once started, is very easily extended; this may be demonstrated during Cæsarean section, where, as in certain cases of fibroids or cancer, it is necessary to remove the uterus. The safest way to deliver the child in such cases, particularly if the membranes are ruptured, is to make a small hole and tear the uterus open. This is done rapidly and with surprising ease by two flips of the forefingers, so to speak. Version in cases of shoulder presentation and the use of forceps before the cervix is sufficiently dilated are two of the commoner causes of these ruptures, which often extend so as to separate the bladder and tear the ligaments. In such cases the avulsion of the uterus would not require much force.

With regard to the mistaking of the edge of the rupture in the uterus for the edge of the placenta, the late Dr. Galabin, one of the most experienced and skilful of British obstetricians, has recorded a case where he temporarily made this mistake.¹

¹ Obs. Soc. Trans., vol. xx., 299.

With regard to treatment, the patient with rupture of the uterus is usually suffering severely from shock and hæmorrhage; in cases of avulsion of the uterus probably always so. In such cases, to move the patient would be almost certainly fatal. No operation is required to restore the pelvic floor. Removing clots from the vagina, washing out the abdomen with salt solution, and the application of a pack of iodoform gauze to be left in situ for a few days would seem to be the best local treatment for these terrible cases. I have successfully applied it in two cases of complete rupture of the uterus.² That patients kept absolutely at rest, without operation, can recover after avulsion of the uterus is shown by the following records.

The first account of this occurrence which I have been able to find is that published by Wrisberg in 1800. The case is admirably described in detail with the name of the doctor (Hepe) who called Wrisberg into consultation, of the midwife (Rippel), and the patient (Ude), who lived in Reyherhausen. The account is in Latin, and as it has features of interest in connexion with the recent occurrence of the same kind in this country, a brief translation may be given.

Wrisberg's Case ("Commentationes," 1800, vol. i., p. 435).—The patient, a primipara, aged 24, felt the first pains of labour at 7 o'clock in the morning of June 5th, 1780. Her pregnancy had run its proper course without any symptoms except sadness at the absence of her husband, who was then fighting with the Hessian forces in America.³ The pains gradually became stronger and more effective, and between 2 and 3 o'clock in the afternoon, after a perfectly natural labour, the patient brought into the world a living well-made girl.

Having placed the infant in its cot, the midwife returned to the patient, and when asked to loosen and extract the after-birth she tortured the patient with such vigorous, zealous, and repeated manipulations (introducing her arm into the uterus) that the patient fainted, and when she saw a large mass of flesh hanging from the vulva she was only able to pronounce the words "Oh! you're tearing everything out of my body," and felt she would surely die. So severe was the pain that she cried out, and there is no doubt (says Dr. Hepe) that the midwife then cut away the inverted uterus, which, with the placenta which she had peeled off, she placed in a vessel and shortly afterwards buried.

The woman lay for two days without any care or treatment directed either towards stopping the bleeding or saving and comforting the patient, who was abandoned to the "beneficent and curative efforts of Nature." The very severe flow of blood which followed the amputation of the womb and ran down like a torrent into the room spontaneously ceased under the influence of the profound fainting, which so affected the poor woman that she seemed almost dead. Two days later, on June 7th, she asked in a very feeble voice that Dr. Hepe should be called in, who found the patient in the following condition:—

The colour of the face was very pale, just like that of a dead woman; the extremities—the brow, nose, ears, hands, and feet—were cold to the touch; the countenance that of a dying woman, the eyes dull and heavy; the voice very weak, scarcely perceptible. The pulse was almost absent and could only be felt in the large arteries; the respiration short and shallow, and the movement of the thorax scarcely to be felt. Up to this time (the second day) the patient had neither desired nor taken any food. Wrisberg was called in consultation and saw the patient on June 8th (the third day). He removed clots, mucus, and pus from the vagina and found that the gap at the top of the vagina was almost closed by the full bladder. Having passed a catheter he was able to examine more thoroughly. Scybala could be felt in the rectum, and in the gap at the top of the vagina

(which had contracted to the size of the diameter of the thumb) he felt a softish, slippery body, which he took for a coil of intestine. "It goes without saying," he writes, "that I was very cautious lest, moved by much curiosity, I should pass my finger too high and hinder the effort of Nature to close the gap, or by too much irritation and handling of the vessels should cause a return of the hæmorrhage." He was able to observe that the canal of the vagina became narrowed like a funnel towards the gap. There was an unpleasant odour like that of gangrene from the vaginal discharge.

Wrisberg prescribed "Summa corporis animique quies"; a moistened sponge was inserted into the vagina to prevent prolapse of the intestines, suitable injections (justæ injectiones) were ordered to wash away the discharge, and mineral acids were administered. On June 16th the patient was able to get out of bed and walk about, and later was shown by Wrisberg with her baby and the uterus to his obstetric colleagues. She made a complete recovery, and on the return of her husband from America she resumed conjugal relations, but stated "Se non amplius voluptatis sensum percipere quem alias percepit."

Bernhard's Case (v. Siebold's "Lucina," vol. i., p. 401).—In this case inversion of the uterus was caused by a forcible removal of the placenta by a midwife who mistook the uterus for a tumour and cut it away with a razor. Ice was inserted into the vagina to stop the bleeding. The patient fainted. There is no mention of a tampon being inserted. The patient recovered "simply by rest and milk diet, without any medicine." When examined later by Bernhard a rectocele was found. The vagina had healed. The patient looked well.

Breslau's Case ("De totius uteri exstirpatione," Inaug. Diss., Munich, 1852).—The patient was 39 years of age, strong and healthy. She had had two children previously, one of which was born dead, apparently as a result of a fall. On Jan. 9th, 1850, at 1.30 p.m., she was delivered of a living well-developed girl. She was attended by a midwife. The labour only lasted an hour and a half. The placenta remained in the uterus, but there was no bleeding. The midwife endeavoured to remove the placenta by introducing her right hand into the uterus and by pulling with the left hand on the cord, which broke. In spite of all her endeavours she was unable to remove the placenta, and at 7 p.m., telling the friends to send for a doctor, she left the patient and went off to another case. The doctor arrived at 9 p.m. and found the patient pale, with cold extremities and small pulse, clots in the vagina, and copious hæmorrhage still going on. The doctor removed the clots, passed his left hand into the vagina, felt the torn end of the cord high up, and some membranes. Using these as a guide, he passed his hand (as he thought) into the uterus, made a couple of "supination movements" to get the hand behind the "placenta," and felt a large body around which he could move his hand without feeling any adhesions to speak of. On account of its size he was in doubt whether this was the placenta, and thinking it was a mole which could not pass, he seized it in the hollow of his hand and, pressing from above (with the other hand), he separated a few adhesions with his finger and nail, and delivered it. To his surprise he found it was the uterus (with its appendages) attached only to the vagina at a few points, which he severed. Overcome with despair, he left the patient to her fate. Next day she was seen by another doctor who prescribed medicine, strict diet, and rest. She gradually recovered, though a fæcal fistula persisted for six months, but finally closed.

The doctor stated that he had removed the uterus without using any force ("ganz ohne Gewalt"). He was punished with some months of imprisonment and suspension from practice. The midwife received no punishment, although "she had probably already prepared the best way" for the removal of the uterus.

Nieprasch's Case (Berliner klin. Wochenschr., 1880, p. 388).—The case was that of a woman, aged 29, with

² Ibid., vol. xlii., 14.

³ In the War of Independence. The capture of a Hessian detachment at Trenton in December, 1776, is said to have been the turning point of the war (Chambers's Encycl.).

a normal pelvis, the mother of seven children, three of whom had been delivered with the aid of the doctor owing to abnormal presentations. In the labour at which the rupture occurred the child also presented abnormally (by the feet). Severe hæmorrhage occurred and signs of extreme anæmia. The uterus (with the head in it) had been torn away by the midwife and lay in the bed, held only by one round ligament. The patient was seen by the doctor two hours after the delivery. Small intestines had prolapsed; these were replaced and a sponge was inserted into the vagina. The patient recovered.

Credé's Case.—No particulars are given; the only record being the statement by Nieprasch that "Prof. Credé had told him of a similar case."

E. Schwarz's Case (*Archiv für Gyn.*, 1880, p. 107).—The patient, aged 29, had had eight children (two born dead in head presentation) and was delivered easily and quickly of her ninth child, a feeble girl, which presented by the head and was born alive. The cord had been pulled upon by the midwife and broke. The placenta was removed by hand. As the midwife thought a piece had been left behind she introduced her hand a second time, when she felt what she thought was a tumour, which she tore away. The doctor who was called also thought it was a tumour till he found it was hollow and had the adnexa upon it. The bleeding had stopped. Clots and intestines were felt in the upper part of the vagina. The clots were removed and a tampon of clean linen inserted into the vagina. Absolute rest and wine and salicylic acid were ordered. The recovery was complete. The midwife was fined and deprived of her licence.

J. C. Cooke's Case (*THE LANCET*, Jan. 16th, 1836).—The patient, an Irishwoman, was delivered by a midwife in the knee-elbow position after a very painful labour lasting 48 hours. The placenta followed naturally. Free hæmorrhage and strong after-pains ensued, and during micturition the uterus appeared to have become inverted, with increase of the bleeding and the pains. On being called to the patient 36 hours later the midwife found a mass as large as a child's head lying between the patient's thighs, loosely connected to the vagina by a shred of membrane only. It was removed without effort and placed in a bowl. The hæmorrhage then ceased. The doctor, on examination, found the mass removed was the inverted uterus. No internal examination was made. Perfect quietude, absolute rest in the horizontal position, and a light farinaceous diet were ordered. No active medicine was given. The patient made a good recovery.

CANCER AND HEREDITY.

By P. LOCKHART-MUMMERY, F.R.C.S. ENG.,
SENIOR SURGEON TO ST. MARK'S HOSPITAL FOR DISEASES
OF THE RECTUM.

It has often been asserted that cancer is not an hereditary disease, and this statement is probably correct; indeed, we know of very few hereditary diseases, but it does not follow that a predisposition to cancer may not be transmissible by heredity. Anyone who has taken the trouble to study Miss Maud Slye's work on natural cancer in mice¹ must have been struck by the very remarkable results which she has brought forward. These certainly seem to show that there are definite predisposing causes transmitted by heredity which tend to cause mice to die from cancer in succeeding generations.

The relationship between heredity and disease is one of the most interesting, and at the same time one of the most difficult problems of modern medicine. The causes at work are very obscure, and the laws governing heredity are but imperfectly understood, though no one can doubt that hereditary predisposition to disease is a most important factor; indeed, it is so recognised by the insurance companies. The study

of heredity in human beings is beset with difficulties which are almost insuperable. Human life being relatively long, and in any case being much the same as that of the person who desires to trace it, the latter is obliged to rely upon records. Three generations cover a period of nearly 100 years, and there are seldom accurate or reliable figures available even as far back as this. Now three generations are not enough; at least ten generations are, as a rule, required to establish an hereditary factor with any degree of accuracy. The following facts, therefore, are offered for what they are worth, and although I should be far from wishing to maintain that they prove anything, I think they suggest a very important addition to our knowledge of the ætiology of cancer.

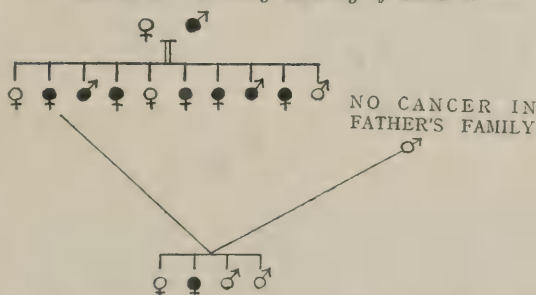
Clinical and Family Records.

CASE 1.—A young woman, aged 31, came into my ward at St. Mark's Hospital with multiple polypi of the colon. Examination showed that she had a vast number of simple adenomatous polypi throughout the visible part of the rectum and colon, when examined with the sigmoidoscope. I removed her colon, as the only feasible means of relieving her, and she made a good recovery. The colon removed was found to be studded with adenomata as far as the ascending colon.

I was already aware that this condition of multiple adenomata was invariably antecedent to carcinoma, one or more of the adenomata sooner or later undergoing malignant change. I also knew that the condition of multiple adenomata is often hereditary in a marked degree, and with this in view I asked my house surgeon, Mr. J. C. Anderson, to make careful inquiries into this patient's family history, and as a result the following extraordinary family history was obtained.

The patient is one of a family of four, and on her mother's side had nine uncles and aunts. Seven of these, including her mother, have died of cancer of the bowel at ages between

CHART 1.—Family History of Case 1.



In each chart cases indicated in black had either cancer or multiple adenomatosis of the bowel, or both.

30 and 54, and her maternal grandfather also died of cancer of the bowel. In order to verify this remarkable history I wrote to the doctors said to have been attending these relatives, or to the registrars of the districts where they were supposed to have died. Although I was not able to trace all, which one could hardly expect since they were much scattered and have died over a period of 20 years, I was able to trace several, and to find confirmatory evidence of their having died of cancer of the bowel. Also another relative, one of the cousins of my patient, subsequently consulted me and was able to confirm the facts as I already had them. I was also able to confirm the fact that the grandfather died of cancer of the rectum. As far as such things can be verified, therefore, the facts as given by the patient as to her family history are correct.

Several facts are noticeable. The large proportion of individuals in a single family that have died of cancer of the bowel is remarkable, also the comparatively early age at which they developed the disease, no less than seven having died between the ages of 27 and 54. Although it cannot be proved, I have very little doubt that all these persons inherited the tendency to the development of multiple adenomata of the large bowel, and that the cancer which caused their death was a secondary process.

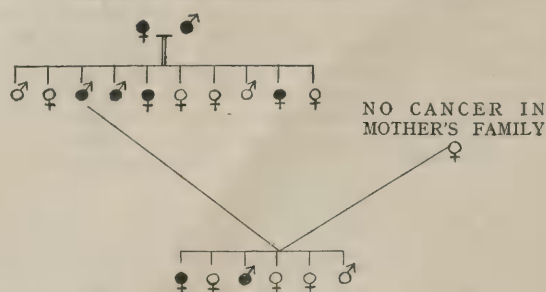
I next started to inquire more closely into the family history of two other patients, whom I had had under my care with the same condition, with the result that the following histories were obtained.

CASE 2.—The patient was a young woman, aged 22, who came to the hospital with a history of diarrhoea and bleeding of two and a half years' standing. Examination revealed an

¹ Jour. of Cancer Research, April, 1922, vol. vii., No. 2.

extreme degree of multiple adenomatosis of the entire large bowel. I performed a complete colectomy, and subsequently removed the adenomata in her rectum. She has been kept under observation for the last four years, and on two occasions has had adenomata which had recurred removed.

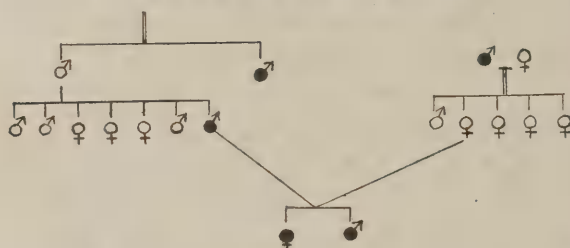
CHART 2.—Family History of Case 2.



The brother of this patient was treated in St. Mark's Hospital for multiple adenomata of the rectum and colon in 1913, and he died from cancer of the rectum in another hospital in 1919 at the age of 36. The patient's father died from cancer of the sigmoid flexure in St. Bartholomew's Hospital, and several of his brothers and sisters are said to have died from cancer of the bowel. Both the grandfather and grandmother are said to have died from cancer of the bowel.

CASE 3.—The patient is a girl, aged 20, and is now under my care at St. Mark's Hospital with multiple adenomatosis of the large bowel. Her brother also has multiple adenomatosis and has been under my observation since he was 11 years

CHART 3.—Family History of Case 3.



old; he is now 26. Numerous polypi have been removed from his bowel on different occasions. This patient's father died from cancer of the rectum in St. Mark's Hospital in 1922 at the age of 46. The grandfather's brother died of cancer of the rectum, and the grandfather on the mother's side died of cancer of the throat at the age of 50.

It is noticeable that in both these cases also there is evidence of the condition being markedly hereditary, and that the deaths have always been from cancer of the large bowel. In the case of the brother of Case 2, he was in St. Mark's Hospital with multiple polypi in 1913, and died from cancer of the rectum in another hospital six years later. In this case the actual proof exists that the patient had multiple adenomata and died of cancer. Multiple adenomatosis of the large bowel is admittedly a rare disease, but it is often by the study of extreme cases that one is best able to throw light on the more common condition.

Tendency of Adenomata to Malignant Change.

The conclusion which, it seems to me, can be drawn from these cases is that cancer of a particular part of the alimentary tract may cause the death of a large proportion of the members of one family in succeeding generations, the hereditary factor being not cancer itself, but simple tumours (multiple adenomata) having a marked tendency to undergo malignant change. This conclusion, if correct—and it would seem to be justified by these three family histories—is of considerable importance. We have for some time known that a simple adenoma of the rectum is often the forerunner of a cancerous growth. A simple adenoma has a marked tendency in time to undergo malignant change which eventually involves the whole tumour. I have on several occasions seen this occur. A few years ago I removed a simple adenoma from

the anterior wall of a patient's rectum and warned him of the necessity of being kept under observation. This, however, he neglected to do, and I did not see him again for a little over a year. I then found he had a typical carcinoma in the position of the scar, where I had removed the adenoma. Further, a careful examination of specimens of cancer of the rectum show that in quite a number, part of the tumour is a simple non-malignant adenoma, though the remainder may be typical adeno-carcinoma, and, still further, that simple adenomata are frequently to be found growing from the mucous membrane of the bowel either above or below the position of a cancerous tumour. There is no doubt that while some adenomata remain innocent tumours for long periods—I have had some under observation for periods as long as seven years—others undergo malignant change very quickly. In cases of multiple adenomata the tendency to undergo malignant change is so pronounced that I have never known a patient with this condition who did not develop cancer. One cannot help wondering what proportion of cancers of the rectum and colon start as simple adenomata, and even whether it may not be possible that in all cases a simple adenoma is the starting-point of a cancerous growth.

Sir Lenthal Cheatele has demonstrated that duct cancer of the breast is often preceded by multiple duct adenoma, so that we have evidence of a similar sequence of events in the case of breast cancer.²

The Hereditary Predisposing Factor.

The hereditary factor of cancer would from this limited investigation appear to be quite indirect. Although at first sight the history in these three families would seem to prove that cancer of the bowel had been transmitted, such is almost certainly not the case; another factor has been transmitted by heredity which has predisposed the descendants to the development of cancer. Tubercle from a study of family history alone would appear to be an hereditary disease, but we know it is not. It is some predisposing factor which is hereditary in the case of tubercle, and the same is probably true of cancer.

Miss Maud Slye has shown in respect of mice that a predisposition to develop cancer is definitely hereditary in these rodents. That mice bred from cancer mice will tend to develop cancer, and further, that they will tend to develop cancer of the same organ as the ancestors. She has further shown that the predisposition to develop cancer is recessive, and that the tendency not to develop cancer is dominant. So that by breeding a strain of non-cancer mice to a strain of cancer mice the development of cancer in the succeeding generation can be held off for as much as nine generations, but will show itself as soon as two heterozygous mice are bred together.

We have got to ascertain what the predisposing factors are in mice. I think the facts here produced point to one of the predisposing hereditary factors of cancer of the rectum in human beings. Even though multiple adenomatosis is a rare condition, it would appear to be of importance and well worth further investigation. Like all investigations into the causes of cancer this, while it possibly proves one more link in the chain of our knowledge, only leaves us with fresh questions requiring an answer.

Questions for Solution.

What is the nature of the transition from a simple to a malignant tumour of the mucous membrane, and what are the factors causing it? This we are now attempting to investigate in the research department of St. Mark's Hospital. A much more important question is: What are the causes of the development of simple adenomatous tumours? For an adenoma is in its way just as abnormal a development on normal mucous membrane as is adeno-carcinoma. It would seem that research into the origin of simple epithelial tumours might be more fruitful of result than the investigation of malignant tumours themselves, and

² Brit. Jour. Surg., 1923, vol. x., No. 40; also Brit. Med. Jour., April 12th, 1924.

this is certainly a branch of research which has been neglected.

Conclusion.

1. Adenomatosis of the large bowel is a condition which tends to develop in succeeding generations in the same family.

2. Individuals with multiple adenomata of the large bowel almost invariably develop cancer in one or more of the adenomata after a few years.

3. The members of families with an hereditary tendency to multiple adenomata tend to die of cancer of the large bowel, and at an early age.

4. Simple adenomata of the large bowel are a common antecedent of cancer.

THE ORAL ADMINISTRATION OF LARGE QUANTITIES OF GLUCOSE,

AND ITS THERAPEUTIC USES.

By T. IZOD BENNETT, M.D., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN AND ASSISTANT TO THE PROFESSOR
OF PHYSIOLOGY, MIDDLESEX HOSPITAL;

AND

E. C. DODDS, M.B., B.S., B.Sc. LOND.,
LECTURER IN BIOCHEMISTRY AND CHEMICAL PATHOLOGIST
TO THE HOSPITAL.

(From the Department of Physiology and the Biochemical
Department of the Bland-Sutton Institute of
Pathology, Middlesex Hospital.)

THE primary object of this inquiry was to determine the therapeutic value of glucose administered orally. Impressed by the physical transformation often produced in severe cases of diabetes mellitus when treated with insulin, it seemed to us probable that a somewhat equivalent improvement in nutrition should be obtainable in many non-diabetic patients suffering from diseases associated with wasting, provided that either (a) glucose could be administered in really large quantities, without marked loss in the urine, or (b) this glucose administration was accompanied by insulin administration.

Method of Preparing Glucose for Administration.

Pure glucose, whether crystalline or anhydrous, is expensive, costing about 8s. 6d. per lb. It is little used save in chemical laboratories. There is on the market a preparation known as "glucose B.P." hereinafter referred to as "commercial glucose," which can readily be obtained in jars containing 1 lb. or more at a cost of about 6d. per lb. On account of its cheapness, this is clearly the best preparation readily available for clinical use on any extensive scale. Notes on its chemical nature will be found in a succeeding section. The easiest method of preparing it in palatable form is to dissolve it in water with a plentiful addition of fresh lemon-juice.

The formula we employ is as follows: Commercial glucose, 1 lb.; water, 1 quart; lemons, two. The glucose is dissolved by stirring into the boiling water, the lemons are squeezed into the solution, then cut in quarters, boiled with it for a few minutes, after which the solution is cooled and strained. A patient will drink daily upwards of a pound of glucose so prepared, in small drinks between or with meals. We have never encountered difficulty or complaint concerning it.

For experimental purposes we have used a similar but more exact formula: Commercial glucose, 1 lb. (i.e., 450 g.); water, about a pint; lemons, two. A solution is made as before, and, after cooling and straining, its total volume is made up to 900 c.cm., so that the final solution contains 1 g. of commercial glucose in every 2 c.cm. of fluid. Stronger solutions than this are syrupy and cannot be drunk readily, but this is only slightly stronger than the average home-made lemonade.

Nature of Commercial Glucose.

Glucose B.P. is a viscid syrup, prepared by the hydrolysis of Indian corn or other cereal starch with mineral acids. It appears that hydrochloric acid is now usually employed for this purpose, but some years ago sulphuric acid was generally used. Contamination of this acid with arsenic resulted in several epidemics of arsenical poisoning, with the result that the use of the commercial product in jams, &c., fell into great discredit. Such foods are to-day frequently

labelled "guaranteed free from glucose." Glucose B.P. is guaranteed to contain less than two parts per million of arsenic, so that 42½ lb. of it would have to be taken before a patient could receive 1 gr. of arsenic. We have tested a number of samples from various sources, and Marsh's test for arsenic was negative in every case.

The exact chemical composition of commercial glucose is very difficult to determine; it consists of a mixture of dextrins, glucose, and maltose, all of which are dextro-rotatory, the two latter reduce copper solutions, and the determination of the precise proportions of them in a given sample is a matter of the greatest difficulty to the analyst. All of these substances are readily hydrolysed to glucose by acid or the amylolytic enzymes of the digestive juices, with the exception of achroödextrin, which is stated to be less easily digested and not readily absorbed from the alimentary canal. The proportion of water present in glucose B.P. makes it necessarily weaker than crystalline or anhydrous glucose; the additional water appears to account for about 10 per cent. of the weight in any given sample.

The difficulty of precise analysis, and the varying amounts of water and of achroödextrin present, make it impossible to give exact figures as to the calorie-value of commercial glucose. It must be remembered that close inquiry reveals equal difficulty in determining the true calorie-value of almost every known class of food-stuff. Taking the calorie-value of the various carbohydrates present to be not less than 3.7 large calories per gramme, and allowing 60 per cent. as a conservative estimate of the amount of assimilable carbohydrate in average samples, we may assume that 1 lb. of commercial glucose will yield 1000 large calories when taken as a food. Dissolved in a minimum quantity of water it forms a strong syrup, and when diluted to the strength we use for clinical and experimental purposes, it is still a solution of very high osmotic pressure.

A most important difference between this substance and cane-sugar is that it is relatively less sweet; this is a property of considerable value, as it enables quantities to be taken greatly in excess of what can be accomplished with ordinary sugar.

PHYSIOLOGICAL EXPERIMENTS.

Clinical observation of cases when strong glucose solutions were being administered taught us that glycosuria following its use was a comparatively unimportant phenomenon. We had shared what we believe to be a very widespread opinion—namely, that glucose, when taken in a single dose exceeding about 150 g., will cause glycosuria in normal people, an amount roughly approximating to the excess over this figure being excreted by the urine. Medical literature abounds in reference to sugar-tolerance, but such references are almost entirely confined to observations upon diabetic subjects or those with various disorders of carbohydrate metabolism. Work on the upward limit of normals is sparse, and appears to have been largely confined to a few observations in which the oral dose of glucose had been determined by the appetite of the observer. From this erroneous deductions have been drawn. Even such an authority as F. M. Allen says,¹ "250 g. (of pure dextrose by mouth) may probably be considered as the upper normal limit," and, again, "the human tolerance by mouth must be figured as probably between 2 and 4 g. per kilo., with possible slight variations in either direction."

TABLE I.—To Show Degree of Glycosuria Produced by Administration of Large Doses of Glucose by Mouth.

Subject.	C.G. taken.	S.E. in urine.	Subject.	C.G. taken.	S.E. in urine.
1	200	0.37	9	200	Nil.
2	200	Nil.	10	200	Nil.
3	200	Nil.	11	250	Nil.
4	200	Nil.	12	250	Nil.
5	200	Nil.	13	300	Trace.
6	200	0.12	14	300	Nil.
7	200	Nil.	15	300	0.16
8	200	0.65			

C.G., Commercial glucose.

S.E., Sugar excreted.

To test the amount of sugar-loss likely to occur, after giving a single concentrated dose of glucose we administered ½ lb. or more to a number of healthy men, students and laboratory workers; the solution being that described in an earlier paragraph. Typical results are given in Table I.

It is clear from these results that, though these large doses may induce the passage of a trace of sugar into the urine, no appreciable loss occurs, the total amount of sugar excreted in the urine collected from 15 experiments in which from 200–500 g. of commercial glucose were taken by each subject only amounting to 1·3 g. This result agrees with those published by Taylor and Hulton,² who found that amounts of 500 g. of pure glucose given by mouth often produced no glycosuria and never a considerable passage of glucose into urine. Similar results are indicated by the work of Woodyatt, Sansum, and Wilder.³

In view of the current belief that the organism has definite limitations as to its capacity for metabolising large amounts of ingested sugar, these results are surprising, and immediately provoke inquiry as to the mechanism by which glucose is dealt with. With a view to gaining clearer knowledge on the problems concerning the fate of this glucose, we made closer investigations of those cases in whom a dose of 500 g. had been taken. The results of these more minute inquiries are as follows:—

(a) *Effects on the Amount and Quality of Urine Passed.*—The subjects were all observed in the morning: they were at that time fasting, urine was passed until the bladder was emptied, 500 g. of commercial glucose diluted to 1000 c.cm. volume, with lemon added, was then drunk, and the bladder subsequently emptied every half hour. Amount and specific gravity were noted in each specimen of urine, and tests for sugar made; when the latter were positive, the percentage of sugar was observed by the polarimetric method and the total sugar excretion calculated. (Table II.)

TABLE II.

Time of observation in relation to glucose meal.. ..		Before.	Hours after.				
			$\frac{1}{2}$	1	1½	2	4
Volume of urine in c.cm....	T.I.B.	?	25	850	430	about 100	—
	H.V.A.	90	125	100	48	16	—
	M.	50	25	15	18	18	170
Total sugar excreted in grammes..	T.I.B.	Nil	Nil	Nil	Nil	Nil	—
	H.V.A.	..	tr.	..	..	..	—
	M.	..	0·1	0·06	..	..	Nil
Specific gravity of urine.. ..	T.I.B.	?	1020	1001	1001	1008	—
	H.V.A.	1022	1008	1004	1016	1020	—
	M.	1022	1018	1024	1026	1024	1012

From these results it appears that in two cases there was an immediate diuresis with passage of very dilute urine, but the third case showed no renal effect save a slight glycosuria.

(b) *Effects on the Blood-sugar.*—To determine these, samples of blood were taken from the median basilic vein of each subject at regular intervals, the moment selected being immediately before or after the voiding of urine. About 10 c.cm. of blood were collected on each occasion, it being desirable to do a more complete analysis. Blood-sugar was estimated by the Folin-Wu method. (Table III.)

TABLE III.

Time of observation in relation to glucose meal.. ..		Before.	Hours after.				
			$\frac{1}{2}$	1	1½	2	4
Blood-sugar in mg. per 100 c.cm....	T.I.B.	88	114	100	88	78	—
	H.V.A.	90·9	116	81	85	85	—
	M.	83	125	98	95	100	90

From these figures it is clear (1) that nothing approaching what is usually considered a hyperglycaemia was produced in any of our subjects; (2) that, in the subject M., who showed definite glycosuria, the rise in blood-sugar was proportionally greater than in the others; (3) that in all subjects

the maximum concentration of blood-sugar occurred in the first half hour after the ingestion of the glucose, and that after the first hour the glycosuria was not notably higher than when the subjects were fasting.

(c) *Effects on the Respiratory Exchange.*—With a view to examining these, samples of expired air were collected from one subject (H. V. A.) in a Douglas bag. The first sample was taken fasting, the second at a period one and half hours after the ingestion of 500 g. glucose. In both instances the subject was lying at complete rest on a couch, this rest having been begun 40 minutes before the first observation. (Table IV.)

TABLE IV.

Time of observation	Immediately before glucose.	1½ hours after glucose.
Corrected oxygen intake (c.cm. per minute)	240	244
Corrected CO ₂ output	192	199
Respiratory quotient	0·8	0·81

Any difference between the results of these two observations lies well within the limits of experimental error.

(d) *An Unexpected Effect Observed.*—A very striking hypnotic effect was observed in two of these subjects (T. I. B. and H. V. A.). In both cases the effect was so entirely unexpected by the subject, and was so strong, that there can be no question of suggestion alone being the cause of it. Some hours after the glucose, two and a half hours in one case and three and a half hours in the other, the subject experienced a feeling of sleepiness so profound that he was quite unable to carry on his habitual duties. It should be noted that, after the first half hour, no subject has remarked disagreeable effects; up to this time there was, in each case, a feeling of abdominal distension consistent with the rapid ingestion of so large a volume as a litre of fluid. In later stages the subjects chatted, read, smoked, and helped the observers with details. Each ate a small lunch, experiencing some appetite but no hunger, and in the cases named, in one before and in both immediately after, there was a somnolence so profound that he was impelled to lie down and was immediately overcome by a sleep described as being far deeper than any he had usually experienced. This sleep lasted for several hours in each case, and its depth may be gauged by the fact that the sleeper was on each occasion not roused by noises close to him so loud as to attract other persons from neighbouring rooms. Beyond this somnolence no subject experienced any untoward effect; gastro-intestinal symptoms were absent.

(e) *Problem of the Fate of the Ingested Glucose.*—G. Graham estimates the total amount of circulating glucose in the blood at less than 5 g. Is a large amount, such as was taken in these experiments, held up for a long period in the alimentary canal before absorption? We have conducted a few experiments with stomach tubage to explore this possibility. A tube was swallowed by one subject every quarter of an hour after taking 500 g. At the end of two and a half hours there was abundant glucose solution left in the stomach, but its actual amount was not determined as we were anxious not to disturb the experiment as a whole. For reasons given in earlier paragraphs of this paper, it is impossible to determine accurately the exact glucose-content of this solution, but observations on its reducing power, as tested by the quantitative Benedict test, give a fairly accurate index of its concentration in various samples. Tested in this manner the concentration of successive samples removed by tubage in the above experiment were found to fall from an original reading of 14 per cent. to a figure of 9·5 per cent. at the end of two and a half hours.

In two previous experiments the same subject had taken different quantities of glucose and subsequent specimens were examined for sugar, with the results shown in Table V.

TABLE V.

Time after ingestion in hours	1½	½	¾	1	1½	Strength of glucose.
Glucose percentage in gastric sample	(a) 16.6	11.2	11.3	5.3		200 g. in 400 c.cm.
	(b) 7.3	8.4	7.0	6.5	3.6	100 g. in 400 c.cm.

In these experiments the subject had had a light breakfast one and a half hours before taking glucose. The results, though clearly only roughly accurate, may be taken with that above as indicating that strong glucose solutions tend to be delayed in the stomach until diluted considerably. As regards the total time elapsing before absorption from the intestine is complete we are unable to offer an opinion. A second question suggested by these experiments is whether hyperglycæmia is avoided during the absorption of these large quantities of sugar by means of some mechanism which withdraws water from the tissues into the general circulation. With a view to determining this we have made fuller observations, by means of the Folin-Wu method, on the samples of blood withdrawn. The results are given in Table VI.

TABLE VI.

Time of observation in relation to glucose meal		Before.	Hours after.				
			½	1	1½	2	4
Urea* ..	H.V.A. M.	40.2 27.0	29.2 23.9	30.3 25.4	26.8 27.1	27.9 21.4	22.1
Non-protein nitrogen* ..	H.V.A. M.	34.2 37.6	30.2 34.6	28.6 33.3	31.6 30.7	33.3 25.6	33.3
Creatinin* ..	H.V.A. M.	? 1.7	1.15 1.7	1.1 1.7	1.25 1.6	1.4 1.4	1.4

* mg. per 100 c.cm.

Study of these figures shows a lowering of the concentration of the nitrogenous constituents of the blood; this supports the hypothesis that the absorption of sugar was in these cases accompanied by an hydræmia, fluid being withdrawn from the tissues into the main circulation. But any such hypothesis must be accepted with reserve until further evidence of dilution is obtained. Of the cases in whom this was observed, one had exhibited an early diuresis and somnolence at a later period. It seems curious that the kidney should deprive the blood of a relatively large volume of almost pure water at a moment when such diluting fluid is about to be in great demand. The somnolence is in accord with the hypothesis that active absorption will be accompanied by a relative hyperæmia in the splanchnic area and a consequent relative anæmia in the cerebral region; on the other hand, both subjects felt that the intensity of the drowsiness was much more akin to the effect of drugs of the chloral series than to mere post-prandial torpor. It remains possible that an important quantity of commercial glucose either escapes in the fæces or is destroyed by bacterial fermentation. We have no evidence on this point, but the entire absence of abdominal symptoms is strongly against it.

(f) *Effect upon Gastric Secretion.*—Our observations on this point have been limited to four cases. In these, stomach contents, removed at intervals after glucose ingestion, showed very little, if any, free hydrochloric acid to be present.

In two cases, where the fasting gastric content had been removed before taking glucose, there was no hydrochloric acid present at one, two, and two and

a half hours after the meal. In cases where the fasting juice has not been removed, the free acid was absent in one case and present in a concentration of 8 c.cm. N/10 only in the other. These results agree with those of Pavlov and others as to the minimal effects of sugars and dextrins in exciting gastric secretion.

CLINICAL OBSERVATIONS.

In a previous communication* one of us (T. I. B.) has referred to the value of glucose when administered in large quantities in certain diseases. It has been freely used for a number of years and in many countries, but it is, we believe, rare for it to be employed in really important amounts, and the solutions usually ordered are so weak that it is doubtful whether the effects obtained differ materially from what might be expected if water alone had been used. As an example, it is common practice to give weak glucose solutions per rectum, or subcutaneously, after severe operations, as it has been found that stronger solutions tend to produce irritation of the mucous membrane of the colon, or sloughing of the subcutaneous tissues. It is therefore a difficult matter to administer more than a small quantity of glucose in this manner. When given by mouth such difficulties do not occur, and though in the post-operative type of case oral administration is often impossible, in other cases we believe that the use of large quantities of glucose is frequently of great value.

For a long time and in a very large number of patients we have now made use of this preparation, giving quantities equal to one pound or more daily, and we believe that the following properties are those which give indications for its employment: (1) It is palatable and can be assimilated in quantities which materially increase the daily calorie-intake without greatly affecting the patient's appetite; (2) it is absorbed with less call for work by the digestive glands than almost any other substance; (3) physiological and clinical observations made by us show that it evokes very little, if any, secretion of hydrochloric acid by the stomach; (4) being in complete solution it evokes very little motor response from the stomach during its passage into the intestine; and (5) it provides the tissues with the ideal substance (glucose) for counteracting any tendency to acidosis.

Illustrative Clinical Cases.

The facts to be learnt from study of the details of clinical cases in which we have applied these indications are general rather than particular. For this reason it has been felt wiser to suppress such details in the present communication, giving merely the broader aspects of typical cases in certain groups.

GROUP A.—*Acute Infections.*—(1) Typhoid fever and lobar pneumonia: In three such cases in adolescents ½ lb. of glucose was added to the daily ration of food. No increase in intestinal gas formation was noted; no glycosuria resulted. (2) Pulmonary tuberculosis: In four cases 1 lb. of glucose was given daily in addition to usual diet. Glycosuria of less than 1 g. daily was observed occasionally in one case. No gastro-intestinal symptoms; progress uninterrupted. General appetite not affected by the addition to the diet. (3) Acute hepatitis during puerperium: A case of difficult labour with prolonged anaesthesia and some laceration of vulval tissues. Profound jaundice, pyrexia, vomiting, complete absence of bile from stools. Glucose in quantities exceeding 1 lb. daily, started immediately after the vomiting had begun to be controlled. Rapid and uninterrupted recovery. No glycosuria.

GROUP B.—*Six Cases whose Major Symptom was Hematemesis.*—All these were cases which had exhibited hamatemesis in such degree as seriously to endanger the patient's life. In two the primary disease was cirrhosis of the liver, in two gastric ulcer, in one carcinoma of the stomach, and in one the cause is unknown. All were treated by absolute rest, morphia and hyoscine hypodermically, and rectal feeding for some days. After half-hourly sips of

water had been tolerated without symptoms for 24 hours, glucose solution was added and within three days increased until 1 lb. daily was being taken; milk and carbohydrate gruels were added about a week later with simultaneous complete alkalisation on familiar lines. In the subsequent treatment the administration of glucose was continued and utilised as the main calorie-supply in the diet for a long period.

GROUP C.—Cases whose Major Symptom was Under-nutrition.—Many cases might be quoted under this heading, usually females of the type described by Robert Hutchison in his recent address on the "Chronic Abdomen."⁵ Often admitted with a diagnosis of "dyspepsia" or "visceroptosis," more exact diagnosis was impossible in the majority of cases. Several, although devoid of definite signs of activity, gave evidence of partly-arrested tuberculous disease. Glucose has been added to the diet in a manner similar to that indicated in Group A. The following representative case may be quoted:—

Female, aged 26, for two years had been the victim of a severe anxiety neurosis, owing to somewhat delicate physique impairing her capacity for physical work and having simultaneously the knowledge that that work was the main financial support of her mother and sisters. Headache, indefinite pains in abdomen and limbs, extremities cold and somewhat cyanosed, complete absence of appetite for food. Weight on admission 5 st. 1 lb. No signs of organic disease discovered. The blood-sugar, at different times of day, at this period was always in the neighbourhood of 70 mg. per cent., a figure lower than we have observed in any other subject apart from patients receiving insulin. The patient was kept in bed, told that rapid improvement would occur, and given no treatment beyond 1 lb. of glucose daily, instructions being given that all meals, apart from this, were to be very small, but that the patient was to finish them completely. After ten days, there had been an increase in weight of 3 lb., blood-sugar had risen to 110 mg. per cent., the extremities were warm and less cyanosed. In the third week, 5 units of insulin were given morning and evening, in addition to previous treatment. Continuing on these lines, the patient's condition improved steadily, the weight increasing by 2 lb. weekly, until she was discharged weighing 7½ stone and went to a convalescent home. It is worthy of note that on three occasions she had slight hypoglycæmic reactions in spite of the glucose administration.

Discussion.

These clinical observations are not set down with any claim to establishing a novel therapeutic action of glucose. We have detailed them rather in illustration of what we believe to be the simple and rational method of securing a diet which is of high calorie-value, very easily assimilable, and without disadvantage in non-diabetic patients. The problem as to whether advantage is to be gained by the simultaneous administration of insulin in such cases is not at present answerable. The observations on the concentration of sugar in the blood before and after the assimilation of large quantities of glucose in normal persons, which we have detailed in the early sections of this paper, show that hyperglycæmia is not produced. The fate of the ingested sugar remains obscure; is it immediately converted into glycogen in the liver and muscles? If so, is there any limit to the capacity of the body for such conversion, and is the glycogen converted into fat? Again, does the hypodermic injection of insulin aid such conversion in the absence of hyperglycæmia? All these are to-day unanswerable questions.

Our observations throw some light on the problem of the limit of carbohydrate tolerance in general. It has been rather generally imagined that such tolerance is strictly limited by some metabolic capacity of the body. Thus it is common to describe as one of the chief characteristics of pituitary insufficiency "a rise in carbohydrate tolerance"; examination of the literature makes it exceedingly difficult to understand what is meant by such description. Persons suffering from Fröhlich's syndrome are not known to exhibit hypoglycæmia, nor has their curve of blood-sugar following glucose administration been proved to differ from that of a

normal subject. The present work demonstrates that the only limit to the normal man's capacity for ingesting glucose is that imposed by his appetite. Glycosuria is only produced in a small proportion of such normal subjects and then in an unimportant degree. What, then, is an "increased carbohydrate tolerance"? The only possible explanation we have met with is that of H. Cushing,⁶ who, speaking of persons with Fröhlich's syndrome, says that they are proverbially sweet-tooths.

Summary.

1. "Glucose B.P." is a substance which allows large quantities of glucose to be administered in palatable form and at a low cost.
2. Its exact chemical composition is difficult to determine, but it is shown to contain arsenic in negligible traces only and to have a calorie-value of about 1000 large calories per pound.
3. Normal persons can assimilate quantities of 200–500 g. in one dose without passing more than a trace of sugar in the urine.
4. The main effects on subjects who took 500 g. in this manner were (a) diuresis, (b) a rise in blood-sugar not greater than what occurs after a normal meal, (c) no change in the respiratory quotient, and (d) a marked hypnotic effect in two cases.
5. Large quantities of sugar taken in this manner appear to be detained and diluted in the stomach.
6. There is evidence of a dilution of the blood during such experiments.
7. Large quantities of glucose have been added to the diet as a therapeutic measure in many clinical cases, particularly in (a) acute infections; and (b) cases with marked undernutrition. Distinct benefit appears to have resulted and no ill-effects have been observed. In some of these cases the glucose administration was accompanied by small doses of insulin.

This work forms part of a report to the Medical Research Council. Part of the expenses were defrayed by grants from the Royal Society, through the Government's Grant Committee. We wish to express our obligation to Mr. W. Lawson for analyses of samples of commercial glucose and to those students of the Middlesex Hospital who have aided us by acting as subjects for experiment.

References.

1. F. M. Allen: Glycosuria and Diabetes, 1913, p. 26.
2. Taylor and Hulton: Jour. Biol. Chem., 1916, xxv., 173.
3. Woodgate, Sansum, and Wilder: Jour. Amer. Med. Assoc., 1916, lxx., 2067.
4. T. Izod Bennett: THE LANCET, 1924, ii., 6.
5. Robert Hutchison: Brit. Med. Jour., 1923, i., 667.
6. H. Cushing: The Pituitary Body and its Disorders, Philadelphia, 1912, p. 263.

DISLOCATION OF THE SEMILUNAR BONE.

WITH NOTES OF A CASE.

By CHARLES NOON, F.R.C.S. ENG.,

ASSISTANT SURGEON, NORFOLK AND NORWICH HOSPITAL.

DISLOCATION of the semilunar bone of the wrist is an unusual injury. Before the use of X rays the condition was rarely recognised. A fair number of these cases have been reported since, but it still frequently happens that the nature of the injury is not recognised when the patient first comes under observation, the condition being thought to be due to a sprain of the wrist—a diagnosis which far too often satisfies both doctor and patient. It not infrequently happens that the so-called "sprained wrist" is proved on further investigation to be a definite bony injury to the wrist-joint which can sometimes be diagnosed by careful clinical examination, and at other times requires the use of the X rays before a

diagnosis can be made. Dislocation of the semilunar bone may occur alone or it may be associated with a fracture of the scaphoid. Both these conditions, which have to be diagnosed from a Colles's fracture, give rise to very definite symptoms and physical signs which, if careful observations are made of the injured parts, should not be overlooked. A definite diagnosis can often be made clinically, and confirmed by the use of the X rays.

Diagnosis.

The physical signs of a dislocation of the semilunar bone are deformity of the wrist-joint, which, when viewed laterally, suggests the silver-fork deformity of a Colles's fracture, but on careful examination the styloid processes of the radius and ulna are found to bear their normal relations one with another. A tumour is felt and seen on the flexor surface of the wrist-joint, pressure on which causes pain in the distribution of the median nerve, the tumour feeling like a displaced carpal bone. There is practically no movement in the fingers or thumb, the incapacity from which is usually far greater than that seen in cases of injury of the scaphoid and in Colles's fracture. When both wrists are looked at from the palmar surface the deformity, as compared with that of a Colles's fracture, is striking and characteristic in its difference. The hand of the injured extremity appears to be that of a different person; it is smaller and shorter, and if the injury is of long standing there is almost sure to be much wasting of the muscles of the forearm and may be some wasting of the muscles in the hand supplied by the median nerve. The condition has also to be distinguished from a simple fracture of the scaphoid bone, the symptoms and physical signs of which are said often to be very definite—namely, (1) a localised swelling in relation to the radial half of the flexor surface of the wrist-joint, (2) acute tenderness in the anatomical snuff-box when the hand is adducted, (3) limitation of extension of the wrist by muscular spasm, any attempt to overcome which by force causes unbearable pain.

Treatment.

The treatment of dislocation of the semilunar bone depends on the stage at which the injury is recognised and seen, and on the presence or absence of the common associated injury—namely, fracture of the scaphoid. In general, the treatment can be considered under the following headings:—

(1) *Rest and massage without attempted reduction of the dislocated bone.* This is the line of treatment which has been adopted in cases in which the diagnosis has in the first place been missed. It is not likely to be followed by satisfactory results. When such cases come under observation it is found that there are much permanent stiffness of the wrist, weakness of the grip, and pain in the distribution of the median nerve. The possibility of improving such conditions when seen after a considerable lapse of time is not good.

(2) *Early or late reduction by manipulation of the dislocated bone followed by rest, massage, and movements.* Immediate reduction of the dislocated bone is the ideal treatment and will be followed by the best results. The best method of reducing the dislocated bone has been described by Codman and Chase. After carrying out careful researches on the movements of the wrist-joint and on the mechanics of dislocation of the semilunar bone, they say: "Since dislocation forward of the semilunar bone takes place by hyperextension, its reduction must take place by hyperflexion. Hyperextension is first made, to drag the convex surface of the semilunar back into contact with the radial articular surface and then, while the semilunar is prevented from rolling forward by pressure of the two thumbs of the surgeon at the anterior lip of the radius, hyperflexion is made over the surgeon's thumbs by an assistant. This allows the articular surface of the os magnum to again roll over the posterior horn of the semilunar bone to its proper facet."

From a study of recorded cases it seems that reduction by manipulation may be successful even after as long a time as a month after the injury. It is always advisable, therefore, to try to reduce the bone if there is any reasonable hope of this method of treatment being successful.

(3) *Reduction by an open operation* or excision when reduction cannot be successfully performed. If reduction fails an open operation will be indicated, by which it may be possible to reduce the bone, but if this cannot be done the bone should be excised.

(4) *Late Excision of the Bone.*—In long-standing cases in which there have been secondary changes in the bones of the joint, it is unlikely that reduction will be possible even by an open operation. The indication for excision in this type of case is pain in the distribution of the median nerve. If the dislocated bone presses on the nerve excision will relieve this pain, but the condition of the joint will not be much improved in these old cases. The recorded case was a simple dislocation of the semilunar bone of the right wrist, seen five days after the injury. All the typical signs and symptoms were present. Reduction was attempted both by manipulation and by open incision, but it was not found possible, even after so short a time as seven days. The bone was therefore removed. The wrist was "put up" in an extended position for a few days, massage and movements were started as soon as possible, with the result that the patient made a rapid recovery and was only left with a very slight disability.

Record of Case.

Injury to the Right Wrist-joint; Dislocation of the Semilunar Bone; Operation, Excision of the Dislocated Bone. Result: Recovery with a useful wrist.

E. R. H., a man aged 28, was sent to me by Dr. A. R. Kay, of Blakeney, on Feb. 28th, 1924, complaining of an injury to the right wrist-joint received while starting a motor-car on Feb. 24th. Since the injury the patient complains that he has not been able to use the wrist and fingers of the right hand owing to the pain and swelling.

Condition on Admission.—The right wrist is swollen, there is a prominence on the flexor aspect of the joint, the dorsal aspect of the joint is also swollen and prominent. On comparing the palmar surfaces of both wrists and hands the injured hand looks shorter and smaller than its fellow. The wrist and fingers are held slightly flexed and the patient is unable actively to extend the wrist or fingers, while passive movement of wrist and fingers is only possible to a very slight extent and then only with severe pain. The styloid processes of the radius and ulna bear their normal relations with each other. There is a hard, bony, irregular fixed swelling on the flexor aspect of the wrist-joint which feels like a dislocated carpal bone. No crepitus is felt. There is some numbness of sensation over the distribution of the median nerve, ulnar sensation being normal.

X Ray Examination.—There is a forward dislocation of the semilunar bone. There is no other evidence of injury to the bones of the carpus or wrist-joint.

Operation.—The patient was anaesthetised on March 3rd. It was not found possible to reduce the dislocation by manipulation. A vertical incision was therefore made over the flexor aspect of the wrist-joint, the incision being half an inch to the ulnar side of the tendon of the flexor carpi radialis. The deep fascia was incised, and the median nerve was found tightly stretched over the superficial aspect of the dislocated semilunar bone. It was carefully retracted and the semilunar bone exposed. Reduction was not even then possible by an open operation. The bone was therefore excised and the wound closed without drainage.

Progress.—The wrist was put up in an extended position for a few days and massage and movements started as soon as possible. The wound healed by primary union. The patient regained full movement in the thumb and fingers, and eight weeks after the operation the movements of the wrist were only very slightly limited, about one-eighth of full movement being lost, but the grip was strong and the disability, even so soon after the operation, was slight. There was no pain.

References.—Thomson and Miles: Manual of Surgery. DaCosta: Modern Surgery. Codman and Chase: Annals of Surgery, 1905. Von Bergmann, von Bruns, von Mikulicz: System of Surgery.

Clinical and Laboratory Notes.

A CASE OF MENINGITIS FOLLOWING LUMBAR PUNCTURE:

IRRIGATION; RECOVERY.

By C. P. SYMONDS, M.D. OXF., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN FOR NERVOUS DISEASES, GUY'S HOSPITAL.

MENINGITIS as a sequel of lumbar puncture is a rare occurrence, and it is therefore of interest and importance to record a case in which treatment by irrigation was followed by recovery.

The patient, a male aged 42, was admitted to hospital in July, 1924, for pain in the back and legs following a lumbar puncture which had been performed for purposes of diagnosis three days previously.

History.—The history was that some 15 years previously he had first noticed some weakness of the left leg. This gradually increased and spread to the left arm, where it became associated with tremor. The right limbs were subsequently involved, and the condition finally was symmetrical. He gave a history of venereal infection (gonorrhoea) in 1898—before the onset of the nervous symptoms—and of several attacks of malaria.

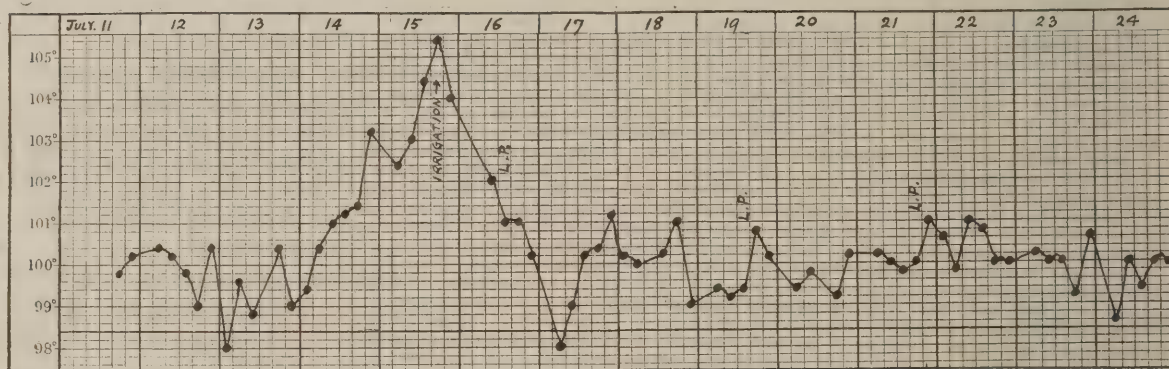
In view of the early age of onset and the history of venereal infection the suspicion was entertained that this was possibly a case of mesencephalitis syphilitica, and it was for this reason that lumbar puncture had been performed.

probably a local collection of intrathecal pus. As the man's condition appeared to be desperate, I conceived the idea of attempting to wash this out by forcible irrigation. Leaving the lumbar needle in situ, I therefore performed a cistern puncture. The fluid obtained was under pressure and slightly turbid. Leaving the cistern needle in place, I then fixed a large barrelled syringe to the lumbar needle and attempted to inject a quantity of normal saline. This at first met with obstruction. When the pressure was finally increased almost to the maximum to be obtained the patient cried out with pain, and the fluid began slowly to flow out of the syringe. At the same time a blood-stained and turbid fluid began to flow from the cistern needle. In this way 50 c.cm. of normal saline were forced from below upwards through the subarachnoid space. Towards the end of the procedure the escaping fluid, though still blood-stained, was less turbid. Subsequent investigations showed in the pus from lumbar puncture abundant staphylococci, with a pure growth of *Staph. aureus* on culture.

The chemical report upon the first specimen of cistern fluid (before irrigation) was: Protein, 0.11 per cent.; chlorides, 0.702 per cent.; about 70 cells per c.mm.—about one-third of which appear to be polymorphs. After the irrigation the temperature gradually fell and was normal on the morning of the 17th. At the same time the patient's general condition improved, and he became more rational.

Lumbar puncture was performed again on the 16th, and a drop or two of pus obtained by aspiration. The temperature rose to 101° on the evening of the 17th, but was never subsequently above 100°, while the improvement in the general condition was maintained. Signs of meningeal irritation being still present lumbar puncture and cistern puncture were both performed on the 19th. The cistern fluid was clear but contained 0.09 per cent. protein and white cells in excess. From lumbar puncture a trace of pus was obtained

Temperature Chart of a Case of Meningitis following Lumbar Puncture.



It was ascertained that the usual technique had been employed, the skin having been prepared by washing with ether and painting with picric acid. The only questionable factor was the sharpness of the lumbar puncture needle which had been used on a previous occasion.

The patient experienced no ill-effects until 48 hours after the puncture. He then felt some pain about the left iliac crest, which later increased in severity and extended to the bottom of the spine and buttocks. On the following day he had shooting pains in his legs and experienced difficulty in standing.

Condition on Admission.—When seen on admission (July 11th) he presented the typical appearance of a case of paralysis agitans, with mask-like face, characteristic rigidity, and "pill-rolling" tremors of the hands. He complained of severe pains in the regions described. The temperature (mouth) was 100° F. Kernig's sign was positive. The tendon-jerks were present and equal on the two sides. The abdominal reflexes were present and equal. No plantar responses were obtained. No abnormality of sensation was detected. There was no evidence of sepsis at or around the site of lumbar puncture.

July 12th: Temp. 100°. Patient complaining of intense pain; retention of urine; tendon-jerks present and equal. Lumbar puncture thrice attempted but no fluid obtained. 14th: Temp. 103°. Incontinence of faeces in addition to retention of urine; knee- and ankle-jerks absent. Patient delirious. 15th: Temp. 105.4°. Patient in a low muttering delirium. I saw him this day and thought him moribund. On performing lumbar puncture I obtained no fluid, but on attaching a syringe to the needle aspirated a small quantity of thick purulent material. I concluded that there was

by aspiration. A final lumbar puncture was performed on the 21st when a trace of pus was again obtained on aspiration.

Since July 15th the lower limbs had appeared to be completely paralysed. On the 23rd power began to return, on the 24th the right knee-jerk was obtained, the others being absent, as also was the left lower abdominal. The patient could lift his right heel clear of the bed, and had some movement in his toes. He complained of numbness in the legs, but no definite sensory loss was made out. He continued to improve and left hospital on August 8th at his own request. His evening temperature had then not been above 99° for four days, and his general condition was good. He still, however, had retention of urine and imperfect control over the anal sphincter. The lower limbs were weak but he was able to sit up. The tendon-jerks were absent except the right knee-jerk. He was unfortunately not seen again, but wrote three months later to say that he had recovered sufficiently to walk and was going on a sea voyage.

Commentary.

In commenting upon this case one must admit the risk, albeit extremely small, of septic meningitis as a result of lumbar puncture, even when performed under aseptic conditions by an experienced worker as in the present case. It is the same risk of sepsis which is encountered in every surgical operation. It must have been the unfortunate experience of most surgeons to have known sepsis occur in such operations, for instance, as those for hernia and varicocele. The reason would seem to be that it is impossible to

sterilise absolutely the deeper layers of the skin. In such an operation as lumbar puncture it is almost inevitable that micro-organisms from the skin will occasionally be carried into the thecal space upon the point of the needle. This risk must be considerably increased when the point is in the least blunt or irregular, or the stilette not bevelled flush with the needle. In the opinion of the writer, therefore, a needle should always be subject to careful inspection after use, and if defective in any of these ways should be sharpened before being used again.

The measure of irrigating the subarachnoid space was undertaken as a desperate remedy when the patient appeared to be in extremis. Short of open operation, forcible washing through provided the only measure of evacuating the intrathecal abscess. The risk of setting up a further extension of the meningitis was seriously considered before the procedure was adopted, but when the fluid from the cistern puncture appeared turbid the conclusion arrived at was that the whole extent of the subarachnoid space was already infected—whether, indeed, staphylococci were present in the cistern fluid is a point which was unfortunately not settled. Irrigation from above downwards was entertained, but at once dismissed as dangerous. It was realised that the fluid would have to be introduced under a pressure which, if directed towards the medulla, would have almost certainly resulted in an immediate fatality.

Whether the patient would have improved with repeated lumbar punctures without irrigation is a matter open to doubt. A review of the clinical history and temperature chart suggests that the irrigation was the deciding factor in promoting recovery, and the case is recorded in the hope that it may be of use to others who may chance to encounter such a rare and disastrous complication of lumbar puncture.

My acknowledgments are due to Dr. A. P. Beddard for permission to publish the notes of this case.

A CASE OF ACQUIRED ACHOLURIC JAUNDICE.

BY C. E. K. HERAPATH, M.C., M.D. LOND.,
ASSISTANT PHYSICIAN, BRISTOL ROYAL INFIRMARY;
AND

A. D. FRASER, M.B., CH.B. GLASG.,
PATHOLOGIST TO THE INFIRMARY.

ACHOLURIC jaundice of the acquired type is a rare disease and comparatively few cases have been treated by splenectomy; the following case may therefore be of interest.

The patient, a man aged 38, had been jaundiced for 11 years. The colour of the skin and eyes varied from time to time, and he complained of severe itching of the skin at intervals. He noticed that his stools were apparently normal in colour, whereas the urine was dark. On four occasions he had attacks of abdominal pain and vomiting accompanied by a great increase in the jaundice.

When examined he complained of weakness and shortness of breath on walking any distance. His skin was of a deep lemon colour. The spleen was greatly enlarged, the lower pole being 1 inch below the umbilicus. The liver extended 1½ inches below the costal margin. The blood Wassermann test was negative.

The result of the blood examination was: total reds, 2,000,000; total whites, 6400; reticulated reds, 14 per cent.; hæmoglobin, 45 per cent. Differential count: polymorphs, 57 per cent.; lymphocytes, 38.5 per cent.; large mononuclears, 3 per cent.; eosinophiles, 1 per cent.; myelocytes, 0.5 per cent. The red cells showed marked polychromatophilia and punctate basophilia. There was no poikilocytosis, but anisocytosis was marked, and was due to the presence of many microcytes. In a count of 200 leucocytes 10 normoblasts were noted. The fragility of the red cells was increased, hæmolysis beginning in 0.58 per cent. and being completed in 0.34 per cent. saline. The test for auto-agglutinins in the blood-serum was positive. The result of the van den Bergh test was: direct reaction negative, indirect reaction positive (15 units of bilirubin). The urine was pink in colour and contained much urobilin. The test for bilirubin was negative. The stools appeared normal, but were very dark brown in colour, and gave an intense positive reaction for bile pigments. The levulose test for hepatic insufficiency was,

positive, the result being: statim, 0.129 per cent.; ¼ hour after, 0.148 per cent.; ½ hour after, 0.157 per cent.; ¾ hour after, 0.166 per cent.; 1 hour after, 0.156 per cent.; 1½ hours after, 0.133 per cent.

The above findings—viz., non-obstructive jaundice and severe anaemia, with an increased number of reticulated red cells, together with increased fragility of the red cells—confirmed the clinical diagnosis of acholuric jaundice. The presence of auto-agglutinins in the blood-serum pointed to the fact that it was of the acquired type.

The spleen was removed by Mr. C. F. Walters on Sept. 22nd. The removal was effected without much difficulty, there being few adhesions. The liver was found to be enlarged but smooth, and no gall-stones could be detected. The spleen weighed 1200 g. and measured 23.5 by 15 by 7.5 cm. The capsule was fairly smooth, but showed two adhesions, one near the hilum and the other on the anterior surface. On section the pulp was dark red in colour, slightly soft, but not friable. Malpighian bodies could be distinctly seen but appeared smaller and more widely separated than in a normal adult spleen.

Microscopic examination showed that the venous sinuses and the lacunar blood spaces in the splenic pulp were overfilled with blood, with the result that the cells of the pulp cords were widely separated from one another. The Malpighian bodies were far apart and appeared somewhat smaller than normal. This would seem to have been the effect of general congestion and not to atrophy or necrosis, as they were normal in appearance and many showed germ centres. There was an increase in the amount of pigment present, which was found mostly in the large phagocytes lining the sinuses. There was no evidence of fibrotic changes in the capsule or connective-tissue framework, nor could any change be seen in the walls of the blood-vessels. These findings suggested that the increase in the size of the spleen was the response of the organ to a demand for increased activity, and not due to the direct action of any toxic agent.

The recovery after operation was uneventful, except that he had a temperature of 101° F. and complained of abdominal pain on the eighth day. However, enemas completely relieved him. The results of a blood examination on this day were: total reds, 3,900,000; total whites, 29,580; reticulated reds, 0.4 per cent.; hæmoglobin, 60 per cent. Differential count: polymorphs, 91 per cent.; lymphocytes, 3.5 per cent.; large mononuclears, 4.5 per cent.; basophiles, 1 per cent. The red cells showed slight inequality in size. There was no polychromatophilia or punctate basophilia, and no nucleated reds were seen. The fragility of the red cells was the same as before operation and the auto-agglutination test was still positive. The van den Bergh indirect reaction showed 2.5 units of bilirubin. Urobilinuria was still present but was not marked. On the ninth day the patient was clinically free from jaundice. The van den Bergh indirect reaction showed 1.25 units of bilirubin and the urine a trace of urobilin. On the tenth day the van den Bergh indirect reaction showed 0.5 units of bilirubin, and urobilinuria was absent. On the thirteenth day the levulose test for hepatic insufficiency was found to be negative. The same result was obtained two weeks later.

Twenty-nine days after operation the patient had put on 13 lb. weight. The blood examination on this day was: total reds, 4,960,000; total whites, 8750; hæmoglobin, 90 per cent. Differential count: polymorphs, 46 per cent.; lymphocytes, 51 per cent.; large mononuclears, 1 per cent.; eosinophiles, 2 per cent. There were no abnormal red cells, and the auto-agglutination test was negative. Two weeks later the red cells had reached 5,200,000 and the hæmoglobin was 90 per cent., the polymorphs being 51 per cent. and lymphocytes 39 per cent. The auto-agglutination test was again negative but the increased fragility of the red cells remained. On Dec. 29th the red count was 5,760,000 and the hæmoglobin 100 per cent. The fragility test was about the same as before operation, hæmolysis beginning in 0.58 per cent. and being complete in 0.32 per cent. saline.

Commentary.

There would appear to have been two factors at work in this case: (1) the increased fragility of the red blood cells, and (2) the presence of auto-agglutinins in the blood-serum. The former remained after removal of the spleen which is in accordance with the findings of others; the latter, the auto-agglutinins, disappeared after splenectomy, which suggests that these abnormal substances may have been produced in the spleen. The complete disappearance of symptoms after splenectomy has been found in both congenital and acquired cases, but in this case it has been shown that the hepatic efficiency has been restored by the operation. It is possible that the overwork of the liver in the excessive excretion of bilirubin has damaged the efficiency of the liver cells, and that the return to normal is due to the rest after the excessive hæmolysis has been stopped.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this Section was held on Feb. 13th, Sir ARNOLD LAWSON, the President of the Section, being in the chair.

The late Sir Anderson Critchett.

The PRESIDENT made sympathetic reference to the recent death of Sir Anderson Critchett, and paid a high tribute to him as a distinguished ophthalmologist, as a colleague, and as an English gentleman, declaring that in those privileged to enjoy his intimate friendship he inspired a feeling stronger than mere high regard. Mr. Ernest Clarke, as a friend of 40 years, seconded the vote of condolence with Lady Critchett and the members of the family, and it was carried in silence by members rising in their places.

Etiology of Miners' Nystagmus.

Dr. T. L. LLEWELLYN, in a general review of this subject, exemplified by charts, graphs, tables, and photographs, said he regarded miners' nystagmus as an occupational disease of the general nervous system, one of gradual onset, and chiefly affecting workers at the coal-face. However, 25 per cent. of all men employed underground showed, on being examined, signs of the disease. The incidence of certified cases had shown a sharp rise since the inclusion of miners' nystagmus in the Schedule of Industrial Diseases, and particularly since the broadening of the definition in 1913, and the difficult economic conditions of the post-war period. He contended that the chief factor in the production of the disease was the *deficient illumination* of the coal-mine on account of the low candle-power of the lamps used and the absorption of light by the coal. The collier was, he said, a skilled workman, but he was required to do accurate work in a poor light. It appeared that the more the collier had to use his pick the more likely was he to develop the disease. Delay in dark adaptation and an increased retinal susceptibility were frequent symptoms. The general influence of light was shown by the facts that the condition was more prevalent in winter, the symptoms came on after dark, and the recovery-rate was greatest in summer. There was proportionally more of the disease in urban than in rural districts, and more among men working some seams than among others. Depth of the workings and the thickness of seams were not such important factors as the age of the workman, the character of the shale, and the amount of attention which the worker paid to his disease.

The Personal Factor.

Dr. Llewellyn regarded the personal factor in the disease as a very important one, for men suffering from illness due to accident or other cause very frequently attributed their incapacity to the nystagmus which they had had while working for years. The development of a neurosis helped men to escape from their uncongenial surroundings. Most cases of miners' nystagmus did not appear to have any neurosis; in a second group the disease was well marked and there were neurotic symptoms, while in a third class the dominant condition was neurosis and the nystagmus was slight or indefinite. This neurosis had no special characteristics, and its treatment was the same as for other neuroses. The provision of suitable work helped the recovery-rate, and improved the rate of incidence. Idleness among subjects of the disease resulted in such deterioration as to render the patients unemployable.

Results of Working in Dim Lights.

Prof. J. S. HALDANE said it was now clearly established that miners' nystagmus was brought about by using the eyes for the guidance of muscular movement when the absolute differences in luminosity

of the objects seen were very low. Acuity of vision began to fall off seriously with low illuminations, and it might be sufficiently low to prevent white objects being distinguished from black ones, however large. Even with very moderate illumination, acuity of vision was much greater in the centre than at the periphery of the visual field. In foveal vision with sufficient luminosity the impression of consciousness of an object on which the eye was fixed was a lasting one; but with very low luminosity foveal vision lost its lasting character. A result of the impossibility of fixing the eye on the object was that the eye wandered about, picking the object up only momentarily with the fovea, then losing it again. The fatigue thus induced, the speaker considered, was the origin of the ultimate disturbance in ocular coördination which constituted miners' nystagmus. In mines where the men used oil cap-lamps there were no cases of nystagmus. The illumination required to prevent nystagmus was that which would permit lasting foveal vision, and so of fixation on the objects seen. Mr. Pooley had shown that the tendency to nystagmus was not dependent on defects of accommodation, but might depend largely on variations in the threshold for lasting foveal vision. In conclusion, Prof. Haldane said he did not consider that nystagmus was due in any way to the gases present in coal-mines.

The Quality of Illumination in Mines.

Mr. H. S. ELWORTHY (Ebbw Vale, Mon.) said that when investigating the cause of nystagmus he was much impressed by the blackness of the coal-mines, and he thought that illumination could best be increased by putting in light colours, which would reflect more light into the eyes of the miner. By better illumination he did not necessarily mean greater candle-power. If what he termed the "chromophotic index" was over 500 he believed there would be no nystagmus. When an oil lamp was taken into a mine, its candle-power was diminished as the yellow and orange rays disappeared, leaving a bluish-white light. On the lamp being again brought into the fresh air these yellow rays reappeared. Blue and violet rays were the most irritating to the eyes, and when objects of these colours were looked at for any considerable time they tended to disappear. It was recognised that the eyes needed to be protected from ultra-violet rays, otherwise damage to them might result. Exhaustion of the visual purple by those rays might well explain the eye movements in nystagmus, as the eyes avoided any continual fixing of these rays on any one part. Though the Ceag and Oldham lamps had a greater candle-power in a mine than an oil lamp, their light was of a worse quality than that of the oil lamps they replaced. Steam coal reflected twice as much blue as did house or anthracite coal, and among workers at the former nystagmus was much the more common. The carbon filament lamp produced an excellent light for the purpose and could be regarded as ideal. What was being aimed at was a filtering glass which would reduce the blue to 5 or 6 per cent. It was agreed that, from the point of view of the prevention of nystagmus, a light of 0.9 candle-power was required in order to be within the margin of safety. In the Ebbw Vale group of collieries, with 4600 men underground, there were 42 cases of nystagmus in 1914, while 10 years later there were only 7, and the only change which had been made in the equipment of the miners in the interval was the substitution of a yellow glass for the clear crystal. Mr. Elworthy said that when wages were high there were fewer cases of nystagmus—e.g., in 1917 there were only three instances among 5000 men. At the present time a man was financially better off by claiming the 35s. weekly compensation than by working three days a week. Given a correct glass and a sufficient light, he thought nystagmus would not occur at all.

The Compensation Factor.

Prof. E. L. COLLIS exhibited diagrams to show that the supposed recent increase in the incidence of miners'

nystagmus was not a real one. There had been an increase in the number of claims for compensation for the disease, which was, in his view, a combination of a physical symptom with underlying neurasthenia. Oscillation of the eyeballs was present without causing inconvenience in from 20 to 30 per cent. of miners working with poor illumination. In Belgium, payment of compensation on account of nystagmus was not continued longer than six months. In this country there was no time-limit, and the increase in the claims for compensation had been much greater since 1913, the year in which the Third Schedule included compensation for "a disease known as miners' nystagmus, whether the symptom of oscillation of the eyeballs be present or not." The weekly compensation figure had been increased from 20s. to 35s. He contended that the figures showed that when the economic life of the mining industry was unhealthy, the psychology of those employed in it became unhealthy too, and that then a certain number of latent cases from the potential reserves became manifest. It was the neurasthenic factor which was of urgent importance.

Mr. BINNS, representing a colliery owner's insurance company, said he believed many men were certified as having miners' nystagmus who had not that condition, the reason being that not all certifying surgeons were experts in regard to that disease. An appeal against such a diagnosis was made in 32 out of 428 claims, and in only 4 of the 32 was the appeal not sustained. Canary-coloured glasses for the miners had been found to be very useful, but it was not to be expected that they would produce an immediate cure. He expressed the hope that the profession would find a cure, so that a man suffering from nystagmus could be sent to hospital and return healthy. It was very difficult to find work on the surface for all the sufferers from miners' nystagmus.

Mr. G. H. POOLEY (Sheffield) spoke on the personal factor in the aetiology of this disease, dividing this factor into that in the observer and that in the person observed. The right attitude for the observer was to examine the whole of the men working in a particular mine, and as far as possible, under the actual conditions in which they did their work, and so ascertaining what percentage of the men showed nystagmus, and to what degree. He had recently been testing vision in an extremely dim light, working with as little as 0.00006 candle-power. The normal eye could still detect colour with this, the visual acuity being $1/72$ of the normal. A relative central scotoma was experienced, the object looked at rapidly becoming dim, though on the temporal side was a point at which the visual acuity was greater than at the point of fixation. There was, under these conditions, much flickering and fatigue, and a moving object was seen more readily than was a stationary one. It was very difficult to prevent the eyes oscillating when working in a very dim light. With regard to the personal factor in the worker, the miner could still work, despite his having a very marked degree of oscillation. Some played cricket in quite good teams, and some had both defective vision from cataract as well as nystagmus, but they refused to apply for compensation and continued to get coal. It was to the financial advantage of the men that they should be under the compensation clauses than under the National Insurance Act. Much of the so-called "hysteria" met with in this association was really *malade imaginaire*.

The Effect of Mine Gases.

Dr. F. ROBSON remarked that the number of certified cases of miners' nystagmus was getting very large, and said that the knowledge derived from the intensive work of coal chemists helped the clinician to visualise a possible chemical relationship of coal to the neurological defects of the miner. The class of coal in connexion with which nystagmus chiefly arose was the bituminous, which contained a high percentage of volatile matter. Subjects of nystagmus might recover, but their return to the pit was marked

by a recurrence. The disease was not found in workers in other kinds of mine, but it was significant that in one ironstone mine which had a single seam of coal running through it, cases of nystagmus occurred. Owing to its volatile constituents, bituminous coal was very liable to spontaneous combustion. There was no nystagmus in the coal-fields of America and South Africa, but there was a good deal of the disease in the coal-mines of New South Wales.

Dr. MILLAIS CULPIN contended that the symptoms associated with nystagmus were psycho-neurotic, and some of them were seen in the mental cases resulting from the war. Prominent among them were anxiety neuroses—economic anxiety in the case of the miner—photophobia, and head tremors. He sought to establish a close parallel between miners' nystagmus and the so-called shell-shock in soldiers.

Dr. C. F. HARFORD supported the view put forward by Dr. Culpin, contending that the morale of cases of miners' nystagmus was defective, and there was a readiness to avail themselves of the avenue of escape from their irksome conditions of employment.

Dr. H. W. EDDISON also argued along the same line, pointing out that an accident such as a blow on the leg, or domestic grief, determined the onset of nystagmus. Some showed an acute exacerbation during examination into their condition.

Mr. H. E. MITTEN, a civil engineer in a communication which was read, stressed the constrained attitude of the men in an insufficient light, but said there was a great difference among the men. He had 7000 men working underground under his own personal supervision, and there had been among them an improvement in the incidence of nystagmus from 0.95 per cent. in 1913 to 0.56 per cent. in 1924, and this he attributed to better illumination. He considered, from much observation, that the miner who found himself affected by nystagmus should endeavour to continue active exercise by working in some capacity, for idleness was likely to aggravate the disease.

Exhibition of Cases.

Mr. LINDSAY REA showed a patient who had presented the signs of orbital tumour, but was subjected to vigorous antisyphilitic treatment and recovered $6/6$ vision in each eye.

Optic Nerve Tumours.

Mr. HUMPHREY NEAME showed a patient, aged 45, with a tumour of the optic nerve. The left pupil was displaced outwards to the extent of 2 mm., but the eye movements were full in all directions. No nasal or sinus disease was discoverable. The age of the patient rendered endothelioma likely, and he gave other reasons for this.—Mr. WILLIAMSON NOBLE showed a case of somewhat similar nature.

Mr. KENDALL exhibited a patient with angioma of retina.

SECTION OF ODONTOLOGY.

Drugs Used in Local Anæsthetics.

A MEETING of this Section was held on Feb. 23rd, Mr. J. G. TURNER, the President, in the chair.

Mr. F. N. DOUBLEDAY gave a report upon some drugs and solutions used in local anæsthetics. He said that for some time past he had concluded that sufficient attention was not paid to the character of the solutions which were used in regard to the effect which they had in causing those minor discomforts, swelling and after-pain, which had been, in his experience, the only unsatisfactory results from the use of local anæsthetics in dental practice. He had, therefore, been working on this problem for about a year, and the description of all that had been done by him and his co-workers on the subject was too long for a single contribution.

He first endeavoured to get an idea of the graphic structure of the drugs, and Prof. Gibson, of Guy's Hospital, had drawn out a table showing the graphic structure of some of the drugs in question. This was thrown on to the screen, and showed how slight a change

took place in these local anæsthetic compounds. Efforts were made to ascertain some tests for novocaine. The most reliable tests for drugs used in local anæsthesia of which he was aware were those in the second volume of Martindale's Pharmacopœia, but they were not absolute for all, and the absence of absolute tests for some drugs was a serious drawback. It was hoped to test dialysed solutions of novocaine against other drugs and examine the filtrate, but the absence of tests for the drugs precluded that. He had been dealing, however, with some important problems connected with temperature and evaporation. A local anæsthetic solution was boiled in the same manner as for a patient, and it was then put into a previously boiled syringe and allowed to become quite cold. A thermometer was kept in a tumbler of boiling water, so that the initial temperature of the thermometer should not in itself cause any alteration of the fluid in the barrel of the syringe. Screwing on to it a dummy head, the upper part of the syringe was removed with the barrel, and the bulb of the thermometer was placed into the barrel of the syringe. The result was a solution which was within a degree of body temperature. It was found that if the containing mugs which were supplied for boiling were permitted to boil furiously for a minute, or even for half that time, they would be found to contain only 2.5 c.cm. instead of the original 3 c.cm. The result of this was that, instead of injecting into the patient a solution which was practically isotonic with the fluids of the body, it was one which was unduly concentrated, and the patient had after-pain, swelling, stiffness, and discomfort. The same was true of short test-tubes. The longer a test-tube, the better, for fluid which evaporated in the boiling would re-condense on the upper part of the tube and find its way back to the bottom of it. A further matter, which was far from negligible, was the reaction of the containing glass upon the fluids; this glass should be relatively free from soda, otherwise the soda would dissolve and so affect the alkalinity or degree of acidity of the solution.

Experiments on Frogs' Hearts.

Mr. Doubleday said that much of the experimental work which had been done on the action of local anæsthetic drugs consisted in their injection either into the blood-stream or into the heart. In the former case an effect was produced differing from that following injection into connective tissue. When a drug like novocaine was injected into the tissues of the body it must first come into contact with the cells, and the manner in which that could be brought about was very interesting. In control experiments on man, he and his colleagues had done many mandibular injections upon themselves and upon others. The novocaine did not act on the central nervous system, but it was placed in the nerve trunk. One must think that the drug did come into contact directly on the protoplasm of the axis-cylinder process and inhibited its activity. The mandibular sensations were definite under local anæsthesia; there was first a tingling sensation of the lip, and if after five to ten minutes one bit on one's teeth the periodontal sensation was doughy. The sensation of the pulp was the last to go. If on attempting to extract a tooth the patient protested, a wait of ten minutes would cause this protest to disappear. This showed that the nerve-fibres passing into the mental nerve which supplied the skin of the lip must be peripheral in the nerve bundle of the inferior alveolar nerve, and that they were the first to be anæsthetised. Nearer towards the centre there must be involved the nerve-fibres of the periodontal membrane and the bone, and in the centre there must be the axis-cylinder process going to the pulp, and sensation was restored in the inverse direction. That depended on the rate of diffusion of the local anæsthetic and its linking with the axis-cylinder process.

The Psychological Human Factor.

When trying to estimate some of the finer effects upon human beings one was brought so greatly into relation with the psychological factor that it was felt

better to experiment with frogs. He described the means adopted for ascertaining the dose of novocaine normal to the frog, various strengths being injected into frogs' right legs. Care had to be taken to inject in a direction away from the spinal cord, otherwise paralysis of the whole of the sacral nerves resulted, with hemiplegia of both legs. Using a 1½ per cent. solution of novocaine and adrenalin the frog recovered from a M 5 dose in one to one and a half hours, and that was comparable to the recovery time in the human; the dose for the frog was proportionately to the human much heavier. It was found that merely exposing the frog's heart and injecting saline did not interfere with its action. A dose of M 2 novocaine and adrenalin produced on the frog's heart very slight alteration. With a M 3 dose the heart was beginning to be slowed, and the force of the ventricular contraction was lessened. With M 5 of the same mixture the heart continued to beat at first with very little change, but later there were signs that the auricular contraction was beginning to fail. Fifteen minutes later there was found to be a great and progressing inhibition of the heart's action. It was necessary to do the dissections with care, otherwise the loss of blood would, of itself, cause some definite heart failure. The conclusion arrived at was that novocaine and adrenalin injections had a definitely depressive action on the frog's heart.

He next set out to determine whether the effects just referred to were due to the novocaine or to the adrenalin. Therefore novocaine alone was injected, and the heart beats dropped from 31 to 20, but it could not be said that the heart was seriously affected; M 5 of 1 in 50,000 adrenalin alone produced a slowing of the heart, the force of the ventricular contraction being reduced. With 1 in 20,000 solution there was a more definite slowing of the heart, with failure of its auricular contractions. Still, he had never seen a patient seriously ill from the injection of adrenalin alone, though he had on occasion used large doses of it; and the fact that it produced a quicker action of the anæsthetic and gave a deeper anæsthesia made it a very suitable drug for certain operations. He tried to find, however, whether there was a more suitable drug with which to combine adrenalin so as to minimise the effects which had been found to be due to it.

The Action of Caffeine and of Strychnine.

He tried caffeine in combination with novocaine and adrenalin and found that it failed to prevent their depressive effects, and it appeared to have no beneficial effect on the heart. Strychnine had been much recommended and widely used as a supposed antidote to novocaine and adrenalin, but he found in his experiments that it was powerless to stop threatened heart failure. Under an injection of M 5 novocaine and adrenalin with atropine the heart was seen to be contracting vigorously, hence his conclusion was that atropine was by far the best drug to combine with novocaine and adrenalin in order to prevent the effects of adrenalin poisoning. But a great objection to the use of atropine, from the dentist's standpoint, was that it caused a paralysis of the secretory function of the salivary glands, so resulting in a very dry mouth; indeed, this was so marked that it was deliberately used for operation in which this dryness was sought after. Prof. Pembury had suggested to him that the patient's discomfort from this dryness could be mitigated by giving him a little glycerine and rose water for the mouth until the restoration of the secretory function.

In the frogs used the best place for the injections appeared to be the muscles of the back; then one was sure of getting absorption into the connective tissue, and not into the blood-stream or the lymphatic spaces. He showed, by means of coloured fluids, the path of the fluids after injection, and, by micro-photographs, the distortion of muscle-fibres by the forcible introduction of the injecting needle. There were also thrown on to the screen numerous photographs of blood-films taken after injection, and of sections of kidneys. Clinical results he said he hoped to bring

forward, with further experimental data, in a future communication.

Discussion.

Mr. F. ST. J. STEADMAN praised this piece of work, and said he could confirm the results set out by careful observation on human patients. Of the definite action of adrenalin on the heart he had full evidence. If three "E" tablets (equalling 1/400th of a grain) of adrenalin were given, the patient nearly always complained of throbbing in the head and general illness four or five hours after the injection. This could be avoided by reducing the dose. He also felt strongly that the character of the glass used had much to do with the quality of the solution used. He thought the difference in the time for induction of anaesthesia was not always due to inaccurate injecting; there was the factor of personal idiosyncrasy. In some, the anaesthesia might pass off even before the completion of the operation.

Dr. ALEXANDER LIVINGSTONE expressed the hope that this valuable research would be continued, and the results so far obtained largely disseminated. He did not think the frog an ideal animal on which to base conclusions for guidance in the case of the human subject, and considered that it was desirable to regard the time factor in the frog as 1/16th that of the human. He asked whether the various experiments were performed under, as far as ascertainable, identical physical conditions, such as temperature, humidity, the presence or absence of draughts. It was clear that the dangerous drug in the series used was adrenalin.

Mr. COLIN KEAY asked whether potassium sulphate had been tried in place of Ringer's solution, as some workers claimed that it doubled the potency of the novocaine. Before the war the Germans suggested about 1/2 per cent. sodium chloride and 0.4 per cent. potassium sulphate being used, and claimed that this brought the potency of novocaine practically to that of cocaine. He thought more research along these lines would be valuable.

Reply.

Mr. DOUBLEDAY, in reply, repeated his conviction that in patients who showed susceptibility to novocaine poisoning the bad effect was due to the adrenalin, but in the dosages used by dentists he did not think it constituted a harmful factor. He could not solve the cause of delayed anaesthesia which some patients showed. He thought that in the case of a cold-blooded animal like the frog it easily acclimatised itself to the ordinary physical conditions of the laboratory. It had been suggested that acid sodium phosphate might be added to the anaesthetic solution so as to increase its hypotonicity.

A large number of tracings, graphs, and tables, as well as specimens of experimented frogs, supported the thesis, and the paper was preceded by elaborate experiments on the subject. A cordial vote of thanks to Mr. Doubleday for his contribution was accorded, on the motion of the PRESIDENT.

CHELSEA CLINICAL SOCIETY.

A MEETING of this Society was held at St. George's Hospital on Feb. 17th, Dr. GORDON LANE, the President, in the chair.

Sir THOMAS PARKINSON opened a discussion on

Diseases of the Climacteric in Both Sexes.

He drew attention to the changes that accompanied this period of life in men. Many men at this time of life showed changes in arterial tension with or without renal changes. He pointed out the uselessness of attempting to reduce the blood pressure in these cases by means of drugs, and said that alteration in the surroundings of the man, with lessened diet and rest in bed, were the chief assets in securing relief. In the female the flushings seen at the

climacteric were, he thought, due to the loss of ovarian secretion, and this loss upset the action of the thyroid and adrenals. At this period of life in both sexes the endocrine organs were very erratic. He considered the upset of the normal mental condition was due, in many cases, to the thyroid. The cause of the excessive headaches was possibly due to affections of the pituitary gland. It was most important that men should be treated before definite changes had been established in the vascular system. He thought that people of both sexes ate far too much at all periods of life, and that such excess was most harmful at this period of life.

Mr. A. RALPH THOMPSON put the age of the climacteric as from about 55 to 63 in the male. He showed that sepsis was more common in the male sex than in the female at about this time of life, and that the chief septic changes were associated with gangrenous or necrotic processes. With regard to the occurrence of growths of the bladder at this period of life, he thought that the practical side of this question was very different from that described in the textbooks. He also drew attention to the comparatively early age at which enlargement of the prostate gland gave rise to symptoms. He operated upon this condition, not so much for the mechanical obstruction that it produced, but because the enlargement so frequently led to disease of the kidney, especially of the nature of chronic interstitial nephritis. In his opinion, the general rule with regard to growth of the prostate should be the same as that occurring in other organs of the body, and he said that he had had several cases where malignant disease was found that had not been anticipated when the enlargement of the prostate was first diagnosed. He thought that to wait for fixity and irregularity of the large prostate was to put off any adequate treatment until too late, as these were symptoms of involvement of other organs.

The speaker then commented on certain clinical facts he had observed in connexion with cases of cancer of different parts of the body. He had noted the curious absence of bloom from the complexion of the face in cases of malignant disease, which he compared with the absence of bloom observed on the leaves of plants grown under calcium-free conditions. In his experience, the thyroid was enlarged in not a few cases. He gave figures showing that in malignant cases the thyroid was, on an average, of greater capacity by 6 c.cm. in malignant than in non-malignant cases of death. Some of the thyroids in malignant disease that had come under his view were very large. Acting on these observations he had been used to prescribe calcium and thyroid, and he gave an interesting account of some cases of inoperable carcinoma of the bladder, in which some success had been seen after this treatment. In some cases weight had been put on by the patients so treated. He concluded by bringing forward some cases in whom it appeared that the prostate gland might exert some influence upon the question of malignant disease in its neighbourhood. He thought cancer was a deficiency disease.

Dr. THEODORE HYSLOP pointed out that many men exhibited psychical symptoms at about the age of 50, and he thought that this was associated with the periodical holding up of uric acid in the system. He advocated saline purges for this condition with diaphoresis.

The PRESIDENT drew attention to the possibility of the patient having started life in a wrong manner. These initial errors were emphasised as the patient grew older. He agreed with Sir Thomas Parkinson about the diet being too great in many cases. He mentioned, in particular, arterio-sclerosis, chronic nephritis, and glycosuria as being the common diseases of this period of life.

Dr. ERNEST YOUNG, Mr. IVOR BACK, and Dr. ERIC PRITCHARD also addressed the meeting, and Sir THOMAS PARKINSON and Mr. THOMPSON briefly replied.

LISTERIAN SOCIETY.

A MEETING of this Society was held at King's College Hospital on Feb. 18th, Mr. C. P. G. WAKELEY being in the chair.

Dr. WATTS EDEN delivered a lecture on *Puerperal Sepsis in Relation to its Mortality and Preventive Treatment.*

Dr. Eden stated that during the last 13 years the general rate of puerperal mortality showed only a very inconsiderable improvement. There were three lines of defence: (1) Antenatal work; (2) efficient conduct of labour; and (3) early diagnosis and proper management of all cases of puerperal fever. With regard to the first, if this was efficiently done, vaginal examination after the commencement of labour in a straightforward case would seldom be necessary. It was regarded as an established fact that when puerperal sepsis occurred the cause was to be found, in the great majority of cases, in failure to achieve a surgically clean technique, the infection occurring during and not after labour. Referring to the "handy woman," so often called in by the poorer classes, the speaker said they were a definite source of sepsis to the lying-in woman, and until practitioners refused to work with such women the same conditions would exist. Notification of the disease had become a complete failure, and one eminent authority had gone so far as to say that in his district only 4 to 5 per cent. of cases were notified. This state of affairs was due to (1) uncertainty of diagnosis in the early stages; (2) reluctance of the doctor to expose his case; and (3) inadequate hospital provision for treatment.

In answering certain questions after the lecture Dr. Eden said that the vulva should always be shaved before applying forceps, but for a normal labour clipping the hair and applying iodine was sufficient. He did not recommend a rectal examination in place of a vaginal during labour, as this would be opening up another source of contamination.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Manchester on Jan. 16th, when Prof. A. DONALD, the retiring President, gave his valedictory address on the

Uterus as a Centre of Toxins and Irritative Products. Referring briefly to the toxæmias of pregnancy and of the puerperium, he said there were two conditions which were of special importance—namely, toxic liquor amnii and toxic lochia. He quoted a case of acute urticaria which was undoubtedly due to changes in the liquor amnii, and also referred to some cases of acute toxæmia coming on about the twelfth day of the puerperium, which were due to the accumulation of toxic lochia in a flabby uterus, the cavity of which was below the level of the cervix. There were cases, he thought, in which these toxic elements, produced during abortion or confinement, might persist for a long time afterwards, and referred to a case of acute eczema which occurred some months after an abortion and which resisted all treatment until the uterus was curetted and then rapidly and permanently vanished. These toxins, he believed, might in many cases affect the heart functionally and also the nervous system, and might play a part in causing rheumatic affections. Their origin was not only in the contents of the uterus, but sometimes in its substance. They were undoubted indications that fibroid tumours of the uterus were associated with a toxic condition in the patient. This was most noticeable when a fibroid was undergoing rapid diminution at the menopause. There seemed to be disintegration of the growth and absorption of the products into the general system, and this was attended by palpitation, profuse sweating, loss of flesh, and cachexia.

The cases he had referred to occurred mostly in parous women, but he believed that they were some-

times seen in nulliparæ and virgins. Under irritative products he included cases in which the effects seemed to be purely local. Sometimes these cases seemed to be the result of bacterial invasion and sometimes they seemed to be due entirely to chemical irritation, but it was not always easy to distinguish between them. The so-called senile vaginitis, and especially the cases associated with senile endometritis and pyometra, seemed to be caused by bacterial invasion. Pruritus was another condition which might be due to the same cause, but it also occurred in single women. In the latter case it seemed to be often due to irritative elements in the menstrual discharge or to an irritating leucorrhœa. Another condition which might possibly be often due to irritation was dyspareunia. In the very severe cases there was probably a nervous or even a mental element, but in the more common type he believed that a uterine discharge (which might be slight in amount) kept up a condition of local irritability. His practice was to dilate and curette in these cases, and the results had been more satisfactory than by any other method of treatment. Finally, he thought that cervical erosion was often the result of an irritating discharge from the uterine cavity. The general opinion seemed to be that it spread from below, and many seemed to think that it was most commonly caused by gonorrhœa. He thought that this cause was greatly exaggerated. The irritation might follow a confinement, but it was not uncommon in virgins. The teaching was largely that it was purely cervical in origin, but there were strong grounds for believing that it was caused by the discharge from the uterus. In all cases of cervical erosion, except where there were reasons to believe that it was the result of gonorrhœa, the cavity of the uterus should be curetted. It was not uncommon in these cases to remove by the curette large masses of glandular tissue. A condition which seemed to him to prove the irritative effect of an intra-uterine discharge was the so-called erosion of the posterior lip in cases of retroversion. The erosion was not confined to the posterior lip, as could be demonstrated by observation when the uterus was straightened by means of a vulsellum, but it was chiefly situated there because the intra-uterine discharge, owing to the position of the uterus, was obliged to flow over the posterior lip of the cervix.

Pelvic Adenomyoma.

The adjourned discussion on Dr. KENNETH V. BAILEY's paper on the Pathology of Ectopic Müllerianoma (pelvic adenomyoma), read at the meeting of the Society on Dec. 19th, 1924,¹ was then opened.

Mr. P. GOUGH thought the cell-implantation theory explained most satisfactorily many cases previously difficult to understand. He thought, however, there was still room for Cullen's mucosal theory and for the theory of development from Müllerian rests. He referred to a case he had recently seen of a tumour over the left pubic spine which became swollen and painful at each menstrual period, and at operation proved to be an adenomyoma of the round ligament. There was no evidence of any intra-pelvic disease and no hernial sac, so this tumour could not be accounted for by the implantation theory.

Mrs. BARTON HALL wondered whether retrograde menstruation was a pathological process as Dr. Bailey suggested and whether it was associated with other pathological changes, including an increase in the loss of surface epithelium. She asked why this actively invading epithelium did not embed itself in the wall of the vagina. She also asked as to the exciting cause and frequency of retrograde menstruation and if the growths described tended to become malignant.

Prof. W. E. FOTHERGILL wondered whether menstrual back flow was an isolated occurrence or took place repeatedly in certain women.

Miss M. H. F. IVENS had been able to excise localised

¹ See THE LANCET, Jan. 17th, p. 129.

uterine adenomyomata in one or two cases without removing the uterus.

Dr. DOUGAL thought that the evidence in favour of the Fallopian type of growth was not very convincing. It appeared to rest chiefly on the fact that the cells in these cases were ciliated, but the uterine cavity was also lined by ciliated epithelium, and he could not understand why menstrual hæmorrhage should be associated with the activity of tubal epithelium. Retrograde menstruation appeared to furnish the most reasonable explanation of how the implants reached the peritoneal cavity. Adenomyoma had been found in certain situations difficult to explain on this theory, but he thought that all of them could be so explained. He referred to the experiments on rabbits, successfully carried out by Victor Jacobson, proving that endometrial transplants in the peritoneal cavity were capable of active growth in the new situation. Clinical observations also supported this. The association of fibroids with adenomyoma had been frequently noted. He further referred to the confusion there was with regard to the nomenclature of this condition, and did not think Dr. Bailey had improved matters by suggesting another name. He thought the terms "endometrioma" and "endometriomyoma," suggested by Blair Bell, were the best so far.

Prof. BLAIR BELL being absent, his remarks were read by Dr. R. A. HENDRY. Prof. Blair Bell stated he had been so fortunate as to be present as a guest of the American Gynæcological Society on the historical occasion when Sampson read the first communication in which he demonstrated the endometrial character of the elements which were to be found in the ovaries in the circumstances under consideration. When Prof. Blair Bell returned home in possession of this knowledge he was able to discover endometrium in the ovaries in a case of bilateral "tarry cysts." This was the first case demonstrated and published in this country. He knew of no inherent reason why there should not be two types of ectopic gland-bearing tissue, one endometrial and the other of tubal origin, but it was only the endometriomata that had any practical or clinical interest, for menstruation could not occur in connexion with tubal glandular tissue. He thought that Dr. Bailey might be in error in describing the line of epithelium which he had illustrated on the surface of one ovary as tubal; it resembled germinal epithelium. Prof. Blair Bell held that in certain cases the "cellular spill and implantation theory" of Sampson could not apply. Endometriomyoma of the round ligament in the inguinal canal could not originate in this way. Such a tumour was congenital in nature, the endometrial tissue having been displaced by the external muscular coat of the uterus in the process of development. Prof. Blair Bell believed that endometriomata were both developmental and implantational in origin.

In his absence, Dr. HENDRY also read remarks for Dr. LEITH MURRAY, emphasising the need for keeping an open mind on the pathology, more particularly in view of the adhesions that occurred at certain sites, and the association in some cases of "adenomyoma" of the Fallopian tubes with the tubercle bacillus. Dr. Murray asked to what extent bilateral oöphorectomy influenced these ectopic growths when occurring, say, in the recto-vaginal space.

Reply.

Dr. BAILEY, in his reply, referred to mistakes made in the past as to the nature of this condition. He referred to the two views held with regard to the amount of epithelium lost from the endometrium during menstruation, and said that he believed that a considerable quantity was cast off into the uterine cavity during menstruation. The vaginal wall was often invaded to a certain extent by small nodules of growth. He had never found any trace of bacterial infection in these growths, and cultures from the chocolate fluid blood were always sterile. He had never observed a case exhibiting malignant change. He would like to emphasise that the invasion of the

ovary by the growth caused the formation of a cavity without any evidence of the formation of a cyst wall. He therefore thought that the term "tarry cyst" was wrong, and that "ovarian blood cavities" or "menstrual blood cavities of the ovary" should be substituted. The "site of rupture," he held, was merely the original site of implantation. He believed that the invading elements were deposited probably at every menstrual period in some women, but did not necessarily invade at every deposition. He also believed that retrograde menstruation was of regular occurrence and that it might be one of the great factors in the causation of dysmenorrhœa in young women.

Exhibition of Cases and Specimens.

Dr. DOUGAL showed a specimen of a very large "Tarry Cyst" of the Ovary which was removed from a married woman aged 30, who had never been pregnant. The cyst measured about 10 inches in diameter and had thin walls except where adherent to the broad ligament. Its inner surface had no definite epithelial lining, but appeared to be composed of a striated layer of fibrin-like material. Outside this the wall was composed of compressed ovarian tissue. The chief interest lay in the size of the tumour, whose contents measured about 2 pints. Tarry cysts varied much in size but were rarely larger than a tangerine. The largest one in Sampson's series of cases measured about 5 inches in diameter.

Prof. FOTHERGILL showed a *Hæmatometra* associated with absence of the vagina, double hæmatosalpinx and ovarian blood cysts removed from a young girl 11 years of age. When examined under an anæsthetic the vaginal orifice admitted only the tip of the little finger and the urethra was a mere slit. Rectal examination showed a very large uterus. At the operation it was found that the vagina was only represented by a fibrous cord.

Cases of hæmatometra associated with other developmental abnormalities were referred to by Mr. J. PHILLIPS, Dr. W. FLETCHER SHAW, Dr. HENDRY, and others.

Dr. J. W. BURNS read notes of a case of *Hydatidiform Mole and Chorio-epithelioma* from the same patient.

Dr. J. E. GEMMELL (Liverpool) was elected President of the Society for the ensuing year.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

At a meeting of this Society, held on Feb. 5th, Dr. PETER HOWIE in the chair, Prof. THEODORE SHENNAN read a paper on

Arterio-Venous Aneurysm in the Thorax.

The paper was based upon two cases in which Prof. Shennan had performed a post-mortem examination, and upon 72 other reported cases. After recalling the fact that William Hunter was the first to describe traumatic arterio-venous aneurysm and that James Syme was the first to describe spontaneous arterio-venous aneurysm, he proceeded to relate his two cases. In the first, perforation had occurred just below the azygos vein, and in the second, perforation had taken place into the right auricle just below the vena cava. The cedema, cyanosis, and distension of veins, limited to the upper part of the body, head, neck, and upper extremities, but descending lower on the back than on the front of the trunk, were then described, and the sharp contrast presented by the almost emaciated-looking lower part of the body was emphasised. In the first case a systolic bruit was heard over the situation of the aneurysm of the aorta, extending outwards from the aortic area. In the second a well-marked "bellows" murmur was heard in the aortic area. Death followed in the first case on the thirty-first day after the perforation occurred, and in the second about three weeks after the perforation. In both cases, at a post-mortem examination, well-marked syphilitic aortitis was found,

and in the second case the compression of the superior vena cava at its lower part had divided its lumen into two narrow channels.

In considering the whole subject on the basis of these two cases and the others culled from the literature, Prof. Shennan found that ten times as many males as females were affected, and chiefly between the ages of 40 and 60. A more or less definite history of syphilis was available in less than 40 per cent., but in only ten cases could syphilis be fairly reasonably excluded. The influence of a previous typhoid infection might have been important in three cases. In no case was any information given with regard to rheumatism. Seventeen cases were definitely alcoholic. A definite exciting cause of increased blood pressure was apparent in less than half the cases. In others the perforation occurred during the night, and in a considerable number the absence of strain was actually noted and commented upon. As a rule the onset of the swelling and cyanosis was stated to be sudden, but in at least six cases swelling had existed for some time before more severe symptoms developed, and this may have been the case in others. There was no pain at any time in eight cases. All, with three exceptions, suffered from severe dyspnoea, going on to orthopnoea. Perforations were found in the termination of the left innominate vein, at all parts of the superior vena cava, and in the upper part of the right auricle. The murmurs were continuous, or double or single systolic in cases in which perforation had occurred at any of these situations. In five cases there was no murmur at all. As to the swelling, it was shown that this depended more on the extent and degree of compression of the vena cava by the aneurysm than on the position of the perforation, though in some cases this was an important factor. No fewer than nine of the cases survived for a period of over two months, the duration varying from 11 weeks to 20 months, in five cases the duration being five months or over; and in one case—the only one in the series—there was apparent recovery.

The differential diagnosis from closure of the superior vena cava resulting from compression and thrombosis was not always easy, and sometimes seemed to be almost impossible. The severe oedema and cyanosis sharply limited to the upper half of the body anteriorly seemed to be more or less characteristic of varicose aneurysm, whereas in closure from compression and thrombosis such alterations might not be so extreme and did not develop so quickly because there was more opportunity for development of a collateral circulation; but the swelling in a few cases of compression had reached as high a grade as in the case of perforation. Moreover, the suddenness of development of the swelling was not absolutely pathognomonic because, occasionally, rapid thrombosis of the compressed superior vena cava—e.g., in dissecting aneurysm—might produce very similar signs. On the other hand, in Lichtheim's case of varicose aneurysm (*Deutsch. Med. Woch.*, 1905, xxxi., 207) the cyanosis and swelling developed slowly. The course of the illness was just as little diagnostic, as it might last only a few hours or many months. The venous pulsation in the neck was probably the best indication of a varicose aneurysm, but it was much more often absent than present, no doubt because of compression of the vein. As to the continuous blowing murmur which was so often described, this, as Prof. Shennan had shown, though an important sign, occurred in less than 50 per cent. of the cases, and, moreover, in a case reported by Dujardin-Beaumetz, in which there was almost complete closure of the superior vena cava resulting from compression of an aneurysm of the aorta, there was a continuous murmur. This, however, was not an important objection, because, as Prof. Shennan had already pointed out, other cases in which a similar pathological change was present showed a somewhat different murmur. One had to rest the diagnosis upon a combination of physical signs, seeing that even the absence of a murmur might not weigh greatly in the scale against the diagnosis of a varicose aneurysm.

Reviews and Notices of Books.

BACTERIOLOGY.

An Introduction to Practical Bacteriology. By T. J. MACKIE, M.D. Glasg., D.P.H. Oxf., Professor of Bacteriology, University of Edinburgh; and J. E. McCARTNEY, M.D., D.Sc. Edin., Lecturer in Bacteriology in the University. Edinburgh: E. and S. Livingstone. 1925. Pp. 297. 8s. 6d.

CURRENT bacteriological methods, including the preparation of media, the use of the microscope, staining methods, animal inoculation, and the main principles of bacteriological diagnosis are conveniently collected together in this handy volume. The methods advocated are for the most part tried and reliable ones. In certain instances the technique described does not conform to the most usual present-day bacteriological practice. For example, there is no mention of the use of boiled-blood media for the cultivation of *B. influenza*; so uncertain a criterion as mannite fermentation is recommended for the identification of the *Streptococcus faecalis*; sheep's heart extract is recommended for Wassermann antigen, and Wright's capsules for the collection of blood for the Widal test. Probably not many practising routine bacteriologists use Neisser's stain for the recognition of *B. diphtheriae*. The scope of the book is ambitious, such subjects as intracranial inoculation for the diagnosis of rabies and the diagnosis of plague infection in wild rats being included; these seem rather advanced exercises to be indicated in a book "prepared primarily for the use of students in the University of Edinburgh." Many a teacher of bacteriology feels that he has achieved much if, at the end of his course, the student can look Gram's stain in the face, firmly and without misgivings. Nevertheless, this is a useful laboratory guide and, on the whole, an exceedingly trustworthy one.

Principles of Bacteriology. Third edition. By ARTHUR A. EISENBERG, A.B., M.D., Director of Laboratories, St. John's Hospital; Pathologist to Lakewood Hospital; Serologist to St. Ann's Hospital, Cleveland, Ohio. London: Henry Kimpton. 1924. Pp. 216. 10s. 6d.

THIS little text-book is intended primarily for the use of nurses who, in America, so the author tells us in his preface, receive instruction in bacteriology during the first year of their training. The book should certainly supply all the bacteriological lore that the nurse has need of. The author seeks to assimilate both gnats and camels, and, while the nurse early in her career is enlightened by a picture of a man looking down a microscope—to show how the thing is done (Fig. 16)—by the time her course in bacteriology is ended she is expected to be sufficiently proficient to answer, for example, questions of following calibre (No. 26, p. 207): What is an amboceptor? Agglutinin? Precipitin? Bacteriolysin? Haemolysin? Phagocytosis? Opsonin? Leucocytosis? Complement? Weigert's Law? If thus is done to the nurses, what will be the lot of the Third M.B. student, such a one may well ask himself in horror! We ourselves do not find Weigert's Law easy to understand, and the index to Dr. Eisenberg's vade-mecum does not lead towards enlightenment. The contents of this book amply cover any field of bacterial knowledge which may be demanded of nurses; it is not suitable for medical students.

Handbook of Bacteriology. By JOSEPH W. BIGGER, M.D. Dub., F.R.C.P. Irel., D.P.H., Professor of Bacteriology, University of Dublin. London: Baillière, Tindall and Cox. 1925. Pp. 413. 12s. 6d.

THIS introductory text-book of bacteriology is an attempt to provide the medical student with a book that is smaller than those in current use, which,

the author complains, tend to drive him to the execrated but ever popular cram-books. We agree with Prof. Bigger that the advice to assimilate one of the standard text-books of pathology, such as "MacCullum" or "Muir," and at the same time to acquire a working knowledge of "Muir and Ritchie," is likely to suggest to the student, at the outset of his course in these important subjects, that the task set is beyond him. This little volume will, therefore, meet a definite need and is likely to have a large measure of popularity. The information conveyed is sound and sufficient and the illustrations, many of which are drawings by Dr. E. C. Smith, are good, although *B. coli* in Plate 3 looks very atypical. The author believes in teaching Ehrlich's conceptions and nomenclature of immunity, which he illustrates by rather unconventional diagrams: while we believe that nothing is lost to the student by omitting extremely hypothetical matter, which is apt to be looked upon as representative of material facts rather than as a scheme of illustration. In the section on streptococci the heat test for differentiation of the faecalis or enterococcus type is not mentioned, although it is generally agreed to be the most reliable single test available. We do not agree with Prof. Bigger's presentation of Bordet's views upon the action of the bacteriophage of d'Herelle. These, however, are minor points, and the book can confidently be recommended as accurate and adequate for the student's purpose.

OPHTHALMOLOGY.

Refraction of the Eye, including Elementary Physiological Optics. By CHARLES GOULDEN, O.B.E., M.D., F.R.C.S., Ophthalmic Surgeon to the London Hospital. London: J. and A. Churchill. 1925. With 180 illustrations. Pp. 276. 10s. 6d.

It is evident, says Sir John Parsons in his preface to this book, that a thorough knowledge of the principles of optics underlying the fundamental apparatus of vision is essential to a sound study of the subject. Mr. Goulden's book is written to supply this want, and from this point of view it will be found useful if not entirely successful. Thus an old stumbling-block for many is the difference between the principal points and the nodal points of the eyes. All books of this sort affect to explain this, but the practical significance of these mathematical abstractions is seldom rendered clear to the student weak in mathematics, and we do not find that Mr. Goulden has succeeded much better than his predecessors. On the other hand, the definitions of the angles α , γ , and κ , which have a practical importance in connexion with an apparent squint, are clear and to the point. The book, however, is by no means all mathematical, and we especially commend those parts of it which bear on the examination of patients. The chapters on ophthalmoscopy and retinoscopy are excellent. We do not remember, for instance, such a clear account elsewhere of the relative advantages of different positions of the source of light in retinoscopy for observing, on the one hand, the point of reversal, and, on the other, the band of light in astigmatism. The "scissors movement," too, a mystery to many, is well explained.

The book does not attempt to deal with the more general aspects of ophthalmic problems, such as the genesis of myopia or problems connected with binocular vision, but within its limits it is excellent. A few passages would bear revision in a second edition. On p. 130 the method of "fogging" the vision is recommended by means of either a convex or a concave glass, but surely, since the whole object of fogging is to eliminate the accommodation, the use of a concave glass is in most cases inadmissible. No doubt what is meant is, in myopic cases, to use a weaker concave glass than that which gives best vision, but this should be expressed. Again, on p. 133 the instructions for dealing with cases of anisometropia are not very intelligible, and the verbal construction is at fault. These, however, are

defects easily remedied when a new edition is called for, and we have no doubt that this opportunity will occur at an early date.

Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practitioners. Tenth edition. By GEORGE E. DE SCHWEINITZ, M.D., &c., Professor of Ophthalmology in the University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1924. With 434 illustrations and seven coloured plates. Pp. 865. 50s.

THE revised edition of de Schweinitz's well-known text-book is well up to date. It is, of course, impossible for any text-book to keep pace with all the recent contributions to the theory and technique of a subject to which hundreds of workers in all civilised countries are constantly contributing their quota, to be found in specialist journals or proceedings of specialist societies. But good efforts are here made. For example, in the section on diseases of the cornea are reproductions of Holmes Spicer's diagrams illustrating the striate clearing of corneal opacities. We are grateful for these efforts, and do not complain that in the latest text-book there is no mention of Major Herbert's latest operation for iris inclusion in glaucoma, and no account of modern methods of testing for colour blindness; but a subject which is yearly, we may say monthly, absorbing in a greater degree the attention of ophthalmologists—the microscopical examination of the living eye with the help of the slit lamp—deserves more than a passing reference. An essential condition of a useful text-book, however, is that it should be limited to reasonable bulk. A readable summary of the authoritative knowledge existing at the date of publication,—that is all that is to be expected. This we do not fail to find in Prof. de Schweinitz's book. It would add still further to its utility if more references were given to the original papers of the vast number of authorities quoted in the text, so that a student desiring to probe any particular subject could do so easily.

The style is, as a rule, lucid, but there is still room for revision. Thus on p. 91 we read that according to Landolt the interval between fixation point and blind spot is greater in hyperopic than in myopic eyes, while a few lines further on we read that according to Hansell this average distance is almost identical in emmetropia and hyperopia, but in myopia is about 5 mm. (*sic*) greater. As the position of the blind spot has previously been defined in degrees this whole statement is calculated to confuse the reader. In the figures, the print, and the general get up of the book there is nothing wanting.

WILLIAM THOMPSON SEDGWICK.

A Pioneer of Public Health. By E. O. JORDAN and others. Yale University Press. London: Humphrey Milford, Oxford University Press. 1924. Pp. 193. 18s. 6d.

THIS book is published under the Williams Memorial Publication Fund, established in 1916 by a gift made to Yale University by Dr. G. C. F. Williams. The introduction is written by Sedgwick's wife and fully commemorates one who must have been a very charming man. Sedgwick was born at West Hartford, Conn., in 1855, graduated from the Sheffield Scientific School in 1877, and entered as a medical student at Yale University in the same year. His account of the medical school at that date reads like that of a mediæval school, inasmuch as medicine was apparently entirely taught from books and lectures, and anatomy was seemingly ignored. In 1879 Sedgwick and a friend of his were appointed to two vacant Fellowships in biology at Johns Hopkins University, and in 1883 he went to the Massachusetts Institute of Technology as assistant professor of biology. In 1888 he became consulting biologist to the State Board of Health of Massachusetts, and then began his life's work in sanitary science. A list of all the important offices which he filled connected with public

health will be found on p. 116, and the good influence which he exercised in America upon the foundation of public health theory and practice is evident throughout the book. The last chapter, which deals with Sedgwick's personal characteristics, gives a lively picture of an inspiring teacher and cheerful companion.

CHEMISTRY.

Dictionary of Applied Chemistry. Vol. V. Revised and enlarged edition. By Sir EDWARD THORPE, C.B., LL.D., F.R.S. London: Longmans, Green and Co. 1924. Pp. 702. 60s.

THE fifth volume of this monumental work starts with "Oxygen" and ends with "Rye." The high level of excellence is well maintained in this volume. A number of the articles will appeal to the medical man; amongst these may be mentioned photosynthesis by Prof. E. C. Baly, an investigator whose work has claimed much attention during the last few months. Prof. G. Barger deals in a lucid and readable manner with pepsin, the pituitary body, and putrefaction bases. Mr. K. S. Murray contributes an article on oxygen and its manufacture, and Prof. Sir W. Bragg one on radiology. A remarkably interesting article extending over 50 pages on photography is written by Mr. C. W. Gamble. This issue sadly synchronises with the death of Sir Edward Thorpe.

Qualitative Chemical Analysis. Fourth edition. By H. W. SCHIMPF, Ph.G., M.D. Revised by A. I. CONE, Pharm.D., Ph.G. London: Chapman and Hall. 1924. Pp. 201. 8s. 6d.

THIS work is based on lecture notes and laboratory exercises delivered to students at the Brooklyn College of Pharmacy. The author has endeavoured to compress into a small book most of the inorganic and organic qualitative reactions that a student of pharmacy is required to know. After dealing with elementary principles the analytical reactions of the metals and acids of pharmaceutical interest receive attention. The third part of the book is concerned with qualitative organic studies, and includes tests for official alkaloids and synthetic compounds as well as other organic substances used in medicine; also schemes for the detection of poisons and the analysis of some. The method of arrangement is logical and the diction concise. The section dealing with the qualitative analysis of organic substances is especially good, and should be of use to medical and pharmaceutical students in this country.

The Constituents of Coal-Tar. By PERCY E. SPIELMANN, Ph.D., B.Sc., F.I.C. London: Longmans, Green and Co. 1924. Pp. 219. 12s. 6d.

THIS book, one of a series of monographs on industrial chemistry edited by Sir Edward Thorpe, is mainly intended for the use of chemists who are interested in the individual substances which together constitute the material known as coal-tar. Tar is generally regarded as the source of a series of fractions possessing varying commercial values, and the fact that it consists of a number of chemical entities is frequently overlooked. The bodies obtained from tar are here divided into the general classes hydrocarbons, oxygen, sulphur and nitrogen compounds, the physical constants, preparation, properties, and reactions of each being recorded. The subject-matter of the volume is admirably arranged and well printed.

SKILL IN WORK AND PLAY.

By T. H. PEAR, M.A., B.Sc., Professor of Psychology in the University of Manchester; Fellow of King's College, London. London: Methuen and Co. 1924. Pp. 107. 4s.

THE study of methods of scholastic instruction has become the elaborate science of pedagogy. Instruction in games and martial exercises has been almost equally discussed, except perhaps in its theoretical

aspect, but the methods of teaching people how to work, and even the selection of those who should teach, have been left to rule of thumb. This hindrance to industrial efficiency is being attacked by the Institute of Industrial Psychology and the Industrial Fatigue Board. Prof. Pear, more versatile than an official body, takes advantage of the peculiar phenomenon that in our country there are probably a greater number of teachers of games than of manual work, and that in some sports there is a technical language describing the muscular movements involved. He then combines the study of work and play in such manner that the swing of a golf club or of a miner's pick becomes of equal interest to the reader—provided, of course, that the latter is not biased by any predilection. The author's aim is to help those who would bring order into haphazard industrial training, and in this he succeeds. The laboratory psychologist and the student of human motives and temperament are often remote from each other; Prof. Pear combines the outlook and experience of both, and the happy result is a suggestive and useful book.

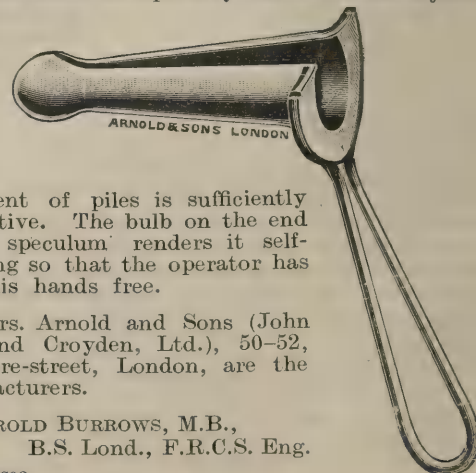
JOURNALS.

BOLETIN DEL INSTITUTO DE MEDICINA. Experimental para el Estudio y Tratamiento del Cancer. University de Buenos Aires.—The first number of this Bulletin, published August, 1924, contains two articles only, both by the Director, Dr. Angel H. Roffo, one on hydatid cysts produced experimentally in the brain and the other on the infectious sarcoma of fowls. The first article is concerned mainly with the locality and development of hydatid cysts after injection of infective material directly into the brain substance of rabbits. It brings out some points of interest, but is only remotely related to the problem of cancer. The second paper illustrates the growth of the round-celled sarcoma in fowls and its metastases. The first inoculation was made with material from another growth in the form of dry powder, and the remainder from a solution of the growth so produced in Ringer's fluid. The tumour develops very rapidly, is at its maximum in four weeks, and soon causes secondary deposits, most frequently in the lungs and liver. Both papers are copiously illustrated and the illustrations, on the whole, are good, the whole production being creditable to the University Press of Buenos Aires, from which it is issued, while its contents give ground for hoping that valuable work may be done in the future by this new experimental laboratory.

New Inventions.

AN ANAL SPECULUM.

THE accompanying illustration of a small anal speculum which is especially useful for the injection



treatment of piles is sufficiently descriptive. The bulb on the end of the speculum renders it self-retaining so that the operator has both his hands free.

Messrs. Arnold and Sons (John Bell and Croyden, Ltd.), 50-52, Wigmore-street, London, are the manufacturers.

HAROLD BURROWS, M.B.,
B.S. Lond., F.R.C.S. Eng.
Southsea.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 28, 1925.

PRESERVATIVES IN FOODS.

THE draft regulations¹ designed to give effect to the majority of the recommendations of the Departmental Committee on the Use of Preservatives and Colouring Matter in Food have been issued. Their general purport is the abolition of the use of formaldehyde, boric acid, and salicylic acid in food, and the permission of the addition of limited proportions either of sulphur dioxide and benzoic acid to certain specified articles of food, which must be labelled as containing preservatives. Colouring matter containing antimony, arsenic, cadmium, chromium, copper, mercury, lead, or zinc is forbidden, as are certain vegetable and coal-tar colours. No thickening substance, other than sugar, is to be added to cream. Representations on the draft regulations may be sent to the Ministry of Health within a period of 40 days from the date of their issue, and it may be anticipated from the controversy which has been aroused that representations will not be wanting. It is the proposed prohibition of boric acid and its compounds that will probably meet with most opposition, for it is contended by many authorities that is unnecessary and undesirable. The grounds advanced in favour of the borates are that adequate scientific evidence has not been disclosed that they are harmful when used as preservatives, while their rejection may lead to a great increase in the cost of foods hitherto so preserved, and an increase in the use of decomposed food. It is all to the good that such distinguished authorities as Sir WILLIAM POPE, Prof. F. W. TUNNICLIFFE, and Dr. ROBERT HUTCHISON have ventilated this question, since its importance is obvious, and it is highly desirable that any legislative action following this report should be based upon scientifically ascertained facts and not upon prejudice. At the same time the subject is so important to public health that it will be a pity if a controversy develops as to the merits or demerits of particular preservatives which will obscure the fundamental principles in question.

There are certain factors in the problem upon which medical men, at any rate, should be able to come to an agreement. The first of these is that the present position in regard to preservatives in food is an intolerable one, intolerable alike to the food manufacturer, the local authority, and the consumer. The former does not know where he stands and is prejudiced by unfair competition; the local authorities have no standards to guide them in taking legal action—moreover, separate actions in the court are wasteful and expensive; the consumers are, all unwittingly, obliged to consume a considerable proportion of their food mixed with chemicals which may be harmful, and as they do not know if they are there or not they cannot decline to buy such food. The second factor is that the basis of action advocated by the 1924 Departmental Committee is the only practicable one. This is the prohibition of all preservatives in foods except those definitely permitted. Prof. TUNNICLIFFE has suggested in the *Times* that legislation should follow on the lines of the

recommendations of the 1900 Committee. The form of these recommendations, however, is regarded as thoroughly unsound by many authorities on public health; it appears only to tinker with the subject. They merely recommend that particular preservatives in certain foods should be permitted and certain others should not. It is surely futile to prohibit named preservatives, since the trade chemist will always be able to find new ones to replace them. It is a conspicuous merit of the 1924 Committee report that they recognise this fact. Dr. W. SAVAGE² puts this point clearly; he says: "The attitude should be that all preservatives must be prohibited until sanctioned, and the State, as represented by its Health Ministry, should be courageous enough to make up its mind which to sanction, while being at the same time, on the one hand, always ready to withdraw its consent if the accumulated scientific data, which should be available and utilised as the result of that sanction, proves that any preservative is prejudicial, and on the other hand ready to admit the use of others which scientific evidence shows to be without detriment." A third matter on which there should be agreement is that the name of the preservative and the amount added should be declared.

Assuming that these fundamental principles are agreed upon, there remain two questions which are clearly highly controversial. The first is as to whether any drastic prohibition of preservatives will make matters worse by restricting supplies and so enhancing their cost—leading to the consumption of decomposed food, while the second is the choice of the preservatives to be put on the permitted list. It is curious the insistence with which the increased cost argument turns up whenever a public health reform is involved. The opponents of clean milk insistently plead that if milk is obtained reasonably clean it will cost much more and be prohibitive in price and the last state be worse than the first. A similar argument was raised against the use of chemical preservatives in milk. The argument fails to take into consideration that preservatives are not only added to sound perishable articles to maintain their soundness, but are frequently added to foods which can perfectly well be kept fresh sufficiently long without their addition if cleanliness is maintained in preparation and handling. These preservatives are a direct substitute for cleanliness. The more the matter is investigated the fewer appear to be the foods for which preservatives are necessary, but that there are cases for their legitimate addition is the reason for a schedule of permitted preservatives. The suggestion that the restriction of preservatives will cause more decomposed food to be eaten, and in consequence a great increase in cases of food poisoning, is based upon the view that such food is a cause of food poisoning, a conception which does not appear to have any evidence in its favour. As we pointed out last week, the large majority of cases of food poisoning are traceable to the *Salmonella* group of bacteria, and no authenticated case of food poisoning due to the consumption of decomposed food is on record.

The choice of the preservatives to be scheduled as permitted, the amounts to be allowed, and the foods in which they are to be introduced form one of the most difficult problems connected with food preservation. Borates are rejected by the recommendations of the 1924 Departmental Committee and prohibited in the draft regulations. By some authorities, however, they are advocated as preferable to sulphites which it is proposed to allow in certain foods. It must be

¹ Draft, dated Feb. 17th, 1925, of the Public Health (Preservatives, &c., in Food) Regulations, 1925, proposed to be made by the Minister of Health. H.M. Stationery Office. 2d.

² Food Poisoning and Food Infections. Cambridge University Press. 1920. P. 214.

conceded that much of the evidence so far offered is unsatisfactory. It is desirable that the evidence given to the Departmental Committee which enabled them to state "we are nevertheless convinced that the prohibition of boric acid as a food preservative in force in many countries is justified" should be made generally available. Without that evidence it is not profitable to argue the respective demerits of these two groups of preservatives. But although the exact form in which regulations should be framed is not a matter on which general agreement can be expected, the fundamental principles which guided the recommendations of the 1924 Committee must be accepted as sound, and the profession as a whole will probably find little to complain of in the way in which the Ministry of Health is setting out to attack this complicated problem.

THE FUTURE OF MEDICINE IN INDIA.

THE report of the Royal Commission on the Superior Civil Services in India, referred to as the Lee Commission, has already been summarised in these columns as far as it affected the medical services in this country.¹ According to the statement of the Under Secretary of State for India during the last session of Parliament, "no decision has yet been reached on the recommendations of the Lee Commission as to the organisation of medical services in India," and the whole matter "is still under consideration." While this state of affairs exists there is bound to be widespread discussion and criticism of the recommendations, and as the publications and pronouncements on this subject grow more abundant it becomes increasingly difficult to relegate all prejudice to the background and face both the facts of the present situation and the future in India under the reforms which have become "the law of the land." Under existing conditions the members of the medical profession working in India belong to the following groups: the Royal Army Medical Corps working with the British troops; the Indian Medical Service, working partly with the Indian troops, but for the most part employed in civil duties; graduates of the Indian universities and members of the Indian Medical Department, consisting of "assistant surgeons," formerly styled apothecaries, who hold junior posts in British hospitals; and "sub-assistant surgeons," formerly "hospital assistants," serving with the Indian troops, and not to be confused with the civil sub-assistant surgeons, who form yet another class. The Lee Commission, it will be remembered, recommended with regard to the Indian Medical Service that no attempt should be made to perpetuate that Service as at present constituted, and that the medical needs of both the British and Indian armies in India should be provided by the Royal Army Medical Corps (India), which should absorb the Indian Medical Service. With regard to the needs of the civil population, it was recommended that a Civil Medical Service should be constituted on a provincial basis, and that entrance to this service should be regulated by a competitive examination. A minimum number of British officers would be maintained in this Civil Medical Service, this number being under direct control of the Secretary of State, and in the event of the number not being obtained by the local government, officers of the Royal Army Medical Corps (India) would be seconded for service in the civil department.

The critics of the recommendations of the Lee Commission thus briefly summarised can roughly be divided into those who consider that the proposals

are too sweeping, and those who consider that they are not sweeping enough. Both sides in the discussion are bound to recognise that some change is desirable. The difficulties arising from two separate organisations, both concerned with the medical care of the troops, became apparent in the late war, when officers of the Royal Army Medical Corps and the Indian Medical Service had to work side by side. The new political outlook of India towards self-government to be reached in a gradual manner with a diminishing number of Europeans in the various civil services makes some change in the medical services an obvious necessity. From both the military and the civil points of view, therefore, some reforms are bound to take place. Major-General Sir GERALD GIFFARD, in a recent address before the East India Association,² considered that the Lee Commission had not gone far enough; he wished that the recommendations had been aimed at the closing and ending of all the medical services in India. He went on to state that "just as no country can hope to attain self-government and dominion status unless and until it can be responsible for its own law and order, and its own defence, so, in my opinion, no country can have a real medical profession until and unless it ceases to have the greatest part of its doctors in the Government services." Sir GERALD GIFFARD urges that medical education is the key to the situation. He holds that a medical college education in India should be complete in itself; that the curriculum of the existing colleges should be improved so that the degrees obtained have the approval of the General Medical Council, and that the admittedly imperfect and partial medical education of the Government medical schools—i.e., sub-assistant surgeon grade schools—should cease. He wants to see an independent medical profession properly educated and trained to carry on the work and traditions of the Indian Medical Service. The opinions expressed in the discussion which followed Sir GERALD GIFFARD's address were not entirely unfavourable to his proposals. It was agreed that there was an urgent necessity for raising the standard of the qualifications and degrees in India to the level existing in England, but at the same time there was a strong plea for the retention of the sub-assistant surgeon grade, which, although imperfectly trained, apparently does much useful work. The other side of the question is set out in a representation submitted to the Secretary of State for India by the Anglo-India Association, London, which voices the opinions of those who believe that the Lee Commission has gone too far. It is considered that from an administrative point of view the proposals raise many difficulties. Some definite unification of the military and civil medical services along the lines of the recommendation of the Verney-Lovett Committee (1919), as to the formation of an Indian Medical Corps are discussed, and the conclusions of the Esher Committee (1919-1920) are put forward to show that such an amalgamation of the two services is impracticable under existing conditions, and that therefore a continuance of the Indian Medical Service is desirable. If, however, a unification of the two services was deemed essential to any future scheme, then it is contended it should take place along the lines of the recommendations of the Medical Services Committee (Verney-Lovett, 1919) towards the formation of an Indian Medical Corps to discharge all medical duties in India, civil and military.

Between these two opposing views there is a middle course along lines suggested by the Lee Commission. From the military side the difficulty of the provision

¹ THE LANCET, 1924, i., 1114.

² Asiatic Review, January, 1925.

of an adequate reserve has been raised. This seems to be met by a minute by Sir REGINALD CRADDOCK upon certain of the conclusions of the Commission. If sufficient British medical officers are forthcoming for the proposed Civil Medical Service the problem is settled, "but if not, the Royal Army Medical Corps (India) will either be asked to increase its reserve to make up the deficiency, or the Secretary of State will have to make it good by special recruitment and on terms which will ensure the supply." The scheme for the provision of a Royal Army Medical Corps (India) was proposed and elaborated by Sir CHARLES BURTHAELL, late Director of the Medical Services, and from the military side this force will practically be the Indian Medical Service in another form without, it may be hoped, the old jealousies and frictions. Sir PATRICK HEHIR, writing in *THE LANCET* (1924, ii., 633), stated that "it may confidently be expected that a good number of well-qualified young men of the home medical schools desiring an Indian career will join this service with a view to obtaining professional work in the provinces, and when political opinion has settled down they will have a full and useful life." So much for the military side; from the civil point of view it has been strongly urged that all European members of the services in India have a right to attention by European doctors. This is met by the Lee Commission, who recommend the grouping of the districts of a province so that a British medical officer (civil or military) is posted to one station in each group with special arrangements for Europeans at any distance from the station. Any objections to the Lee Commission's proposals on this point are therefore without foundation. Pending any decision on the recommendations a limited number of European officers are being recruited for the Indian Medical Service on special terms. The dangers of considering this service as a permanent career by Europeans are obvious enough, but it does not follow that these temporary posts, which are being offered in attractive terms, will fail to give valuable experience to a man who is prepared to go abroad for a period at any rate before settling in consulting or general practice. The new policy in India is directed towards the progressive realisation of responsible government. The progress is bound to be slow and gradual, and it seems logical that the changes in the medical services should also be slow and gradual. If the general standard of medical education in India is to be raised, it will be some years before there is a body of adequately trained Indian medical practitioners to take part in the Indianisation of the medical services; but that this will ultimately result in medical as well as other services is regarded as inevitable by those familiar with the political outlook in that country.

SOME GREAT NAMES IN FRENCH MEDICINE.

IN the history of a nation one finds but a small place assigned to medical discoverers and discoveries. Prof. René Cruchet, of Bordeaux, in a lecture delivered to the Institut Français du Royaume Uni on Feb. 20th, commented on this and explained it as being due not to ingratitude on the part of the historian, but to the fact that a doctor's skill did not outlive the body it was practised on, and thus his work had of necessity an impermanent quality which was not shared with the products of the sculptor, the writer, or the artist. Prof. Cruchet gave an interesting summary of the development of the healing art from its earliest beginnings in France. It was in 1220 that the first French Faculty of Medicine at Montpellier was officially recognised by Cardinal Conrad, and

although, as Prof. Cruchet himself pointed out, France has contributed less to medicine itself than she has to the other arts and sciences, from that time onwards she has produced a succession of great medical men. The earliest great name in French medicine is that of Guy de Chauliac, the father of French surgery, who in 1363 published a book on Surgery which for four centuries was a bible for his successors in that craft. Chauliac operated on hernias, removed cataracts, and advocated extension in the treatment of a fractured femur. Under the influence of Guy de Chauliac the Montpellier Faculty of Medicine remained pre-eminent during the fifteenth century, a century which was harassed by epidemics of plague, typhus, "ergot gangrene," and leprosy. From 1376, by royal edict, the professors of that school were permitted to hold practical demonstrations in anatomy on the dead bodies of criminals. It was not until 1498 that the same privilege was accorded to the Faculty of Paris.

About 1540 Vesalius published his work on the Structure of the Human Body after several years' study at Montpellier. There he had as his teacher one Rondelet, who, if he have no other claim to immortality, has been pictured for ever in the character of Rondibilis by Rabelais, who was his pupil. Among the friends and pupils of Rondelet was a group of men, Platter, Lobel, Delécluse, and Bauhin, whom Linnaeus called the fathers of botany, and who were the forerunners of the genius of Boerhaave. The sixteenth century may be called the century of contagious diseases, and among the names of those physicians of that date are Houllier, Frenel, physician to Henry II., and William Vaillau, who helped to differentiate various types of epidemic fever. Vaillau, in particular, separated small-pox from measles, and left a graphic record of the characteristic symptoms of the onset of the latter disease. He also gave the first description in 1578 of whooping-cough, which he called Tussis quinta or quintana. But the outstanding figure of the sixteenth century is Ambroise Paré (1517-1590), of Laval, who laid the foundation of modern surgery. While according due homage to the teachers of the old world, he nevertheless was imbued with the new spirit of learning, which so marked the renaissance. The century of Louis XIV., the seventeenth, had no distinguished name in French medicine, for the whole art in France was overshadowed by the works of Harvey and Sydenham in England, but it would not be fair to take Molière's estimate of contemporary medicine as altogether a just one. In 1651 Jean Pecquet discovered the lymphatic circulation, and a little later Mauriceau wrote a treatise on Obstetrics, which may be considered as the first valuable work which had appeared on this subject. In the eighteenth century medicine broke away from the dogmatic conceptions which had dominated it in the preceding 100 years. The great scientific movement had begun which was going to transform the whole of man's outlook towards the body. Two names stand out, those of Théophile de Borde and De Barthez, who were forerunners in France of the return to the Hippocratic spirit of clinical observation.

With the nineteenth century biology became a science, and in turn was forged into a weapon for the fight against disease. Bichat (1771-1802), inspired by Borde, first described the different kinds of animal tissues, and following him came the period of experimental medicine, the discovery of physiological functions, the work of Magendie and Claude Bernard. Claude Bernard studied the action of poisons on living tissues and concluded that diseases acted on the body as poisons, but at the time of his death in 1878, Pasteur had already shown by inoculation that anthrax was caused by the anthrax bacillus. This was the beginning of the microbic theory of disease. Physics and chemistry also paid their tribute to medicine in the hands of Duchenne and Mme. Curie. How many of the great names of nineteenth century medicine in France are familiar to us? Baudelocque in obstetrics, Laënnec, Trousseau, and Charcot in

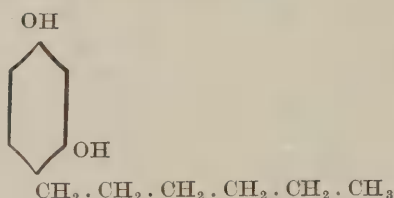
medicine, Dupuytren, Nélaton, and Terrier in surgery, Pinel and Esquirol the pioneers of the humane treatment of the insane, among others. Of our own medical leaders, one doubts if the list of familiar names would be much longer. Medicine triumphs in the present, for as Dr. Cruchet says, it is a living thing, and cares little about its own ancestry.

Annotations.

"Ne quid nimis."

HEXYL RESORCINOL AS A URINARY ANTISEPTIC.

URINARY infections, particularly pyelitis, provide one of the most trying problems in treatment. The majority of those who have to deal with them are willing to acknowledge that this field of therapy admits of wide improvement. Up to the present no drug administered by the mouth can be relied on to cure a chronic pyelitis, still less a chronic pyelonephritis, and the topical application of lavage is admittedly of limited usefulness. For this reason the announcement of the discovery of a new urinary antiseptic of great potency by a worker in Johns Hopkins University, Baltimore, has aroused interest. The drug referred to is "Hexyl Resorcinol," having the formula—



An account of the properties of the drug was given towards the end of last year by Veader Leonard.¹ The starting-point of Leonard's investigations was the synthesis of certain of the lower homologues of a series of alkyl resorcinols by Johnson² and his co-workers in 1913. It was found that the successive addition of carbon atoms to the alkyl chain was followed by a pronounced increase in bactericidal properties, and a coincident diminution in toxicity to experimental animals. Hexyl resorcinol is claimed to fulfil all the experimental qualifications of the ideal urinary antiseptic—viz., it is chemically stable, non-toxic, and non-irritating to the urinary tract, it has an antiseptic action in high dilutions in urine of any reaction, and is eliminated in high percentage by the kidney. In addition it is said to be actively bactericidal. It is found, however, that in human urine the drug is not infrequently secreted as a conjugate, and that this leads to a loss of the bactericidal action in the urine. Nevertheless, even in patients who apparently conjugate hexyl resorcinol very completely, the difficulty can be got over by regular administration over several consecutive days. One other point seems of importance—viz., that the simultaneous exhibition of sodium bicarbonate also destroys the bactericidal properties of the urine, not apparently because it makes the urine alkaline, but perhaps because it in some way facilitates the complete conjugation of the drug. It is disappointing, and detracts considerably from the interest and value of the paper that no clinical results are given by Leonard. He does sum up generally results of treatment in human patients, but no detailed account is presented. He claims that all the coccal infections of the urinary tract

clear up rapidly under hexyl resorcinol and without any other treatment. In coliform infections when the bacterial count is low, his drug is efficacious; when the count is high, disinfection is not obtained without adjuvant local treatment, and even then persistent treatment is necessary. And when the infection has spread below the surface of the mucous membrane the treatment is of no avail at all. Frank Kidd⁴ has pointed out, and none will gainsay him, that of all renal infections probably about 70 per cent. are coliform. He reports 140 cases of pyelitis in which 117 were infected by *Bacillus coli*. It is just the infections by coliforms which Leonard admits are least influenced by hexyl resorcinol, and his remarks on his results in coli infections might really have been written by any other writer about any other urinary antiseptic. Doubtless in the laboratory hexyl resorcinol is a powerful bactericide and an admirable antiseptic, but the human body is not a glass test-tube on a laboratory bench. The usual problem confronting the surgeon in these cases is that of a patient who has had a *Bacillus coli* pyelitis for a long time; nothing has so far brought about any improvement, and the patient grows tired of the whole business. Hexyl resorcinol may help here, and it should certainly be tried, for while the author does not claim that it is the last word in the treatment of all urinary infections, he does put forward strong claims for serious experimental trial.

AN INTERESTING RETROSPECT.⁵

George Sterling Ryerson, who has just published an interesting account of his strenuous life, came of an old Dutch family which first settled in New Amsterdam, the New York of to-day, in 1647. During the Revolution of 1775 the family were divided, and on the conclusion of peace the Loyalist members migrated to Canada. The writer of the book now before us was born in 1858 (p. 20) or 1855 (p. 32), being the only child of his father's third wife. He studied medicine in Toronto, Edinburgh, and Paris, and later in Austria and Germany, so that when he started practice in Toronto in 1880 he had an unusually cosmopolitan outlook. He served as a youthful private in the Queen's Own Rifles in the Fenian Raid, and as a surgeon with the Royal Grenadiers during the North-West Rebellion of 1885. In 1892 he gained a seat in the Ontario Legislature, and in the same year began his long struggle for the reform of the Militia Medical Service. In 1895 he organised the St. John Ambulance Association in Canada, and in 1896 established a branch of the Red Cross in Canada. For all his services in ambulance and army medical service work we must refer readers to the book itself, as well as for his accounts of the Boer War and the late war. In this latter struggle he not only gave his own work, but he also lost his son, killed at St. Julien, and his wife in the torpedoing of the *Lusitania*. The book is a record of good work unassumingly performed; but it is marred by errors which might easily have been corrected. The author says on p. 100 that the Order of St. John of Jerusalem was founded by Peter the Hermit at Jerusalem in 1030, having its origin "in the necessity for medical aid during the Crusades." Now the first Crusade started in 1095. It is true that there was a hospital in Jerusalem dedicated to St. John the Almoner, Patriarch of Alexandria, founded sometime before the recovery of the Holy Land by Godfrey, but Peter the Hermit did not visit the Holy Land until about 1094. After Godfrey had captured Jerusalem the dedication of the hospital was changed from St. John the Almoner to St. John Baptist and the society was organised as an Order in 1118. The curious thing is that Dr. Ryerson gives as his authority for his

¹ Journal of Urology, 1924, xii., 585-610.

² Johnson and Hodge: Jour. American Chem. Soc., 1913, xxxv., 529.

³ Johnson and Lane: Ibid., 1921, xliii., 348.

⁴ Kidd, F.: Common Infections of the Kidneys, Oxford University Press. P. 14.

⁵ Looking Backward. By Major-General G. S. Ryerson, M.D., C.M., Canadian Army Medical Services. Toronto: The Ryerson Press, 1924. Pp. 263. \$2.50.

statement Bedford and Holbeche's Order of St. John of Jerusalem, which says nothing about Peter the Hermit. Those who wish to investigate further will find an account of the rise of the hospital and Order in the *Evagatorium* of Felix Fabri, vol. ii., pp. 246 and 274 of Hassler's edition, 1843. Dr. Ryerson's memory has misled him when on p. 129 he speaks of Granada Cathedral being Gothic. As a matter of fact the building is a weak example of Græco-Roman style and the *trascoro*—i.e., the west end of the choir—is in the peculiarly offensive style known as churrigueresque, from the architect Churriguera. The Capilla de los Reyes, however, is Gothic. The presence of such errors should not deter anyone from reading this book, which is full of interesting matter.

THE CONTROL OF HOOKWORM DISEASE.

FOR the last four years an American Commission has been at work in the West Indies and South America on the essential problems of hookworm control and possible eradication. During this time many valuable investigations have been undertaken, and over 33 reports on the work accomplished have been published in the *American Journal of Hygiene*. The thirty-fourth report, which has recently appeared, and summarises the previous ones, is by Dr. W. W. Cort, who is well known as one of the most active workers in this branch of medicine, while he has also been responsible for formulating the general scheme of prevention and research. One detects in this report no unwarranted claim that the problem of hookworm prevention has been finally solved; indeed, the opinion is expressed that further intensive researches by numerous investigators are still necessary before a complete knowledge of the life-cycle of the ankylostome is obtained and the prevention of the disease thereby placed on an entirely satisfactory scientific basis. Dr. Cort and his colleagues have especially concerned themselves with the practical sanitary aspects of the problem. They have endeavoured to ascertain the complete story of the cycle of the larval ankylostome in the soil up to the point when it is capable of reinfecting man. The part played by domestic animals, especially fowls and pigs, in the dissemination of the disease has received especial attention, and a new species of hookworm has been discovered in the pig. Up till comparatively recently it has been considered that larvae in infected faeces could be exterminated by being buried deeply in the soil; unfortunately, however, this idea has proved to be fallacious; the larvae are able to migrate in a vertical direction from great depths in the soil, especially when it is of a sandy or loamy character.

The outstanding difficulty in the prophylaxis of hookworm disease in a primitive community is really a question of administration, discipline, and education. The natural habits of the people have become so deeply ingrained that it is impossible to change them in a short space of time, and undoubtedly it is this factor which has hitherto proved to be the stumbling-block of every well-organised attempt at hookworm eradication. The prevention of promiscuous defæcation in suitable soil cannot be accomplished, and it is now known that such soil remains infective for a considerable length of time. This difficulty existed in the former European outbreaks of ankylostomiasis, and it is therefore no matter of surprise that in South America it is no easier to solve. The thirty-fourth report of the Rockefeller Commission marks the end of its labours in the West Indies, but certain lines of investigation, which are indicated, continue to receive the attention of various workers. The reward of the Commission's labours may at present appear to be a small one, as the professed object has not been entirely attained, but we have no doubt that largely as a result of the Rockefeller work it eventually will be. From the economic point of view hookworm disease has, during the last 50 years, caused practi-

cally incalculable economic loss, though the remedy appears to be so simple. It is a matter solely of simple sanitation and one capable of achievement if only the sufferers can be induced to realise the importance of rudimentary hygiene. But who is there who will point a finger at the habits of the American "poor white" or ignorant negro when there exist in our own enlightened country evils almost as gross, in the shape of "privy middens" and "stable dumps," which are still permitted to exist in the centre of some of our larger towns.

THE FELLOWSHIP OF THE ROYAL SOCIETY.

ALL the names recommended for election to the Fellowship of the Royal Society are of moment to those who are watching the progress of modern medicine, since practically all the sciences have been enlisted in its service. Especial interest, however, attaches to the choice, year by year, of Fellows from among those who are devoting their lives to the direct study of the structure and function, whether normal or pathological, of the human body, and of the diseases to which it is liable. Physiology is honoured this year in the person of Dr. C. Lovatt Evans, professor of physiology at St. Bartholomew's Hospital Medical College, whose work on the hydrogen-ion concentration of body fluids and on the utilisation of sugar by the heart has had a profound bearing on our knowledge of pathological processes. The dry bones of anatomy have been given fresh life by the comparative researches of Dr. F. Wood Jones, professor of anatomy at the University of Adelaide, who has made clear the phylogenetic history of many human organs. Dr. E. Mellanby, professor of pharmacology at Sheffield, is known chiefly for his exhaustive experimental researches into the aetiology of rickets; the whole science of dietetics has been profoundly influenced by his work. Dr. J. A. Murray, director of the Imperial Cancer Research Fund, worthily represents pathology in the list. For 20 years he has been engaged in initiating, organising, and consolidating the experimental study of cancer, and it is due largely to the high tradition inspired by his unobtrusive work that the laboratories of the Fund have acquired fame. We offer cordial congratulations to the recipients of a coveted honour.

TREATMENT OF GONORRHOEA BY CATAPHORESIS.

THE cataphoretic application of colloidal silver in the treatment of gonorrhœa was discussed over a year ago at the War Section of the Royal Society of Medicine,¹ when Major A. T. Frost reported on the promising results he had obtained by this method in some 107 cases. Since then a considerable amount of research has been carried out on the microscopical study of the behaviour of the gonococci and leucocytes under the electric currents—a line of research which was suggested by Sir William Leishman—and at a recent meeting of the War Section Major Frost demonstrated the outcome of this work and described in detail the treatment at present used by those who are investigating the cataphoretic method. Many disappointments have been experienced, but the system of treatment for anterior urethritis which is at present employed has achieved a high percentage of cures.

The method as described by Major Frost is as follows: The patient, on entry, is treated with daily vaccine injections, 5, 10, 15, or more millions, with a daily increase, but not to the extent of developing a negative phase. When he undergoes the cataphoretic treatment the patient is seated on an electrode, a square of copper gauze, wired

¹ THE LANCET, 1923, ii., 1134.

to the circuit, and shaped to fit the perineum very accurately, covered with lint which has been well boiled in distilled water to wash out any electrolyte; to this lint is connected the 1-inch bandage, also well boiled in distilled water, with which the penis is carefully bandaged. The urethra is washed out, first, with 0.2 per cent. lime-water, to dissolve away the mucus, then with distilled water, to remove electrolyte, and then into the bladder is injected some 200 c.cm. of chemically prepared silver colloid, made with trebly distilled (pH 5) water, and made alkaline (pH 7 or 8) with NaOH solution, 0.13 g. to the litre. A glass nozzle is adjusted to the meatus; it carries within it a platinum electrode. The urethra is filled with the silver colloid solution, but instead of an alkali, gonococcus endotoxin, the equivalent of half-a-million gonococci to the cubic centimetre is introduced. Through this system is passed a current (which must not cause pain), probably of 90 to 100 volts, and 2 milliamperes.

For the first ten minutes the lower pad is negative, and the pole in the nozzle positive. The gonococci are attracted out of the tissues along with the leucocytes, and they adhere to the positive pole, from which they may be recovered and microscopically identified later. The colloid is attracted to the negative pole, that is, into the tissues, which it permeates to a depth of 1 mm. or even 2 mm. After ten minutes the current is reversed, and for the next ten minutes the colloid is changed by the hydroxyl ions streaming out of the tissues. The change in pH and the lessened specific gravity of the solution kill the gonococci, and cause the leucocytes to swell. The destroyed gonococci and cells now try to push their way into the tissues, where, being dead, they are thought to raise immunity. This treatment is repeated daily for two or three days.

The interest of this method lies in its direct attack on the gonococcus, the cause of the trouble. It is conceivable that this method of direct attack may prove useful in other diseases, and we await with interest the publication at length of this paper in the journal of the Society, with a full account of the necessary safeguards.

HUMAN MILK IN COMMERCE.

A WELL-KNOWN student of pathology recently produced for analysis what seemed to be a singularly original dream. He had dreamed that, along with an enterprising friend, he had engaged in the manufacture of cheeses, and had put upon the market a small flat article which at once took the fancy of the cheese-eating public and sold in prodigious numbers. He and his collaborator left a life of studious penury for one of affluent ease, constantly cheered by the sight of their cheeses in every shop window. But at the height of their prosperity the pages of the daily press explained to horrified millions that the cheeselets so dear to them were made from human milk; public opinion was revolted and the makers had to fly the country. The meaning and interpretation of which may be left to the psychologists. But it is worth the notice of the telepathists that this dream was dreamed just about the time when the *Journal of the American Medical Association* was printing in Chicago a most interesting article by Dr. B. R. Hoobler, of Detroit, on the commercial production and distribution of human milk in that city, where, as THE LANCET mentioned lately, every nurse has her own bathroom. For the past ten years in connexion with the bureau of wet-nurses an organisation has existed there for collecting and distributing human milk. Carefully selected mothers supply clean milk to the bureau at a flat rate of 10 cents an ounce; in 1923, 63,722 ounces were so supplied, and mothers have earned as much as £700 in one lactating period. The milk is disposed of partly to patients who pay from 30 to 10 cents an ounce, to institutions who pay 8 cents, and to poor patients who pay nothing; the supply is normally greater than the demand, and the excess each day is distributed free of charge to

hospitals caring for sick and premature infants. The turnover is about £2000 a year, and the organisation occupies quarters in the Women's Hospital and Infants' Home, of which it is an integral part. There is, of course, no panacea for the many idiosyncrasies of babies who quarrel with their food, but this sort of provision must necessarily do much useful work in getting a certain number of infants over the rough places which they meet so often, and it is little remarkable to read at the end of Dr. Hoobler's account that electrical milking machines are to be installed.

A SUPRACLAVICULAR PROTUBERANCE IN PLETHORA.

Two years ago Prof. C. Trunczek, of Prague, published his theory of vascular hypertension, according to which all cases of this condition may be attributed to one of two primary changes, either a diminution of the vascular capacity or an increase in the quantity of blood. In the first case the contraction of the peripheral arteries causes anæmia of the skin, and hence hypertension; in the second variety, on the other hand, the increased vascular content causes distension of the vessels, especially of the capillaries and veins, which results in turgescences of the skin and numerous membranes. Prof. Trunczek now draws attention¹ to an anatomical peculiarity in this second variety which, from its constant and obvious presence, furnishes a characteristic symptom of plethora. Normally, the clavicle forms a slight prominence and the supraclavicular fossa, more marked in children and young adults, tends to diminish and gradually disappear with increasing years. Some individuals in this region show, in place of a fossa, a manifest protuberance which, in many instances, rises very markedly above the upper border of the clavicle. At the same time, the skin and visible mucous membranes are hyperæmic and turgid, the arterial pulsation hard and full, the veins and capillaries distended like the arteries, which usually appear normal in structure and feel. The area of hepatic and splenic dullness is enlarged, the number of blood corpuscles increased, and the blood pressure high. The complex of these symptoms constitutes the clinical picture of plethora, and the supraclavicular prominence is a feature of plethora. When it is small, it appears as a round or oblong mass, and when more pronounced has the form of a swelling, flat-topped and often unequal on the two sides; smooth, soft, elastic, and mobile. Percussion over the protuberance gives a dull note, and this characteristic distinguishes it from the bilateral prominences often met with in cases of pulmonary emphysema, the plethoric swelling being formed of turgid and dilated veins and capillaries which, in the supraclavicular triangle, are only feebly protected by soft tissues. The supraclavicular protuberance is of considerable importance in the diagnosis of plethora, since it is the most prominent symptom of excessive fullness of the vascular system; it has, moreover, the advantage of being easily recognisable, while other pathognomonic symptoms of this condition, although not less certain, require for their recognition much more time and clinical experience. It is also a valuable symptom for prognosis and treatment. It is a fact that in some patients who have the supraclavicular swelling the arteries are soft and the plethora not extreme, but when these same patients are seized with some acute disease, such as pneumonia or pleurisy, they are in real peril owing to the excessive quantity of blood in the pulmonary vessels and danger of acute pulmonary cedema. In such cases the excrescence, Prof. Trunczek holds, is an infallible sign which indicates the danger and points to an efficacious treatment. With the object of lessening the quantity of pulmonary blood as swiftly as possible, nothing is more efficacious than a copious bleeding, which,

¹ La Riforma Medica, Nov. 10th, 1924, vol. xi.

however, would be dangerous in patients with arterio-sclerosis, on account of the cerebral anæmia it may produce. It is therefore safer, according to Prof. Trunczek, to apply cupping glasses over the chest, which procedure, although abstracting a smaller quantity of blood in comparison with phlebotomy, has the advantage of drawing the blood in the lungs directly towards the surface, the veins and capillaries of the thoracic wall being in direct communication with the pulmonary vessels. The supraclavicular swelling may be seen to become smaller under this treatment, as it does when cachexia supervenes in such patients, in which case, on the other hand, it is of unfavourable prognosis. The supraclavicular protuberance often occurs during various chronic diseases, such as obesity, nephritis, alcoholism, and especially arterio-sclerosis, but in whatever malady it develops it constitutes a sign that the vascular system contains too much blood. A similar condition has been observed by H. Senator in splenomegalic erythrocythæmia, Vaquez disease, in which the protuberance is generally more marked on the right side. In the hypertension associated with narrowing of the smaller arteries, even when in an advanced stage, the supraclavicular prominence is not, as a rule, present. In plethora it must be considered as a phenomenon having as its object the restitution of the equilibrium the organism has lost by reason of the excess of blood in the vessels and the accumulation of it in a harmless position, Nature thus sparing regions more active and more important.

PROGRESS IN COMBATING VENEREAL DISEASE.

A JOINT deputation of the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease will be received by the Minister of Health on March 3rd. The object of the deputation is to urge the Minister to give effect to the recommendation of Lord Trevethin's Committee "that the law should be altered so as to permit properly qualified chemists to sell ad hoc disinfectants, provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority." Sir Auckland Geddes will head the deputation. In this connexion the Ninth Annual Report of the National Council for Combating Venereal Diseases, which covers the period June 1st, 1923, to May 31st, 1924, deserves careful reading. Opening with a warm tribute to the work of Sir Malcolm Morris, who devoted his time and abilities during the last years of his life to promoting the N.C.V.D., it is shown how for the past ten years the Council has entered into an intensive campaign in furtherance of treatment for those infected with venereal disease and has been engaged in enlightening the public on the need for those who have been exposed to the risk of infection seeking and continuing treatment until all danger is passed. Efforts have also been made to secure a broader outlook from parents and teachers towards problems of sex, that the rising generation may obtain clear and simple teaching on the facts of life, and great endeavours have been made to give practical effect to the Trevethin Report. In spite of the limited powers of local authorities to incur expense on public health propaganda progress has been made here by arranging public health campaigns in which the subject of venereal disease is dealt with as a part of a programme which includes such subjects as infant welfare and tuberculosis, and the National Council equipment may be used for this purpose on the payment of a small fee. The international aspect of the Council's work is proved by the success of the Colonial Commissions which were despatched in 1920,¹ for proposals have now been made that similar travelling bodies of experts should visit the Provincial and State Governments of India, Egypt, and certain of the Mandated territories. There are

now 18 countries represented on the Union Internationale, and the Minister of Health has appointed Colonel L. W. Harrison to attend as an observer at the meetings of the Union for the purpose of giving information on technical matters. Statistics show that venereal diseases in this country are on the decrease. The total number of new cases in England and Wales presenting themselves for treatment at the official treatment centres in 1920 amounted to 105,185, while by 1923 they had fallen to 73,613. The syphilis cases have fallen from 42,805 in 1920 to 23,927 in 1923, and the gonorrhœa from 40,284 to 30,902. While there seems to be some evidence that many who expose themselves to the risk of infection seek early advice—over 17,000 people not suffering from venereal diseases presented themselves at the clinics—it is unsatisfactory to note that there is a grave discrepancy between the number of women and men coming under medical care. In countries where a comprehensive following-up system has been found possible there is no such discrepancy, and presumably a large number of married women in this country who are suffering from gonorrhœa are unaware of their condition and are not receiving treatment. It may be noted that the fall in the syphilis figures in this country corresponds with a similar fall in other countries where facilities for treatment are provided. The Report is published at 102, Dean-street, Oxford-street, London, W. 1.

LOCAL ANÆSTHETICS.

THE use of local anæsthesia in dentistry in this country far outrivals its use in surgery, though there are signs that surgeons are becoming more alive to its advantages. In the majority of dental cases, at any rate, the operator can be assured of a satisfactory loss of sensation. There are, however, certain minor disadvantages, such as after-pain, swelling of the tissues, and toxic symptoms, which occur sufficiently often to detract somewhat from the value of this method from the patient's point of view. The toxic symptoms are of varying degree, sometimes serious but more often only unpleasant. It goes without saying that a competent knowledge of the anatomy of the fifth nerve and of the technique of injection is a qualification essential to every dentist who performs a local or, still more, a regional injection. While the chief element in local anæsthesia is the anæsthetic drug used, it is becoming widely recognised that the vehicle in which the drug is given and the presence of adrenalin, which is generally combined with the anæsthetic, are factors of great importance. Moreover, the pharmacology of the whole solution must be taken into consideration. The paper read by Mr. F. N. Doubleday before the Odontological Section of the Royal Society of Medicine on Feb. 23rd, which is reported on p. 437 of this issue of THE LANCET, is one of the most important contributions to the science of local anæsthesia which has been made in this country. It represents a large amount of original research and embodies findings of great interest. Mr. Doubleday's work was chiefly carried out on frogs and appears to cover almost the whole range of the subject. There has been much discussion on the toxicity of the various drugs employed. Experiments to determine the lethal dose of the different anæsthetics have shown that cocaine, though the most potent, is also the most toxic. The dose used in dental operations is not generally one which should be dangerous even though cocaine be used, although fatal accidents have happened and toxic symptoms of a disquieting nature have often occurred. Since it is the invariable rule to use adrenalin in order to limit the extent of anæsthesia as well as to intensify its action, it has been argued that the toxic symptoms may well be due to the adrenalin rather than to the cocaine or novocaine. Mr. Doubleday found that an anæsthetic dose of either novocaine or cocaine without adrenalin did not appear to have any effect on the action of the heart

¹ See THE LANCET, 1920, ii., 1276.

over many hours. A large number of cardiac tracings were shown which proved this point. But if adrenalin to the amount of 5 minims of a 1 in 50,000 solution was added, the effect on the heart's action was remarkable; action became slower and diminished in intensity until there was a failure of auricular contraction. Some experiments were carried out to ascertain whether it was possible to add a cardiac stimulant to the solution to counteract the depressing effect of the adrenalin. Neither caffeine nor strychnine had any effect. The addition of atropine, however, completely overcame the effect of the adrenalin, so that the action of the heart after injection was hardly affected. It is generally taught that the medium in which the anæsthetic is dissolved should be isotonic with the blood, and it is customary to dissolve the drug in Ringer's solution; but in order to ensure sterility of the solution it is desirable to boil it, and this must destroy the isotonicity. It is probable that the solution as injected is usually hypertonic. Mr. Doubleday showed by means of blood-films the crenation of the corpuscles that follows a hypertonic injection, and he suggests that such an injection may be one cause of after-pain. He recommends as a solution 50 per cent. of Ringer with an equal amount of tap-water. He finds that this solution is isotonic after boiling. This difficulty might be overcome by using ampoules of prepared solution, but there is the disadvantage that the solution would then have to be used cold; and experiments on frogs seem to suggest that a solution at body temperature causes less discomfort than a cold solution. In making a mandibular injection it is regarded as important to avoid injecting the solution into the internal pterygoid muscle, since this also is supposed to be a cause of after-pain. There would seem to be good grounds for this belief. Mr. Doubleday showed slides of muscle into which an injection had been made; the effect of the injection was to cause separation of the muscle-fibres and this might well account for the pain which sometimes follows a mandibular injection. In Mr. Doubleday's experiments the injections were made into connective tissue and not direct into the venous system. As he pointed out, in dental injections the needle is passed into connective tissue and only by accident into a vein. The absorption must be less rapid under these conditions, and these experiments therefore conform more to the actual practice of local anæsthesia in dentistry than experiments which have been made on the effects of adrenalin and other drugs by direct injection into the blood-stream. It would be unsafe to apply Mr. Doubleday's findings on a cold-blooded animal like the frog directly to such different conditions as obtain in man; yet the thoroughness with which they have been carried out, and the wide range they cover, renders his contribution highly suggestive for further research.

SECRET REMEDIES FOR FOOT-AND-MOUTH DISEASE.

THE Minister of Agriculture was asked recently in the House of Commons whether his attention had been called to Dr. John Shaw's remedy for foot-and-mouth disease which had been tried in this and other countries and proved successful; and if not, whether he would give immediate instructions to his department for an official test. Mr. E. Wood replied: "I am aware of claims made in regard to the efficacy of Dr. Shaw's remedy, and I have decided that this particular remedy shall be tested officially." We believe that the composition of the remedy in question is secret and that it has also been advocated by Dr. Shaw not only as a preventive and cure for foot-and-mouth disease in animals, but also for other diseases—e.g., influenza, for which it was originally devised. It is called by its author a "serum" and is administered parenterally. There appears to be no *a priori* reason for testing this remedy in preference to the other thousand and more proprietary medicaments which

are continually being pressed on the notice of the official veterinary service by more or less interested advocates. The alleged trials abroad of this particular "cure" have never been substantiated by reports of properly controlled experiments. It so happens, however, that an experiment has already been carried out in this country by a farmer who subjected his stock to prophylactic inoculation with Dr. Shaw's "serum," but nevertheless experienced an outbreak of foot-and-mouth disease among the same cattle eight days later. Any reasons which may exist for expending the time of the staff of the Ministry of Agriculture in testing this remedy do not appear to be supported by veterinary or other scientific evidence in favour of its claims. It seems rather that the Ministry must have yielded to the importunate pressure of ill-advised agriculturists who, dreading the disease, have been induced by high-sounding promises to turn their attention in this unprofitable direction. Now that serious scientific investigation of foot-and-mouth disease has been set on foot in this country and that there is a good prospect of the whole question of prevention being investigated from a broad and scientific point of view, it is unfortunate that delays should be introduced and recourse had to guesswork. It must be remembered that effective trial of this or similar secret remedies must inevitably hinder the serious research work now in progress. Members of the medical profession are usually well aware of the ethical disadvantages and almost invariably futile nature of secret remedies, and are therefore able to sympathise with the troubles of their veterinary brethren in this respect.

WE are happy to record a continued improvement in the condition of His Majesty the King. It is understood that no further bulletins will be issued.

WE regret to announce the death at Salcombe, Devon, at the age of 79, of Sir Thomas Edward Thorpe, Fellow and former Vice-President of the Royal Society, a past President of the Chemical Society, and famous all over the world through the Dictionary of Applied Chemistry.

FROM Ireland comes the news of the death of two leaders of the profession, Dr. George Sigerson, professor of biology in University College, Dublin, and Dr. Alfred Smith, who was professor of midwifery in the same College.

THERE will be a contested election in the representation of the Faculty of Medicine on the Senate of the University of London, and Sir G. Lenthal Cheatle, who is standing as a candidate, has circulated the reasons why he considers that there should be opposition to the sitting member, Sir Holburt Waring. Those reasons are based on Sir Holburt Waring's favourable attitude towards the recommendations in the Haldane Report. Sir Lenthal Cheatle objected to the concentration of the University on the Bloomsbury site, and to any changes in the Faculty of Medicine which might place all the medical schools, save those becoming "constituent colleges," in a disadvantageous position. Further, the circumstances in which a new degree in Pharmacy has been created are considered by Sir Lenthal Cheatle to be derogatory to the Faculty of Medicine, and in his circular he pledges himself, first, to oppose the Haldane recommendations root and branch, and, secondly, to support the authority of the Faculty of Medicine on every occasion. He is nominated by Mr. Victor Bonney, Sir Charlton Briscoe, Mr. Herbert Clogg, Sir Thomas Crisp English, Mr. Percy Legg, Dr. Willoughby Lyle, Sir Humphry Rolleston, Dr. Arthur Whitfield, and Sir Almroth Wright. The election takes place in the University of London at 5 P.M. on Tuesday next, March 3rd.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXI.—LOBAR PNEUMONIA.

In the treatment of a self-limited disease such as lobar pneumonia, the nursing and general management of the case are of greater importance than the exhibition of drugs. At present, however, the help which is afforded by drugs in the symptomatic treatment of the disease is apt to be somewhat underestimated, in part no doubt due to a healthy reaction from the days of the so-called "heroic" treatment by blistering, bleeding, tartar emetic, &c., and in part due to the search for purely specific remedies, such as anti-sera or vaccines. Treatment by specific anti-sera is effective only against infections with the pneumococcus belonging to Group No. 1, and since these constitute only some 33 per cent. of all cases, it is obvious that, in the treatment of the majority of cases, we must depend on general or symptomatic measures.

The researches published in recent years from the Rockefeller Institute have shown that virulent strains of the pneumococcus can be recovered frequently from the mouth and throat of cases convalescent from pneumonia, and from those in attendance upon or in contact with them, whereas they can be recovered only rarely from non-contacts. The possibility that pneumonia can be disseminated by carriers should therefore be kept in mind and a careful prophylaxis instituted. The patient should be isolated in a room by himself and visitors prohibited. Particular attention should be paid to the frequent cleansing and disinfection of the mouth. The throats of all contacts should be swabbed, and if pneumococci are found, appropriate disinfectants, such as liquor thymolis diluted 1 in 10, prescribed. Sputum should be expectorated into a sputum cup containing 1 in 20 carbolic acid, or into paper handkerchiefs which can be burnt. After convalescence the room should be thoroughly disinfected, and the bedding sterilised, as in the case of any other infectious disease.

The room should be thoroughly well-ventilated and kept at a moderate temperature of 60-65° F. Nursing in the open air in this country does not seem advisable, more especially in elderly or debilitated patients. The initial rigor of pneumonia has so impressed the lay mind with the idea that the disease is due to chill that most patients are made unnecessarily uncomfortable by an excess of both bed-clothes and underclothes. A light flannel jacket, opening down the front, is ample, and allows the necessary examination of the patient without discomfort or fatigue. After the diagnosis has been made the patient should be disturbed as little as possible by physical examination. The heart and front of the chest can be examined without causing any discomfort. He should be allowed to assume the position in which he is most comfortable, but, if very ill, the position should be changed from time to time to avoid congestion of the bases. Even if the temperature is not unduly high, tepid sponging twice a day, if skilfully carried out, is comforting. When the temperature exceeds 103° F., tepid or cold sponging is repeated more frequently, and where the range of temperature is still higher, and there is danger of hyperpyrexia, sponging with iced water and the application of cold compresses to the thorax and abdomen should be carried out.

At the commencement of the disease the bowels should be thoroughly evacuated by calomel, gr. ii. to iii., followed by a morning saline aperient. Throughout the course of the disease constipation must be avoided by the regular use of salines or other aperients. In many cases abdominal distension

is a distressing symptom, which is best relieved by the use of turpentine stupes, turpentine enemata, and the passage of a rectal tube. Where the distension is severe, small doses of pituitrin ($\frac{1}{2}$ c.cm. hypodermically) are useful.

The diet should consist mostly of milk and semi-fluid foods, such as arrowroot, cornflour, or the various prepared foods; fruit juices; custard; junket; soft-boiled eggs. Two or three ounces of sugar in the 24 hours is a valuable addition to the diet, and can be given as lactose in the farinaceous foods or as glucose in the fluids. In children especially good plain chocolate is a convenient method of giving glucose. Home-made lemonade, prepared from fresh lemons and sweetened with glucose, is a palatable beverage, of which the patient should be encouraged to take two or three pints in the 24 hours in order to promote an efficient action of the kidneys. For the first 48 hours fluids only—milk, lemonade, beef-tea, fruit juices—should be given.

Relief of Pain and Cough.

The relief of pain and the procuring of rest and sleep are two of the most important principles in the treatment. For the relief of the pleuritic pain, linseed poultices, renewed every two or three hours, are effective, but when skilled nursing is not available the frequent changing of the poultices may cause considerable disturbance of the patient. The weight of the poultice, too, is a disadvantage, and in children especially may add seriously to the already embarrassed breathing. Antiphlogistine is therefore preferable, since it is equally effective in alleviating the pain, it is readily applied, and it does not require to be renewed oftener than once in 24 hours. The very painful, frequent, non-productive cough of the early stage of the disease should be controlled by a sedative linctus, or a preparation such as glycoheroin, 1 drachm repeated as necessary. Many patients are allowed to become exhausted from lack of sleep, due to the frequent warnings against the use of morphia in this disease. The milder hypnotics, such as bromide, chloral hydrate, &c., may be tried, but they are generally ineffective, and opium or morphia in some form is necessary. Dover's powder in 10-grain doses is frequently successful, but if it fails, morphia, gr. $\frac{1}{4}$, combined with atropine, gr. 1/120, should be used hypodermically. In the later stages, where the toxæmia is very great and where there are signs of impending respiratory or cardiac failure, morphia is, of course, contra-indicated, but in the earlier stages lack of sleep is more dangerous than the use of opium.

Drugs have probably no effect in modifying the course of the disease, though it is customary to prescribe a simple diaphoretic mixture, such as one containing pot. cit., gr. x. to xx., liquor ammon. acetat., $\mathfrak{z}$ i. to ii., syrup aurantii, $\mathfrak{M}$ xx., aqua ad $\mathfrak{z}$ ss. A combination of pot. iod. and creosote had a considerable reputation for a time, but many patients find the creosote nauseating, and it is very liable to upset the digestion. In view of the dense consolidation of the lung, it is difficult to see how drugs belonging to the expectorant group can have any beneficial effect.

Conservation of an Efficient Circulation.

In spite of the negative findings from the pathological side, most clinicians are agreed that, in fatal cases of pneumonia, the issue is decided in the greater number by failure of the cardiovascular system, either from right-sided cardiac failure or from failure of the blood-pressure-regulating mechanism, or from both, and for these reasons the main object of treatment is to conserve and promote by every possible means an efficient circulation. As pointed out by Levy,¹ aside from structural changes, the three factors which throw an added burden on the heart are (1) the impairment of the circulation in the pneumonic lung; (2) toxæmia; (3) anoxæmia.

¹ Levy, R. L.: Archives of Internal Medicine, vol. xxxii., p. 359.

Careful watch should be kept for signs of right-sided failure—e.g., an increasing cyanosis, weakening of the second pulmonic sound, slight venous stasis in the vessels of the neck, cedema of the lung bases, or a fall in the tension of the pulse and of the blood pressure. Digitalis is the most generally useful drug, and it should be used early before the signs of circulatory failure are present. Tincture of digitalis may be added to the diaphoretic mixture, or preferably given separately in 5 to 7 minim doses three times a day from the onset of the disease, increased to 10 to 15 minims, according to the necessities of the case. In cases of known cardiac disease, the larger doses are used from the onset; where cardiac failure is severe, digitalin gr. 1/100 should be used hypodermically or intramuscularly. Strophanthin gr. 1/100 may also be used hypodermically or intravenously, but only with caution in patients already under the influence of digitalis.

Falling blood pressure is always an ominous sign, and calls for more energetic stimulation of the cardiovascular system. Numerous drugs have been recommended—strychnine hydrochloride or sulphate gr. 1/60 to 1/30, camphor gr. iii. in olive oil, or caffeine gr. v. hypodermically every four or six hours. Strychnine has rather fallen out of fashion as a "cardiac stimulant," and is perhaps more useful in threatened respiratory failure. Lately I have used adrenalin in preference to any other drug, giving it hypodermically in doses of M v. to x. of 1:1000 solution every six hours for 24 to 48 hours before the crisis. Adrenalin is not recommended as a routine in all cases, but only as an emergency in those cases which show a falling pulse tension. Pituitrin $\frac{1}{2}$ c.cm. may be used in place of or with the adrenalin.

Miscellaneous Points.

Where there are signs of cedema of the bases of the lungs, or where there is excessive sweating at the crisis, *atropine* is of very great value. It should be given hypodermically in doses of gr. 1/120 to 1/100, repeated if necessary once or twice. Atropine, like adrenalin, is an emergency remedy and should be used with caution.

The use of *alcohol* as a stimulant is still much in dispute, but the general tendency seems to be to use it less and less frequently. It seems to be beneficial in certain cases, particularly elderly and debilitated patients and in those habituated to its use, and may be prescribed in doses of 4 to 6 oz. in 24 hours. In young robust people one seldom has recourse to alcohol.

Oxygen has a considerable effect in relieving the cyanosis, but generally has little effect on the dyspnoea. Its use is indicated in those cases where early and marked cyanosis is present. In private practice it is usually given by means of a wide filter funnel, held close to the nose and mouth of the patient, or by means of an ordinary gas-bag, and the patient is allowed to breathe the oxygen for 10 or 15 minutes at a time, repeated every hour or so.

Venesection is frequently recommended but seldom practised. In the obese plethoric individual, with a full bounding pulse and marked cyanosis, the withdrawal of 15 to 20 oz. of blood at the beginning of the illness gives considerable relief to the symptoms. Later on in the disease it is indicated in any case presenting signs of right-sided cardiac failure. A mild delirium is not uncommon in many patients, preceding the crisis, but an active, noisy delirium occurring early in the illness adds greatly to the responsibilities of those in attendance on the case. Paraldehyde in doses of 2 to 4 drachms, repeated as may be necessary, should be tried. Constant observation is essential in all cases of delirium.

Specific Therapy.

Specific therapy has been successful so far only in cases infected with pneumococci belonging to Group No. 1. An anti-serum has been prepared against Group No. 2 pneumococcus, but has not been successful. The results, even against Group No. 1 infections,

are much inferior to those obtained by the use of anti-sera in diphtheria. A specimen of sputum should be sent to the laboratory in order that the group to which the infecting organism belongs may be determined. A minute dose of the serum, 0.02 c.cm. of a 1:10 dilution is injected intradermically, in order to determine the patient's sensitiveness to serum. If the patient is sensitive, or if he has already received injections of serum for some other disease, he should be desensitised by repeated small doses given at intervals of half an hour, 0.01 c.cm.; 0.1 c.cm. and 1 c.cm. hypodermically. The serum should then be diluted 1:10 with normal saline solution raised to body temperature, and injected slowly. In ordinary cases the serum should be diluted with equal parts of normal saline solution. Large doses are necessary, as much as 100 c.cm. in the first 24 hours, and 40 to 50 c.cm. on subsequent days. A dose of 30 to 40 c.cm. of serum should be injected and repeated at eight-hour intervals. Serum treatment in this as in other diseases should be commenced as soon as the diagnosis and the type of infecting organism are established. The necessity for very large doses and for the intravenous route are serious drawbacks to the routine use of serum in private practice. Vaccines, whether autogenous or stock, do not appear to have any very beneficial result except in cases of delayed resolution.

In ordinary cases where cardiac or other complications have been absent, the patient should be allowed to sit up in bed a week after the crisis, and after another week may be allowed to get up. If feasible, he should be sent to the country for two or three weeks before returning to work.

A. GREIG ANDERSON, M.D. Aberd., M.R.C.P. Lond.,
Assistant Physician, Royal Infirmary, Aberdeen.

Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 405.)

In the three previous articles a summary has been given of the official evidence on Medical Benefit, except in so far as it relates to the work of the Regional Medical Staff of the Ministry of Health and the Certification Rules. These affect both the doctors and the Approved Societies, and a summary will be given later before the evidence given by Approved Societies is dealt with. At this stage the official evidence on financial provisions and on Scottish questions is inserted.

FINANCIAL PROVISIONS OF THE ACT.

The official account of the financial structure and resources of the Act and of the accounting arrangements (Section D of the Appendix) was supplemented by the oral evidence of Mr. E. J. Strohmenger, C.B. (App. D. 2.) The moneys, consisting of accumulations of contributions, which constitute the permanent balances in the National Health Insurance Fund, belong in the main to Approved Societies, some 98 per cent. of the insured population being members of Approved Societies. In general the summary of the evidence which has been extracted will, therefore, relate to the funds of Approved Societies, the evidence as to the small percentage appertaining to the Deposit Contributors' Fund, the Navy and Army Fund, &c., not being of general interest.

* References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

(Q. 2133-4.) The National Health Insurance Fund acts as banker for the societies, and also acts as a general clearing house for all financial transactions involved in the scheme. The disposal of all moneys in the National Health Insurance Fund is fixed by statute, and there are no funds which are available for other purposes. (App. D. 6-9.) The receipts of the N.H.I. Fund consist of the contributions paid by employers and employed, the State grants, which consist of two-ninths of the cost of all benefits and of administration, and the interest on investments. The payments out of the fund consist of (1) the sums necessary to pay cash benefits and to pay doctors and chemists and expenses of administration, and (2) the sums issued from time to time to societies for investment.

Contributions and Reserve Values.

(Q. 2137, 2374-81.) The flat rate of weekly contributions under the Act is the rate required for the ordinary benefits in the case of a boy (or girl) of the age of 16 on entering into insurance. If there is added the contribution of the State, the value of the 10d. paid by the boy of 16 and by his employer exceeds the value of his benefits; the State contribution in respect of all insured persons is really required in order to make everybody 16.

(Q. 2154-8.) A "Reserve Value" is a paper credit in respect of every person admitted to insurance over the age of 16. These paper sums are credited in the accounts of the Approved Societies and will be gradually liquidated over a long term of years out of the margin available from the contributions and interest on investments. The amount of these paper reserve values originally created was 65 millions, and when the contributions and benefits were increased by the Act of 1920 further reserve values, estimated to amount to 48 millions, were created.

Investments.

(App. D. 17.) The balances in the National Health Insurance Fund are in the first place temporarily invested with the National Debt Commissioners. Subsequently, one-half of any sum ascertained to be available for permanent investment by an Approved Society is transferable to the N.H.I. Fund Investment Account and is placed to the credit of the society in that account. As regards the remaining half the society may take one of three courses—viz., it may request the Department: (1) to pay over the amount to the society for investment in the names of its trustees; (2) to invest the amount in specified securities in the name of the Minister (in the case of England and Wales) on behalf of the society; or (3) to transfer the amount together with the other half, to the Investment Account in the N.H.I. Fund.

(Q. 2400.) Why is it that only one moiety of the money available for permanent investment is allowed to be invested by the Approved Society. The Act has fixed a moiety?—That is roughly the share of the contributions paid by the insured person.

(Q. 2288-2291.) The total cash resources of the scheme for England, Scotland, and Wales as existing on Dec. 31st, 1923, were £107,000,000. Of this sum £88,700,000 is the immediate property of Approved Societies, made up of £38,000,000 Investment Account, £40,000,000 their own investments, £9,700,000 in their current accounts, and about £1,000,000 working balance in societies' own hands.

A Windfall.

(Q. 2189-94.) The witness explained that in the account of stamps sold there were accumulations, in excess of the sum paid over to the Approved Societies, which had gradually mounted up to 5½ millions. The greater part of this amount he described as a windfall. It is paid into a special fund called the Central Fund, and under the Insurance (Cost of Medical Benefit) Act, 1924, there is a special charge on that fund for certain liabilities in respect of the cost of medical benefit. Part of

the excess cost of medical benefit in the years 1924, 1925, and 1926 will be charged to that fund. At the end of 1926, when all the charges on the fund have been met, it will stand at £1,500,000 with, in addition, interest from the end of 1923, and is certainly adequate to meet its liabilities (that is, in the way of helping societies having deficiencies).

Q. If this special liability for medical benefit had not arisen and been thrown on the Central Fund, a problem as to the amount of that fund would have arisen later on, with which, I suppose, Parliament would have had to deal?—That is so. This large sum of money is wholly a windfall in any case. Q. In your view, have Approved Societies any proper claim upon it?—Practically none whatever. Q. It is absolutely a windfall?—It is absolutely a windfall.

An Impression of Considerable Complication.

(Q. 2129, 2351.) The Chairman at the outset had stated that the financial arrangements appeared to be highly technical and complicated. As to this, Mr. Strohmenger said that some of the arrangements were made in the interests of sound financial administration, but the whole scheme was really the scheme which Parliament had itself laid down.

(Q. 2360.) Asked whether the societies understood the essential features of the financial arrangements, the witness said:—

I think they know all things that they need know in the interests of their members. I should not like to say that every society really understands the whole of the financial structure of National Health Insurance. . . . The officials of the large societies of course have understood it perfectly, but I do not suppose the great bulk of Approved Society officials have a very intimate knowledge of all these mysteries, and I do not think they need have. The ordinary working Approved Society secretary who looks after his insured people and protects his funds knows, I think, quite as much as he need know. (Q. 2361.) And no great degree of simplification in the central finance of the scheme could be said to be necessary for the proper and intelligent administration of benefits by the agencies concerned?—I say that quite clearly.

(Q. 2437-8.) To those to whom ledgers are profound mysteries, there is an interesting piece of evidence with regard to the ledger work of the Approved Societies. The officials, especially of small societies, are in effect keeping a ledger without really knowing it.

We devised a scheme under which a book was given to them, arranged according to subject in columns. There was a specific instruction on each advice as to which column each entry should go into. The book really is a ledger; but instead of having a separate opening for each account, it has got columns in which the entries go. It helps the society, which has simply to look at its advices saying that a certain item should be posted in column 20, line 10, for instance. At the end of the year they simply add up the total of their entries and thus get their ledger balances.

This book gives all the material to enable a society to make up its benefit fund and to get the auditor's certificate.

The Cost of Medical Benefit.

(App. C. 142.) The cost of medical benefit has varied from time to time with the agreements entered into with the doctors' representatives with regard to the amount of the capitation fee and the sums to be allowed for mileage and with the arrangements in force in regard to the supply of drugs. The provisions of the Act at present in force (the National Health Insurance Cost of Medical Benefit Act, 1924) fix the charge for medical benefit at 11s. 10d. per insured person. The total amount required in addition to the sum of 9s. 6d. provided by the Act of 1920 is 2s. 4½d., and this is provided as follows:—

	s.	d.
(1) Out of the funds of Approved Societies, &c. . .	0	2
(2) Out of moneys in the Central Fund (as explained above) derived from the unclaimed balance of sums received from sale of National Health Insurance stamps	1	8½
(3) Out of interest earned on the proportion of insurance funds retained in the National Health Insurance Fund (Investment) Account beyond the prescribed rate credited on sums standing in that account	0	6
	2	4½

It would appear (Q. 1435-7) that this provision of 2s. 4½d. is a temporary provision, and that for the cost of medical benefit in the future in the absence of fresh legislation 9s. 6d. only will be available at the end of 1926. With regard to these provisions, Mr. Strohmenger said:—

(Q. 2238.) These financial provisions as regards medical benefit are, so far as the Ministry is concerned, extremely unsatisfactory. They constitute a serious defect in the general financial arrangements. Here you have what is really a limited provision for the payment of medical benefit and an unlimited liability. It is true that the payment to the doctors is fixed for a period of years from time to time, but there is always the risk that the time may come to review the bargain with the doctors, and to have a further liability for which you have no provision. . . . For the years 1924, 1925, and 1926, the Department made what they considered to be a very full estimate of the cost of drugs, but owing to the epidemic this spring the cost exceeded that estimate, and although I hope that, during the three years for which the Act of 1924 will run, the cost will be within the provision, at the same time it may not be, and it will be an acute embarrassment to the Department if it is not.

EVIDENCE OF THE SCOTTISH BOARD OF HEALTH.

A careful reading of the evidence given by Sir James Leishman, the chairman of the insurance side of the Scottish Board of Health, and the other official Scottish witnesses, fails to reveal any peculiarly Scottish problems which would appear to necessitate a separate Scottish administration. The contributions and benefits are the same throughout Great Britain, and Approved Societies operate in both countries. (Q. 1544.) Generally there is constant communication by letter, by telephone, by wire even, with the English Ministry; practically all documents are exchanged between the two departments; and there is a considerable measure of coöperation through the operations of the Joint Committee.

(Q. 1556.) The question whether a good deal of machinery was not thus required for the purposes of coördination, and also whether a certain amount of difficulty did not result from movements of the population, especially with regard to statistics, accounts, and valuation, Sir James Leishman said:—

Yes, there is some, but it is part of the price you have to pay for separate administration, and in my judgment the price is fully justified.

(Q. 1573.) Apart from the question of national susceptibility, do you think on the grounds of efficiency alone there is a case for separate administration in Scotland?—I think so, but I may be prejudiced.

Separate Valuation.

The witness was asked why Scotland insisted on having a separate valuation for the Scottish members of societies, and he replied that it was an indication of what might be called the "Home Rule" position.

(Q. 1894.) Has anything been gained in these international societies by having a dual system of valuation?—It is very difficult to answer that question. What we do know is that, putting the objection to uniformity on the highest plane, Scotland, on the whole, stands fairly well, and that, at all events, we have not lost anything while we have gained a certain element in our own self-respect.

The Friendly Society Movement.

(Q. 1764.) Before the days of the Insurance Act the Friendly Society movement, especially in the purely country districts, had not got such a firm grip in Scotland as it had in England. This appears to account in part for the fact that there are relatively not so many small societies in Scotland administering the Act as separate units. Although, as stated, not many problems peculiarly Scottish are dealt with in the evidence, the views of Sir James Leishman were ascertained upon various matters, of common interest on both sides of the Border, from which we make a selection.

Malingering.—(Q. 1617.) Are you satisfied now that malingering or over-generous certification is not a substantial financial danger?—It is a serious part of the

administration, but, as far as I can see, there is not a substantial financial danger.

Delay in Paying Benefits.—(Q. 1619.) While some societies are probably not so good as others, we could hardly say, viewing the position as a whole, and having regard to the fact that societies are spread all over the country, and to the fact that members are often in inaccessible places, that there could be any serious charge made of undue delay in paying benefits.

Insurance of Married Women.

(Q. 1663-1729.) Sir James Leishman was questioned at great length with regard to his opinion that married women were not an insurable proposition. He expressed himself as in favour, on the grounds of simplicity, of the view that a woman on marriage should be given some sort of surrender value. Sir Alfred Watson pointed out that a similar proposal when the Bill of 1918 was before Parliament was stoutly opposed by the representatives of Women's Societies.

(Q. 1679.) There was substituted for it the present arrangement under which a woman gets something equivalent to that surrender value in the shape of maternity benefit and a small weekly allowance for a short period of sickness?—Yes, and also medical benefit.

(Q. 1702.) Is it really the considered view of Approved Societies responsible for administering the insurance scheme that rather than have the trouble . . . of administering these benefits they would offer the woman a bribe to get out?—I would not put it in that way, not so bluntly as that. So far as I know the mind of Approved Societies—and I would rather this question was pressed home with them— . . . they would prefer that.

Sir James Leishman said that he was all for simplicity. A series of further questions, however, led to the following:—

(Q. 1729.) If you take an able-bodied young man, if he is at home you assume something is wrong, but in the case of a married woman you would not know whether it was anything more than spring-cleaning. Does it come to anything more than those two propositions?—I think you have stated the case very well, if I may say so.

Maternity Benefit in Scotland.

(Q. 1965.) Maternity benefit in Scotland has been highly popular. Positive evidence is abundant that it has greatly helped mother and child, and there has been very little misapplication of this benefit. Complaints, however, have been received that in many cases too much of the money has gone to the doctor or midwife, but, even so, the mother and child have benefited by the skill and care thus obtained.

Medical Benefit.

Medical benefit has been found to work well, even under the severe difficulties and the restricted service made necessary by the war, and very little reliable evidence has emerged of neglect of duty on the part of insurance practitioners, or of any real ground for loose general charges of inefficiency. Dissatisfaction with a limited service and agitation for an extended and complete medical and institutional service must not be fastened on as a condemnation of the working of the Insurance scheme, but rather as an indication that it has resulted in increased appreciation of the importance of a further great development of medical services in the interests of national welfare.

Early Diagnosis.

An American critic has alleged that insurance doctors are mainly occupied in dealing with trivial ailments. In so far as that is the case it is testimony to the worth of the present scheme. The facilities for treatment which the Act presents to the insured have resulted in the insurance practitioner seeing disease in its earliest and most curable stages, when there is frequent opportunity to prevent the onset of disabling or fatal illness.

Need for Specialist Advice.

The witness quoted from the Fifth Annual Report of the Scottish Board of Health, 1923, as follows:—

There is a great diversity in the range of treatment given to their insurance patients by practitioners. The work done

by many practitioners is of the very highest quality, sometimes comparing not unfavourably with that of specialists attached to hospitals. . . . There is an urgent need for increased hospital accommodation for the insured. The fullest advantage is not always taken by the practitioners of the availability of specialist advice at these institutions.

Numbers of Doctors on the Panel.

(Q. 1972.) Out of 2175 general practitioners in Scotland 1790 are panel doctors. In the county of Fife all the general practitioners are on the panel. In Glasgow† 401 out of 670 are on the panel. In Dundee Burgh the proportion is 95 per cent. In rural areas, it may be assumed that most of the doctors are on the panel, and, indeed, in a single practice area it is almost inevitable that the doctor should go on the panel. In Edinburgh the figures are 160 doctors out of about 230 in general practice. Edinburgh, said the witness, was the place where the reaction in connexion with the agitation was felt most keenly in the medical profession owing to the number of consultants who were there.

Vaccination.

(Q. 1976.) The question of preventive treatment had been the subject of an interesting decision in Scotland by referees, who had come to the conclusion that treatment should cover—

all treatment of every kind which a person is entitled to receive from any general practitioner attending him in the ordinary way; in ordinary general practice prophylactic treatment for the prevention of sickness is given, and the only change effected by the Act is that the practitioner, instead of being recompensed by fees, is recompensed by the capitation grant.

The referees, having regard to the rapid advance in medical science, added a rider that the panel doctor is not bound to undertake prophylactic treatment of any kind which has not become a matter of ordinary treatment by competent general practitioners; with regard to the particular case submitted to them, they had no hesitation in holding that any general practitioner was able to revaccinate against small-pox.

Sizes of Doctors' Lists in Scotland.

(Q. 2023.) In counties 66 per cent., and in burghs 36 per cent. of the panel doctors have less than 500 insured persons each on their lists; 18.5 per cent. in counties and 16.4 per cent. in burghs have from 500 to 1000 insured persons; and 13.8 in counties and 34.2 per cent. in burghs have from 1000 to 2000 insured persons. Those with over 2000 number 1.8 per cent. in counties and 13.4 per cent. in burghs.

Cost of Drugs.

(Q. 2024-2062.) The Scottish chemists are paid at higher rates than those paid in England, but the total expenditure on drugs is about 3d. per insured person less. This was explained as being due to differences in the prescribing habits of the doctors in the two countries. Mixtures are renewed in England 5 times to 4 in Scotland; powders 6 to 4 and pills nearly 7 to 4. The dosages are different, and it does not necessarily seem to imply that more medicine is consumed in England. (Q. 2038.) The extra cost in England is explained by the fact that each renewal carries a separate dispensing fee and separate payment for the chemist's establishment charges.

(App. II. C. 19.) The chemists in Scotland have proved more difficult in regard to terms of remuneration because, unlike the English chemists, they had not so much new business under the Insurance Act. Generally speaking, in Scotland, before the Insurance Act, the doctor had dispensed his own medicines only in country districts in which there was no chemist. In England, on the other hand, dispensing by doctors had been widely prevalent and in certain districts it was the almost universal rule. The

Insurance Act, by prohibiting doctors from dispensing medicines for insured persons, except in special circumstances, thus diverted into the hands of English chemists an increased volume of trade without conferring upon Scottish chemists an equal or corresponding advantage.

Medical Service in the Highlands.

(Q. 2119.) It is claimed that there exists in the Highlands and Islands of Scotland a combination of difficulties not to be found in any other part of the country. By means of a special Exchequer Grant—the Board have been able to make considerable improvements in the medical service, not merely in supplying surgeons and specialists, but also in raising the status of the ordinary practitioner, for example, by providing him with a living wage and helping him with a motor-car to reach his patients. The total of the grant is about £42,000 a year, but . . . that covers payments for services rendered to other classes in the Highlands besides insured persons.

Extra Payments to Medical Men in the Lowlands.

(App. II. C. 25-34.) An Exchequer Grant of £65,000 is available for the Lowlands of Scotland for mileage and also to include special grants for necessitous districts. These special grants are paid under a scheme which provides funds for maintenance of doctors in isolated areas, for the maintenance of a motor-car, for dispensary provision, removal of patients to hospital and even, in a limited number of cases, for expenses incurred by the doctor in taking leave for the purpose of a short course of post-graduate study.

REX v. BATEMAN.

ALL our readers know the successful issue of Dr. Bateman's appeal against his conviction last December, which resulted in the quashing of the sentence and the immediate release of the wrongfully convicted man. Most of us also know that these devastating occurrences in the life of a practising doctor bring with them both a train of heavy expenses and a temporary loss in professional earnings. Through representations made to us it has been found that the advocacy, from the first extended to Dr. Bateman's case in these columns, has met with the approval of the medical profession at large, and we may here say that the attitude of THE LANCET in the matter was entirely dictated by great professional motives. In our opinion from the first—and it was strongly supported by good authorities—Dr. Bateman's conviction was an example of the neglect in a court of law to give value to clinical evidence; and in a court of law, when malpraxis is in question, clinical evidence must always receive the greatest respect if injustice is not to be done. Thus juries have the right to expect that their attention will be directed, and directed prominently, to the places where clinical evidence might be expected to influence their opinion. This was not done in the case of Dr. Bateman, and the result of that case must lead to better things.

It has been felt that material assistance ought to be offered to Dr. Bateman in the present circumstances, when he has to meet the legal expenses of the appeal and to make good the deficits in his professional income. With that view we shall be happy to announce in these columns any subscriptions that may be received towards a "Bateman Fund," designed to defray the expenses which he has incurred and to assist him in temporary but very real need.

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C.2, and made payable to the "Bateman Fund Account."

We have received :—

	£	s.	d.
The Proprietors of THE LANCET..	250	0	0
Lieut.-Colonel Henry Smith, C.I.E., I.M.S.	5	0	0
Dr. J. Bright Banister	5	0	0

† The figures which are quoted were given in a note to Q. 1997.

EPSOM COLLEGE WAR MEMORIAL.

IN 1895 the late Sir Arthur Blomfield presented his designs for the rebuilding of the old chapel at Epsom College, but because of lack of funds and other reasons, it was possible to build part only of the new chapel then planned. A new chancel was accordingly built and completed by the end of 1895. For 30 years the boys have used their chapel with its new chancel and old nave. The completion of the original plans has been eagerly awaited amongst all Epsomians past and present, and the Council, actively supported by the Old Epsomian Club, decided that no more fitting war memorial to the

Lambeth Parish Church (where the school has its mission), the vicars of Christ Church and St. Barnabas, Epsom, and the two school chaplains. After the Bishop's procession had entered the chapel, wreaths were placed beneath the war memorial tablet by the head prefect, the second master, and the president of the Old Epsomian Club, and then the headmaster read the names of the 140 past students and masters, of whom the new nave stands a memorial to all who follow them. The Bishop's address—"The leaves of the tree are for the healing of the nations"—while reviewing the fundamental principles for which this and all war memorials stand, came chiefly as a message to the boys of the College, emphasising that it was for them to continue the work



The New Chapel at Epsom.

old boys who fell in the late war could be desired than the completion of the chapel. After six years of careful planning the new nave has been added to the chancel. Mr. Arthur Blomfield has been responsible for adapting and carrying out his father's original designs; the work has cost £11,500, of which £2000 remains to be collected. The chapel is built of red brick with Bath stone windows and dressings, and has a seating capacity of 650. The choir are placed in the chancel facing inwards, while the seating of the congregation differs from that in the old chapel, in that chairs are used instead of pews and these all now face the east. In addition there is a gallery at the west end. The whole of the heating and lighting systems are new, while the organ has been re-erected in a new organ chamber on the south side of the nave.

On Saturday, Feb. 21st, in the presence of a large gathering of parents, relatives, and old Epsomians, the new nave was consecrated by the Bishop of Winchester "in memory of those from Epsom College who gave their lives in the Great War in the cause of Righteousness, Liberty, and Peace." The Bishop was attended by two past headmasters, Rev. T. N. H. Smith Pearse and the Rev. W. J. Barton, by two past chaplains to the College, Rev. J. M. Swift and Rev. J. A. Davies, M.C., and by Bishop Hook, the rural dean and vicar of Epsom the rector and curates of

begun with such sacrifice by their brother Epsomians before them, that is, to work for the betterment of the world and the advent of universal peace. The service concluded with the "Te Deum," the "Last Post," and the National Anthem.

Among the large gathering present were Lord Dawson of Penn, Sir Ernest Goodhart, many members of the Council, and many old Epsomians, including Dr. Arthur Napper, who entered the school in 1855, the year of its opening. To the great regret of all, Lord Rosebery, the President of Epsom College, and Sir Henry Morris, Bart., were both unable to attend through ill-health.

It may be recalled that Epsom College has now entered upon its seventieth year. It is difficult to realise that its foundation pensionerships and scholarships, its present position, and the wonderful educational facilities it offers, could possibly be unknown to any medical man or woman, but judging by the unequal support accorded to it by the profession in general this must be so. During the last few years the numbers at the school have rapidly increased, and to-day there are 331 boys, and not one more can be fitted in anywhere; there is a waiting-list of over 400 names. As recently as last December¹ we supported the appeal made by Dr. Raymond Crawford,

¹ THE LANCET, 1924, ii., 1293.

chairman of the Council, in unqualified terms and nothing further need be said now, save that the visit to Epsom for last Saturday's ceremony proved that while its medical foundation remains the very essence of its being, the College is becoming generally recognised as a public school of high standing in the country.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Tests for Motor and Tram Drivers.

THE excellent motor-bus and tram service provided by the S.T.C.R.P. (Société des Transports en Commun de la Région Parisienne) could hardly be improved, but the directors of this concern never rest on their laurels, and are always seeking to add to the efficiency of their service. The latest innovation is the provision of a psycho-technic laboratory which was formally opened last month, and which is intended as a testing-house of the human machinery employed on the motor-buses and trams. The tests conducted at this laboratory resemble in certain respects those already in general use for prospective aviators; the reaction of would-be drivers to a variety of stimuli is studied under artificial conditions made to resemble as closely as possible those under which drivers will find themselves in normal circumstances. The tests are to be applied also to drivers who have had some mishap, and whose capacity to continue at work is questioned. In addition to purely dynamic tests—i.e., investigations of the muscular power and the fatigue response of the persons examined—a number of psycho-motor tests have been devised. The prospective driver finds himself seated on a motor-bus surrounded by handles and levers and confronted by a cinema film portraying as many vehicles and pedestrians as can possibly crowd together at one time on to the road. He is further confronted by red and green lights, noises of all descriptions, and his reactions to one and all of these stimuli are faithfully and mercilessly recorded—whether he presses the right brake, and, if he is a tram driver, rings his bell at the right moment, and does other appropriate things—and thus his capacity to thread the congested streets of Paris is judged. It is proposed that every driver shall undergo the tests of this laboratory at intervals of five years up to the age of 50, by which time he will, no doubt, be ripe for a less nerve-racking vocation. Considering that the company concerned possesses 1500 motor-buses and 2506 trams it is clear that this new psycho-technic laboratory will not be idle. In France it is hoped that a service of a similar nature will soon be provided for all motor drivers, amateur as well as professional, and that a means will thus be forthcoming for the elimination of the unfit driver.

Poison Gas and Tuberculosis.

At a conference on the respiratory sequelæ of poisoning by warfare gases, held recently at Val-de-Grâce, Prof. E. Sergent, of Paris, stated that poisoning by gas, in itself, was not sufficient to cause tuberculosis—a statement which was based on clinical observations, statistics, and experimental evidence. When an aggravation or a sudden recrudescence of tubercle is observed following poisoning by warfare gas, one must assume that there has been a reinfection of the injured lung by active and latent tuberculosis. When a late pulmonary infection appears in a patient who has been previously gassed, this cannot be laid directly to the account of the gas, but other general factors must be taken into account, apart from the gas, such as accidental reinfection or recrudescence through lowered resistance in the patient.

Anti-microbic Properties of River- and Sea-water.

A most interesting communication, from the hygienic point of view, was read on this subject to

the Academy of Medicine by Dr. Arloing, professor of experimental and comparative medicine and of bacteriology at Lyons. From a study of the waters of the Rhône, the Saône, the Isère, the Brac, the Romanche, the estuary of the Seine, and the roadstead and harbour of Le Havre, he found that these waters had remarkable bactericidal properties with respect to certain organisms of the intestinal group. Dr. Arloing attributes these properties to a bacteriophagic and bacteriolytic action of the water, varying with its regional source. Thus the Rhône and the Isère have a marked antipathy towards the typhoid organisms, the Isère and other streams in the neighbourhood of Grenoble, including water from melted snow, having a particularly destructive action on paratyphoid A, while the waters at Le Havre are inimical to the *B. dysenteriae*. The bacteriolytic effect on the *B. coli* is the most general, and this is found particularly in slow-flowing, impure water (Saône, Seine, and harbour of Le Havre). The anti-microbic action is usually more marked below than above an important locality. This bacteriolytic property, from its biological character, seems to be bacteriological rather than physico-chemical.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Transplantation of Eyes.

SOME years ago a young Hungarian scientist, Dr. Koppányi, created a stir by his claim to have transplanted eyes in vertebrate animals with such success that a certain amount of visual power was regained through the transplanted organ. Koppányi demonstrated the results of his experiments at the Ophthalmological Congress held in Vienna in 1921, but the Congress was not prepared to regard his claims as proven. Further experiments along Koppányi's lines were, however, sanctioned by the Congress, and one of the workers who undertook research in this field was a Transylvanian ophthalmologist, Dr. Nicholas Blatt. Dr. Blatt pursued his practical investigations for over two years, during which time he experimented upon over 600 animals, 400 fresh water fishes, 200 rabbits, and several chickens. In all cases the animals were narcotised before the operation. The most that can be said for the experiments is that anatomical healing took place in 26 cases among the 400 fishes, in 2 cases among the 200 rabbits, and in no case among the chicken experiments. He made some interesting observations on such phenomena as colour change in fishes when one eye had been transplanted, that is, for all practical purposes, in fishes blinded in one eye; but out of the sum total of the attempts made to re-create sight nothing of value to afflicted human beings emerged. A rather pathetic sidelight on his work is the fact that he had to hide himself away in a small and specially erected laboratory because, when the nature of his experiments was voiced abroad, hundreds of blind people flocked to him in the hope of receiving "new lamps for old."

Anatomical Cadavera in the Rumanian Universities.

The starting-point of the anti-Semitic feeling which has run high in the Rumanian Universities during the past two years, and has led to several very regrettable incidents, may be traced to the demand of the Christian medical students that Jewish medical students should be excluded from the classes of practical anatomy, except in so far as their dissections were limited to Jewish cadavera. This demand was rejected by the professors, but the attitude of the Christian students was so firm that, in order to ensure the peaceful continuance of regular studies, a compromise had to be made, in conjunction with the Minister of Public

Instruction, whereby it was decided that in future Jewish students might carry out dissecting work only if Jewish cadavera were available. When none were available the Jewish students must not themselves dissect, but they might watch the procedure. This regulation brought about a truce, but it did not put a stop to anti-Semitic demonstrations, which, indeed, have been so frequent that military patrols were stationed outside lecture-rooms to ensure a measure of peace among the students. The Minister of Public Instruction, Mr. Anghelescu, who considers the exclusion of Jewish students from the practical anatomy rooms to be unfair, recently held a conference to discuss the whole question of Jewish cadavera. As a result of the conference, the Minister of Public Sanitation has issued an order to all hospitals demanding that the bodies of all patients who die in hospital, unless they are claimed by relatives of a definite degree of consanguinity, must be placed at the disposal of the anatomical institutes without regard as to the nationality or creed of the deceased. This order also applies to provincial hospitals, and includes the conveyance of cadavera from such hospitals to university centres.

Epidemic of Hiccough in Transylvania.

For the past few weeks an epidemic of hiccough has been prevalent in Transylvania, and cases are reported from all the towns of the country. The cases are mild for the most part, and the onset is marked by slight fever. The symptom of hiccough shows itself on the third or fourth day, and lasts generally two or three days. In treatment, aspirin in fairly large doses has been the main stand-by, specific therapeutic measures having proved inefficacious. In some old subjects the fits of hiccough are very difficult to stop, but aspirin usually brings relief. No fatal case has as yet been recorded.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Hardships in the Medical Profession.

THE economic conditions prevailing in our country are weighing heavily on the medical profession. Not only is the standard of living quite different from that to which we were accustomed a dozen years ago (it is at least 50 per cent. lower as regards culture and outward appearances), but also the level of fees has dropped alarmingly. Eighty per cent. of the population belong to one or other of the different sickness insurance clubs, which cuts out many opportunities of private practice. The average income of a busy general practitioner in our city is about £25 a month—and that is a bare living wage. Only about 12 per cent. obtain £30-£40 a month, and not more than 2 per cent. have more than £80. Specialists as a rule have slightly higher incomes, but few earn more than £50, whilst £100 represents a flourishing practice. Under such circumstances—the cost of living here being about the same as in England—a large number of doctors have given up their profession and have become agents for surgical instrument factories, or for chemists or pharmaceutical concerns; many have taken up a purely commercial career.

Atypical Measles.

In a memorandum addressed to the practitioners in Vienna Dr. Friedjung draws attention to the fact that the type of measles occurring in the outbreak which has been present in our city for the past month is quite different from the disease described in textbooks. On the whole, the decursus has been very mild, with few complications from the ears or the lungs. The prodromal symptoms are insignificant; now and then one notices a little redness or soreness of the throat, some cough, but no Koplik's spots. Then a violent and intractable cough develops, and the rash appears suddenly with high fever. At this stage,

and not before, Koplik's spots appear. The disease then runs its regular rapid course, and the patients are soon well again. As there is concurrently in the city a fairly extensive epidemic of mild influenza, with similar bronchitic manifestations, one must be on the look-out. Many schools had to be closed temporarily on account of these conditions amongst the children.

The Water-Supply of Vienna.

The present unparalleled scarcity of snow and rain in the Austrian Alpine regions has caused a rapid diminution of the water-supply of the capital, which derives its water from two different districts of the Alps. The old waterworks, opened in 1885-87, comprise seven "eternal" springs at the foot of the Rax-Alp and the Schneeberg, two mountains about 60 miles to the south of Vienna. From this source Vienna used to obtain excellent water for about 1½ millions of people. The increase of the population necessitated the acquisition of new water sources. In 1910 the second waterworks were completed, embracing 22 springs, which derive their water from a distance of 120 miles to the south-west, and the combined supply was sufficient for about 2,000,000 inhabitants, giving each about 135 litres (280 pints) daily of pure water of medium hardness. But of late the average yield of the wells and springs has diminished, and the amount of water required daily per inhabitant has gone up. Plans are now being made to get a water-supply by means of artesian or other wells in the vicinity of the capital. Naturally special care will be paid to the quality of water to be added to the present supply. Already many physicians have noted an increase of goitre amongst the population. The general public believes that this is due to the Alpine water, as it comes from districts where goitre is endemic. And the coincidence of the use of the second waterworks and the increase in the incidence of goitre, especially amongst the females, is striking. When the present dry winter cut down the available daily quantity of water to about 110 litres and less per head, it served as a warning that the city could not rely on the Alpine springs alone. In keeping with modern ideas of hygiene and cleanliness, a daily average supply of 200 litres per head will be aimed at.

Final Settlement of the Conflict between Prof. Meller and the Hospital Board.

As I mentioned some time ago in a letter, a conflict had arisen between Prof. Meller, the chief of the ophthalmologic clinic and the board of the hospital and the Ministry of Health, owing to certain alleged grave obstacles placed in the way of scientific work. Public sentiment was definitely on the side of the professor, and he threatened to resign his chair and discontinue his lectures in the University. After some heated controversy an understanding was arrived at whereby the professor agreed to continue his teaching. The hospital board will no longer interfere with the administrative work of the clinic, and will not let monetary views interfere with the receiving of patients wanted for instruction or for other reasons by the teaching staff of the clinics.

BERLIN: INTERNATIONAL POST-GRADUATE COURSES IN MEDICINE.—A series of post-graduate courses at various hospitals will be held in Berlin in the spring, in conjunction with the Berlin Medical Faculty. The series will include the following: (1) Practical Course on the Diagnosis and Treatment of Syphilis, from March 2nd to 7th; (2) Practical Course in Diseases of the Digestive System and of Metabolism, from March 9th to 14th; (3) eight evening lectures on Important Points in General Medicine, during March; (4) Supplementary Course on Special Subjects in all Branches of Medicine, two sections (a) from March 2nd to 28th, and (b) March 16th to 28th; (5) Important Chapters in Social Medicine, from March 30th to April 5th; and (6) Special Course in Ear, Nose, and Throat, from April 20th to May 9th. Information as to lodgings, &c., and the full syllabus may be obtained on application to the offices of the International Post-Graduate Course, Luisenplatz 2-4, Berlin, N.W. 6.

Obituary.

THE RT. HON. SIR CLIFFORD ALLBUTT,
P.C., K.C.B., F.R.S.,

REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE.

THE whole of the medical profession will unite with us in regretting the death at the advanced age of 88 of Prof. Clifford Allbutt. He was the acknowledged leader of the profession in this country and had attained to this position by outstanding clinical experience, by an unrivalled knowledge of the literary side of our science, and by a wonderful ability to deal with men and things, as shown by his success in the tenure of high office, in academic teaching, and in practical politics. He died suddenly at 1 A.M., after 10 minutes' acute dyspnoea, on Sunday last in full possession of all his faculties and discharging with promptitude until the end his official duties at the University. Only three days before his death we received from him a communication, which will be found in our correspondence columns, showing how keenly alert he was to the salient points in any discussion in contemporary medical journals, and also displaying in its phraseology his unvarying intention not to overstate a case. He offers no explanation of the phenomena, but reports an empirical result, knowing that on the sum of such results explanation may follow. Throughout 65 years of professional work he always maintained a similar logical outlook.

Thomas Clifford Allbutt was the son of a Suffolk clergyman and was born at Dewsbury in Yorkshire and educated at St. Peter's School, York. From school he entered Gonville and Caius College in the year 1857 as a scholar and graduated in the first class of the Natural Science Tripos. From Cambridge he went to St. George's Hospital and while there graduated in medicine at Cambridge and held the usual resident hospital appointments. Shortly afterwards he took up his residence at Leeds, where his professional career was from the first an unqualified success. For while he rapidly made a name for himself in scientific circles, he also obtained a huge consulting practice, but managed to discharge at the same time, and zealously, his duties as physician to the Leeds General Infirmary, the Leeds Hospital for Women and Children, and the Leeds Fever Hospital. His reputation and his influence alike spread far into the north of England, and the seniors among us can still remember when his opinion was constantly quoted over a wide range of work as coming from "Allbutt of Leeds." As early as 1868 his share in the improvement of clinical thermometry was recognised as fundamental, and he has himself recorded what that share was. The first clinical thermometers were those of Casella, constructed for the well-known Prof. Aitken of Netley. But these were too cumbersome for general practice, and for this reason the thermometer long remained a stranger to the busy practitioner. Allbutt set to work with Messrs. Harvey and Reynolds to manufacture an accurate thermometer of a new form to be carried in a portable case, and in a paper by the late Prof. Sims Woodhead and Mr. Varrier-Jones, published in our columns about eight years ago, Allbutt's own account of his share in perfecting the device is given. The value of the new instrument in medical investigations was not recognised quickly, despite the advocacy of Aitken and Pridgin Teale, Allbutt's colleague at Leeds, but when the enormous aid to diagnosis furnished by the self-registering instrument was once perceived there was hardly a practitioner in the country who did not wonder how he had been able to dispense with it.

A second prime contribution to the technical side of scientific medicine was also made by Allbutt at an early stage of his career, for although no particular ophthalmoscope bears his name, no one man contributed so largely to the recognition of the value of the ophthalmoscope in the earliest days of its inven-

tion by Helmholtz. Fifty years ago, when the ophthalmoscope was a comparatively new instrument, many who employed it were too sanguine of the gains to accrue from the recently acquired power to see nerves and blood-vessels in such immediate relation with the brain. They saw that the instrument should pave the way to an improved diagnosis of cerebral affections, and the discovery of the forms of retinitis that depend upon renal or other remote disorder was hailed as sure to lead to advances not only in diagnosis, but also in pathology and therapeutics. But as time went on, these expectations became less confidently expressed, for it was apparent that the new page opened to clinical observation was not of the kind which he who runs may read. Persons unskilled in the use of the instrument, and unable to interpret the appearances that it revealed, not infrequently made and published serious blunders; they afterwards neglected the help they had misused. In the meantime a few patient workers toiled steadily on, collecting data, comparing evidence, and eliminating sources of error. Among these workers Clifford Allbutt was one of the most prominent, and at the proceedings of various medical societies and in our columns and in those of other professional journals he explained methodically the use of the ophthalmoscope, defining its range and annotating the phenomena made apparent by its use. In 1871 he brought all this work together into a connected volume which was the only existing general treatise upon its subject at the time. The book, which dealt with the use of the ophthalmoscope in diseases of the nervous system and of the kidneys in particular, but which took note of the employment of the new system in many general disorders, began with an emphatic and personal testimony to the value of the direct image in the recognition of early and slight changes, explaining the common sources of error in interpretation. An orderly account was then given of the variations from health of the optic nerve and the retina, while the relations between these variations and intracranial and other general disorders was closely discussed. The work was recognised from the first as full of sound reasoning founded upon careful observation, never carrying conclusions further than the facts would warrant, but bringing together all the facts as far as they could be ascertained to bear upon the questions at issue. The book was reviewed in THE LANCET just 53 years ago, and how much it was needed is indicated by the last words written about it, which were: "It will convince the most sceptical that the ophthalmoscope is an instrument no longer to be neglected as a means of diagnosis in general medicine." In the same year he read before the Royal Society a paper entitled the Effect of Exercise upon the Bodily Temperature, to which Society he was elected in 1880 in recognition of his original and scientific services to clinical medicine. In 1883 he was elected F.R.C.P., having in the meantime taken his M.D. at Cambridge, and in the following year he delivered the Goulstonian Lectures of the College, taking as his subject, Neuroses of the Viscera.

Allbutt remained at Leeds, working at the highest possible pressure until 1889, discharging his official duties, enlarging his private responsibilities, and resolutely informing his colleagues by papers, lectures, and addresses, dealing with an ever-expanding range of clinical subjects. It must be remembered here that consulting practice in Yorkshire 35 years ago was physically a strenuous affair if calls abroad were frequent from the outlying districts, and at length Allbutt had to confess to himself that he was overtaxing his strength. Many offers are known to have been made to him to return to London in various dignified capacities, but these he had so promptly refused that some surprise was manifested when at this time he accepted the post of Commissioner in Lunacy. This he held for three years, and his knowledge of affairs as much as his experience of the sick made of a wise and kind man a satisfactory official, but those who knew what were his aspirations fully endorsed the action of the authorities in choosing him

as successor to Sir George Paget as Regius Professor of Physic in the University of Cambridge.

At Cambridge, although well over 50 years of age and without any experience either as university professor or college don, he immediately took his place in the front of academic life. He had a remarkably flexible mind, which was readily appreciative of the work of others, a very necessary quality in a university professorship. He was also progressive in his views and untiring in keeping abreast with new work, and thus his big but exact store of information usually enabled him to standardise as important, or as interesting, or as negligible, with discriminating judgment; but his attitude towards all honest work was so invariably sympathetic that even when he felt unable to commend the result he was often able to encourage the worker, and to indicate to him where his labours might bear fruit. (Hundreds of workers, some no longer young, will endorse this from personal experience.) Almost immediately after succeeding to his Chair he projected the scheme for a new system of medicine, whose outcome, more than his great clinical record, will keep his name alive. Accordingly in 1896 there began to appear the first edition of Allbutt's *System of Medicine by Many Writers*, dedicated to Sir Russell Reynolds, whose similar but very unequal system had fallen into disuse. The work was immediately triumphant, and the second edition, which we now all use, was issued under the editorship of himself and Sir Humphry Rolleston some ten years later. It would be difficult to estimate the benefit which the undertaking has been to medicine all the world over. To the *System of Medicine* Allbutt contributed considerably, writing the sections upon the history of medicine, on neuroses and dilatation of the stomach, on chlorosis, neurasthenia, and, most importantly, on cardiac diseases, overstress and functional disorders of the heart, and diseases of the aortic area. He also contributed a chapter on mountain sickness from the point of view of an experienced Alpine climber. From the inception of the undertaking he spared no trouble in maintaining the symmetrical form of the compendium, ensuring the authoritative nature of the contributions and watching over the literary style. The policy was continued with the second edition, and the scrupulous care was even perfected under the joint editorship of Allbutt and Rolleston. Those who have had occasion to look further into any subject than such a summarising chapter as in many cases is all that the best compendium need attempt to supply, will realise the unlimited aid which they obtain from the long list of references appended to most of the chapters, given in such a form that their verification is possible.

As was inevitable, his position at Cambridge made him an intimate observer of all phases of modern medical education, and his words on the proper place of the teaching of universities in the medical curricula were always weighty. He wrote on several occasions to these columns useful and pointed explanations of the need for the establishment of clinical units, foreseeing in them that blend of theory and practice which his whole life was spent in exemplifying.

To attempt a résumé of Clifford Allbutt's literary output would not only be difficult but unnecessary. For almost from the beginning of his career he was one of those who not only knew what he wanted to say, but knew what wanted to be said, so that his various addresses in a clinical or official capacity always possessed two qualities, apart from literary charm, which have ensured their recollection. In the first they were arresting from their topicality, but secondly they remained as sources of inspiration because of their broad outlook. Take, for example, such an address as that in medicine which he delivered at the annual meeting of the British Medical Association in Glasgow on the *Classification of Diseases by Means of Comparative Nosology*. From a wide range of reading and observation he indicated that the marshalling of diseases of men, animals, and plants on various bases of affinity must pursue at least four different methods of inquiry—the hereditary, the historical, the geo-

graphical, and the experimental—and although, under each of these headings, during the more than thirty years that have elapsed, subdivisions and refinements have made their appearance, the scheme laid down by Allbutt remains inclusive and fruitful, for the present interest in comparative pathology dates definitely from that address. Another example of the permanent utility of Allbutt's deliverances is furnished by his "Notes on the Composition of Scientific Papers." No doubt much writing on his own part, and certainly much editing of the writing of others, had revealed to him certain common pitfalls in English prose into which not only the careless or the ill-educated, but even industrious and learned writers might fall. Not since Dean Alford wrote "The Queen's English" has any more valuable guide to the art of writing and arranging written matter been published, and the practical value of the essay is proved by the fact that a third edition appeared only a few months ago. And a sidelight on the continuity of his interests is shown when he chose for the subject of the FitzPatrick Lectures at the Royal College of Physicians of London the subject of Greek Medicine in Rome. His words synchronised with the growing feeling that the bases of our ancient professional learning might be studied with advantage, not so much out of historical curiosity, but in order to show, for future edification, how systems and schools of thought arise, and how their votaries make good in some directions, and how the unimportant as well as the incorrect fall gradually away from the store of knowledge, leaving us what is valuable whereon to base future developments. It was along such broad and fundamental lines that Allbutt's mind ever worked.

To enumerate the degrees which Allbutt earned or received would require much space, if it were to be done in detail; but this is here unnecessary, so familiar are all our readers with the great position which he occupied. He was, we believe, the only medical man who was ever summoned to the Privy Council as a medical man. At the Royal Society he served on the Council as Vice-President; he was a D.Sc. in three universities, and an LL.D. in five; he held the honorary Fellowship of several Colleges and Academies; he was a K.C.B., and a Justice of the Peace for two counties. He had held examinerships at different times in the University of Oxford and the Royal College of Physicians of London, where he delivered, as has been said, the Goulstonian Lectures and the FitzPatrick Lecture, and was also Harveian orator. At the College he was at different times on the Council and a Censor. He was President of the British Medical Association in the strenuous days of the war and an honorary Lieut.-Colonel in the Royal Army Medical Corps. We do not exhaust the list of honours that might be enumerated, but no more emphasis need be laid on them. Throughout his life he grudged no man any success, so the wide recognition which his own services and gifts received was always felt by the medical profession as fitting. He was learned without pedantry, firm but even-tempered, courteous but unaffected, on occasion a good orator, and always an admirable talker, whose wit was unstudied and whose excursions into a diversified range of subjects were as often as not taken in order to exhibit the familiarity of others with these subjects.

Sir Humphry Rolleston, Bart., K.C.B., President of the Royal College of Physicians of London, writes:—

"A friend of my father, Sir Clifford Allbutt had for more than 30 years constantly helped me in innumerable ways, and his sudden death is an irreparable and unexpected break in the established order of things. For though he was in his eighty-ninth year he was astonishingly young for his length of days, the main or only evidence of age being deafness. In his full sympathy with the young and with fresh ideas and in his broad outlook he indeed compared favourably with many a man of half his years. Aristocratic in appearance and courtly in manner—somewhat resembling the great Lord Dufferin—he was the most approachable of men; obviously a great gentleman, he had indeed a genius for friendship, and I never



SIR CLIFFORD ALLBUTT

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

heard him speak ill of anyone, though he shrewdly estimated the points of character. Like Sir Henry Acland, the Regius Professor of Medicine at Oxford, he had a refreshingly wide and original outlook on medicine, and was more concerned with principles than details. Among his many activities reference may be made to two: his general influence on medical education and culture, and the special subjects in which he initiated advances. He was a scholar in the broadest sense, a profound medical historian, an omnivorous reader, and a persistent advocate of the need for a sound general education as the basis of medical training. With a highly critical literary taste, he was as careful in his own writings as he urged others to be in the choice and use of words. But he was far more than a scholar or a learned man, for his combination of wisdom, humanity, and versatility was of a kind that appears to be dying out in a world that has seen many changes in a comparatively short time. His public addresses were on broad lines and fearlessly independent. Thus, in the Goulstonian Lectures for 1884 he satirised the vagaries of the contemporary gynaecologist with a masterly touch, and later, in 1920, expressed his stern disapproval of the practice of psycho-analysis; while in the St. Louis address on the historical relations of medicine and surgery (1905) he insisted on the present artificial distinction between the surgeon and the physician. Since his address in medicine at the Glasgow meeting of the British Medical Association in 1888 he had urged the recognition of comparative pathology, and it is a happy outcome of his appeals that there is now an institute for this branch of research at Cambridge and a section for its study at the Royal Society of Medicine, of which he was appropriately the first President. No one could write more charmingly of others, as is shown to perfection by his introduction to the volumes dedicated to the late Sir William Osler (1919) and to Karl Sudhoff (1924) on their seventieth birthdays.

"He rapidly formed a sound judgment on new work, and was ever alert to welcome the germ of a real advance; thus, in his review (*Brit. Med. Jour.*, 1902, ii., 259) of the book on the pulse by the then little known James Mackenzie of Burnley he generously described it as destined to 'take a permanent place in the standard records of the subject.' It is indeed remarkable how many matters of now common knowledge in medicine he either originated or made more widely known, though in some instances his share therein has from lapse of time been perhaps naturally forgotten. For many years he described hyperpiesia—or, as he originally called it, senile plethora (1895)—and while so doing was largely responsible for the introduction of the sphygmomanometer into ordinary practice. His advocacy of the aortic origin of angina pectoris dated from 1894, and those who heard him speak after Prof. K. F. Wenckebach's lecture on angina pectoris and the possibilities of its surgical relief at the Royal College of Physicians on May 5th, 1924, were impressed with his mental and physical vigour. He was one of the first, if not the first, to describe syphilitic disease of the cerebral arteries (1868); he was the first in this country to record a case of tabetic arthropathy, a year after Charcot's description in 1868; and he early insisted on the effects of strain on the heart and arteries (1870), on the value of morphine in cardiac disease (1869), on the use of the stomach pump, and of the ophthalmoscope in medicine (1871). Together with the late Mr. Pridgin Teale he advocated the operative treatment of tuberculous glands in the neck (1885), and in 1867 he invented the present short form of clinical thermometer.

"Such are a few achievements of the philosopher, the professor, and the physician; but greater even than them were the character and personal influence of the man, the like of whom his friends can hardly hope to see again. He died as he would have wished in the full tide of his activities; he was to have given the Lloyd Roberts Lecture at the Royal Society of Medicine this autumn, and had a new book ready

for the press. Our sorrow is for those left behind; for him there is no feeling but of thankfulness that he had lived so fully and so finely right up to the inevitable end."

Sir Thomas Clifford Allbutt married in 1869 Susan, daughter of the late Thomas England, of Headingley, by whom he had no children. To his widow the sympathy of the whole medical profession is extended. He was buried at Trumpington, near Cambridge, on Wednesday last, the funeral services, which were largely attended, being held in the Chapel of Gonville and Caius College, of which he was a Fellow, and in Great St. Mary's, the University Church.

EPHRAIM MACDOWEL COSGRAVE, A.B., M.D.
DUB., M.Ch., F.R.C.P. IREL.

Dr. MacDowel Cosgrave, past President of the Royal College of Physicians of Ireland, died in Dublin on Feb. 16th after some weeks' illness at the age of 71. He enjoyed good health until a month before his death, when a slight cerebral hæmorrhage occurred. He appeared to rally, and his friends hoped that he might still have some years to live, but it was not so to be. Dr. Cosgrave was educated at Trinity College, Dublin, and proceeded to his medical degrees in 1876. In 1886 he was appointed lecturer in botany in the Carmichael School, and on the amalgamation of that school with the school of the Royal College of Surgeons three years later he became professor of biology in the latter. He continued to perform the duties of that office to the time of his death. In 1887 he became a Fellow of the Royal College of Physicians of Ireland, and in 1914 was elected President of the College. Dr. Cosgrave was not attached to any of the general clinical hospitals, but he was for many years physician to Drumcondra Hospital, and had also been physician to Cork-street Fever Hospital, and during the war to the Dublin Castle Red Cross Hospital. He was a knight and honorary associate of the Order of Hospitals of St. John of Jerusalem in England, and an examiner and lecturer to the St. John Ambulance Association. He was also a member of several Dublin scientific societies, and at one time filled the office of physician-in-ordinary to the Lord Lieutenant of Ireland.

Among his medical writings he published a treatise on Hints and Helps for Home Nursing and Hygiene, which achieved great popularity, and in 1885 "The Student's Botany," while in 1899 appeared "The Role of Alcohol."

Dr. Cosgrave made a special study of the history and antiquities of Dublin, and he was an authority on everything relating to Georgian Dublin. He wrote or edited several books on this topic, including a "Catalogue of Engravings of Dublin," an "Illustrated Dictionary of Dublin," and the publications of the Georgian Society. He had himself a valuable and charming collection of furniture, engravings, books, and book-plates. Dr. Cosgrave was a conscientious and careful physician, courteous and gentle in manner, and a man of charm and culture.

SUSSEX THROAT AND EAR HOSPITAL.—In connexion with the scheme to extend the out-patients' department of the hospital at Brighton, it was stated at the forty-sixth annual meeting, held recently, that although over £900 had now been subscribed, no extensions would be undertaken until the full estimated cost of £2000 was assured. Improvements carried out during the past year included a new and thoroughly efficient sterilising room, kindly provided by Major R. L. Thorntor, and a new operating table. Financially, the treasurer stated, there was hardly any debt on the year's working. Of the income from ordinary sources, apart from rents and invested funds, the payments from patients amounted to £976 19s. 2d., which was more than half the total. Among the contributions was £163 from friendly, trade, and other societies. The hospital joined the Sussex Provident Scheme during the year and received £75 from it. Lord Leonfield presided over the meeting.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. J. E. Clark to be Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

W. E. M. Wardill to be Surg.-Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. J. Dorgan retires on retd. pay.

RESERVE OF OFFICERS.

Maj. S. W. Sweetnam, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Col. T. Kay (late R.A.M.C., T.A.) to be Col. and Asst. Dir. of Medical Services 52nd (Lowland) Division T.A., vice Col. G. H. Edginton, who vacates on completion of tenure of appointment.

Lt.-Col. (Bt. Col.) F. Whalley, from R.A.M.C., T.A., to be Col. and Asst. Dir. of Med. Services 49th (West Riding) Division T.A., vice Col. A. D. Sharp, who vacates on completion of tenure of appointment.

Lt.-Col. (Bt. Col.) R. E. Bickerton, from R.A.M.C., T.A., to be Col. and Asst. Dir. of Med. Services 56th (1st London) Div. T.A., vice Col. A. D. Ducat, who vacates on completion of tenure of appointment.

YEOMANRY.

Supernumerary for Service with O.T.C.—Capt. A. Fowler (late R.A.M.C., S.R.) to be Capt. for service with the Medical Unit Aberdeen University Contingent, O.T.C.

INDIAN MEDICAL SERVICE.

The King has approved of the resignation of his commission by Capt. A. L. Watts.

PAY OF INDIAN MEDICAL SERVICE OFFICERS IN MILITARY EMPLOY.

The Secretary of State for India has sanctioned the extension to Indian Medical Service Officers in military employ of the concessions regarding overseas pay recently introduced for officers of the Indian Medical Service in civil employ. The extension has effect from April 1st, 1924. Officers now in the United Kingdom who have been in receipt of rupee rates of pay for any period after this date, and who accordingly have claims for retrospective adjustment under this concession, should address the Controller of Military Accounts by whom they were last paid in India.

Passage concessions have been sanctioned for officers of the Indian Military Services. They will apply to any passage beginning on or after Feb. 14th. Detailed rules have yet to be drawn up, but the provisional arrangements which have been approved are being communicated by the India Office to all officers concerned who are now under the orders of the India Office.

THE WEST AFRICAN MEDICAL STAFF.

A new edition of the West African Medical Staff List, corrected up to Jan. 31st of this year, has just been issued from the Crown Agents for the Colonies, 4, Millbank, Westminster, London, S.W. It contains a list of officers in grades with their dates of appointment, a list of officers arranged by colonies, and an alphabetical list with qualifications and services.

THE GOLDEN BOOK OF THE ROYAL ARMY MEDICAL CORPS.

On July 13th, 1922, a tablet to the memory of 743 officers and 6130 warrant officers, non-commissioned officers, and men of the Royal Army Medical Corps was erected in Westminster Abbey. The names of the fallen are enrolled in a Golden Book which will shortly be placed in the Chapter House of the Abbey. A reproduction of the list, which gives the names in alphabetical order with the date of death, and an indication as to whether the soldier died in action or of wounds, has now been issued for the relatives and friends at the price of 2s. 6d. by Messrs. Charles Whittingham and Griggs, Ltd., 20, Took's-court, Chancery-lane, London, E.C.

RONTGEN SOCIETY.—A general meeting of this society will be held on Tuesday, March 3rd, at 8.15 P.M., in the British Institute of Radiology, 32, Welbeck-street, London, W. A paper on the Photometry of Fluorescent Screens will be read by Dr. Leonard A. Levy, D.Sc., and Mr. D. W. West.

Correspondence.

"Audi alteram partem."

ALKALIS IN CERTAIN DISEASES OF THE SKIN.

To the Editor of THE LANCET.

SIR,—In respect of Dr. F. Carminow Doble's article in your issue of Feb. 7th may I report the following case? A patient of mine had been troubled for many years with patches of eczema breaking out on the outer surfaces of his limbs, not large themselves, but setting up large areas of itching; a patch not larger than a shilling would set the whole forearm afire. Or, again, likewise for the leg or thigh. He had found that this scourge happened in the winter only, and accordingly traced it to the effects of fire heat; thus by careful avoidance of the fire, or the use of a screen, he managed with some, but not complete, success to mitigate his plague. The best curative means were simple unguents-inunction with olive oil after the bath, "cold cream," or "glycerine and honey." In the summers he was almost free. His next trouble was nocturnal micturition. As his urine always had been highly lithatic, always painting the chamber-pot, I advised him to take a small teaspoonful of sodium bicarbonate at bedtime. As this put the micturition right the evening alkali was regularly taken. In two or three weeks the patient observed that his eczema had ceased, and with ordinary care he escaped the fire irritation; the unguents lay neglected on the shelf. Two winters have now passed without eczema, and the limbs can be towelled without irritation. The change is remarkably complete; indeed, the patient says that the skin of his limbs is much more "natural," softer, and more pliant to the touch. I offer to Dr. Doble and your readers no explanation, simply an empirical result.—I am, Sir, yours faithfully,

Cambridge, Feb. 17th, 1925.

CLIFFORD ALLBUTT.

HYGIENE OF THE NOSE AND NASO-PHARYNX.

To the Editor of THE LANCET.

SIR,—No more opportune moment could be found than the present one for discussing this subject, when the whole world is being attacked by that most insidious and mysterious of all diseases that are air-borne—viz., influenza. Your readers should be grateful for your calling attention to it in a leading article (vide THE LANCET, Feb. 14th, p. 344).

The medical student has but little time, unfortunately, to study the details of the anatomy of the nose with its vast intricacies, nor of its physiology, and there is practically no instruction given in the hygiene of the healthy nose. It is possible, then, that some of your remarks may lend themselves to be misinterpreted.

The objection to the removal of any part of the surface of the interior of the nose is not peculiar to that organ, since scar-tissue can never function like normal tissue. Also when waste is removed regularly the surface of any organ is likely to remain healthy. But life in the open air will not supply the deficiencies that must be due to lack of care of every sort. Some of the worst cases of sinus disease that have come under my notice have occurred in professional gardeners. It is hardly safe to hold that catarrh is incompatible with the simple life unless that includes the natural methods of the animals that have breathing organs of the same plan as our own—i.e., the keeping of them clean and clear and free from any accumulation of waste. There is some danger in cleaning the nostrils of an infant with pledgets of cotton-wool. The slightest excess of force may drive in the little plugs of dust and dried secretions which lodge in

the nostrils or through the narrow slits which guard the interior of the nasal passages and cause an obstruction which a delicate infant will not be able to shift.

The danger of forcing toxic material into the Eustachian tube is well recognised. It is not so great when one nostril only is closed when blowing the nose, as when there is no airway left in either, but it is sufficiently great specially to be guarded against. The discharges not being able to escape freely are forced up towards the organs among which the nose lies and with which it is in anatomical and physiological continuity and damage is likely to occur to some of them. For the same reason sniffing is a dangerous as well as unpleasant habit. It cannot, however, be seriously suggested that as a suitable alternative the stagnant secretions should be swallowed. The stomach cannot be asked to take on the rôle of a dustbin without interfering with its proper functions. Constant swallowing of anything upsets the rhythm of respiration and when the material swallowed is highly undesirable putrid waste such as develops in chronic catarrh there can occur nothing but harm.

The difficulty of securing the services of anyone who can be trusted to irrigate an infant's nose and know exactly when to stop would suggest that it is a practice not to be encouraged. One case has been brought to my notice where the child succumbed in the nurse's arms, as the exceptional skill and experience were wanting. Nor is it likely that the child who is clogged will have the accuracy of touch to irrigate its nose safely. The child who cannot blow the nose should be trained in the art. The "unkempt" nose is a danger to its owner and to his companions. Handkerchief drill is already established in some schools with the greatest benefit to all concerned.

I am, Sir, yours faithfully,

OCTAVIA LEWIN, M.B., B.S. Lond.

Wimpole-street, W., Feb. 20th, 1925.

THE ACIDIC VALUE OF THE URINE IN SKIN DISEASES AND OTHER CONDITIONS.

To the Editor of THE LANCET.

SIR,—If, as Dr. H. W. Barber admits in his letter in your last issue, the urine is sometimes hypacid, and there is no evidence of acidosis in the blood, I do not see why one should be tempted to try alkalies. Dr. Barber states that the urine may become very acid and the patients show a high alkali tolerance. It would be interesting to know what controls he has carried out on apparently normal people.

However, the chief reason for this letter is to explain that having failed to corroborate his theory by control work I was not deterred from trying the therapeutic test. In many cases valuable discoveries have been made working on a theory which has been found subsequently not to be the right one, and an admirable instance of this is found in the Wassermann reaction for syphilis. None of my patients were improved by making their urine strongly alkaline and for some time after the publication of Drs. Barber's and Semon's paper I was constantly seeing patients with highly alkaline urine resulting from their having been placed upon Dr. Barber's prescription.

Dr. Barber admits that others have been unable to corroborate his work, but says there is no doubt that it is right. I would point out that Dr. Doble disagrees with him in that Dr. Doble thinks it is not enough to produce alkalinity, but that it is necessary to produce only a certain degree, otherwise the condition is not cured.

Dr. Semon, since the publication of the paper in which he was associated with Dr. Barber, has published another recommending X rays for acne, a disease which I am sure Dr. Barber will agree with me in regarding as lying on a foundation of seborrhoea; so that apparently Dr. Semon has not

found the alkaline treatment alone sufficient. Are we then to accept a theory based on results which we cannot corroborate and to continue a form of treatment which in our hands and the hands of others has proved futile?

I am, Sir, yours faithfully.

ARTHUR WHITFIELD.

Harley-street, W., Feb. 23rd, 1925.

UNILATERAL PHRENIC NERVE PARALYSIS.

To the Editor of THE LANCET.

SIR,—Sir Charlton Briscoe's article on this subject in THE LANCET of Feb. 21st is of particular interest because of the renewed attention to artificial paralysis of one half of the diaphragm, now that the operation of phrenic evulsion has been substituted for that of phrenicotomy.

The symptoms of "phrenic paralysis" due to morbid lesions are evidently very different from those which follow phrenic evulsion. I have recently done this operation on six patients and the total absence of any post-operative symptoms has been most surprising. When the nerve is first seized in the forceps (a local analgesia only is used), there is a twitch of the corresponding half of the diaphragm visible to the onlookers, and felt as such by the patient. When the nerve gives way, whether intrathoracically at some 10 to 20 cm. distant, or by actual evulsion of the fibres from the diaphragm, the relaxation of the strain is also felt, but no pain whatsoever.

After this there have been no symptoms, neither pain, respiratory distress, nor preference for any particular posture. The only difference felt referable to the altered position of the diaphragm has been the sensation of a hollow under the right costal margin in one patient, in whom there has been considerable elevation of the dome and of the liver. In every case the disappearance of the dry reiterated purposeless cough has been remarkable.

I am, Sir, yours faithfully,

H. MORRISTON DAVIES.

Vale of Clwyd Sanatorium, Feb. 21st, 1925.

TINCTURE OF IODINE (PH. FR.).

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 21st Dr. P. C. Brett states that the change in the formula for tincture of iodine (Codex 1908) made in the French Codex of 1922 has not been published in medical literature. The following paragraphs appeared in an editorial in the *Prescriber* of February, 1923, p. 64, dealing with iodine as an internal remedy:—

"... Since that time, however, a further difficulty has arisen, which will nullify all the recommendations made of this [French Codex] tincture. *The French Codex has altered the formula.* Under the name of 'Tinctura Iodi Iodurata,' a new preparation appears in the Codex Supplement 1920, which contains iodine, 30 grains, and potass. iod., 12 grains, in one fluid ounce of alcohol 90 per cent., and this preparation is to take the place of the old Codex tincture. The new formula entirely defeats the object of the intensive iodine treatment, which is to administer iodine to the amount of tolerance without KI. This cannot be done with the new tincture, which will of course be supplied if 'Tinct. iodi. French Codex' be prescribed, and physicians must note this and cease to specify 'French Codex.'

"In the absence of a suitable official preparation we would suggest the use of the *Tinctura Iodinei* of the old Edinburgh Pharmacopœia. This contains one grain of iodine in 16 minims of rectified spirit, without KI, and is still kept in stock by many pharmacists north of the Tweed. It is 50 per cent. weaker than the old French Codex preparation, but as dosage is not definitely laid down, being entirely a matter of tolerance, the instructions will be to begin with 2 or 3 minims and gradually increase so long as no iodism is produced. Boudreau observed that one of his patients was able to take 350 drops (not minims) in 24 hours for a month. ..."

I am, Sir, yours faithfully,

THOMAS STEPHENSON,

Editor of the *Prescriber*.

Edinburgh, Feb. 21st, 1925.

MEDICAL AID FOR THE RIFFIS.

To the Editor of THE LANCET.

SIR.—In the House of Commons last week Mr. Saklatvala asked the Prime Minister if it was the intention of the Government to continue the policy of the former Government or whether it will support an appeal of the British Red Crescent Society to the French and Spanish Governments to give facilities for sending a medical mission and medical supplies for the Riffis. For it was reported that the sick and wounded were without medical aid, although Article 2 of The Hague Convention (Laws and Customs of War on the Land) gave belligerent rights to fighting men in a *levee en masse* of the population, providing that they carried their weapons openly and conformed to the laws and usages of war. Mr. Austen Chamberlain (Secretary of State for Foreign Affairs) replied to the effect that the Government were not prepared to intervene in a matter which was entirely a question for the Spanish and French Governments. He further stated, that by Article 2 of The Hague Convention, the provisions of the land warfare regulations apply only as between the signatory parties, and that even if the insurgent tribes in the Spanish and French protectorates were signatories, that the sending of a medical mission or medical supplies to the Riffis have nothing to do with the land warfare regulations.

With the passing remark that Mr. Saklatvala's question was neither inspired directly or indirectly by the Red Crescent Society, one must confess that it is difficult to conceive how an official in the position of Mr. Chamberlain could ever have returned any other reply. But this by no means disposes of British responsibility in the matter. There is an insistent cry from our Moslem fellow-subjects in India that the sufferings of their co-religionists in the Riff should not be disregarded. With unanswerable logic they point out what a clamour would arise in England if a tiny Christian community struggling for freedom against a Mohammedan power were to be deprived of all medical assistance. Some of us are inclined to listen to their cry. We remember with gratitude how the Moslem chivalry of India drew their swords in the Great War and proved their traditional valour on the battlefields of France, Mesopotamia, and Palestine. Many were killed, and lie for all time in honoured graves, while those who were wounded or "gassed" remember their sufferings and wonder what would have been their fate had they been deprived of medical assistance in their hour of need. They read in the papers how the people of the Riff are being assailed with all the latest diabolical contrivances of war—shell, bomb, and poison gas—and the poorest of the poor have subscribed their mites to help the victims. It is a supreme pity that Spain will not see her way to concede to a society working solely in the interests of humanity the right to send a hospital unit. It would be a valuable witness to the fact that Spain was conducting the war in accordance with regulations, and would also be a comfort and protection to the Spanish prisoners in the hands of the Riffis: for the British Red Crescent Society, although founded primarily for the relief of Moslem victims of war, does not work in any mean or sectarian spirit. The President, the Rt. Hon. Syed Ameer Ali, who has had a long and distinguished career in the service of the King-Emperor, has always made this clear. I well remember that before my departure for the Turco-Italian war in Tripolitana, he strictly enjoined me that I was on no account to allow differences of religion or nationality to prejudice me in granting relief, with the result that Christian, Moslem, and Jew shared alike in the charity we administered.

Finally, it must not be thought that those of us who advocate the sending of medical relief to the Riff are in any sense hostile to the Spanish people. We recognise the valour of the Spanish troops who are battling in a country more difficult to fight in than Switzerland or Montenegro, and we regret that

treasure should be poured out in an attempt to subjugate a gallant little people, while the fertile soil and vast mineral treasures of Spain are left neglected. Surely if Great Britain, backed by the enormous resources of the Empire could afford to grant a practical independence to Ireland, Spain need feel no humiliation in granting the status of a dominion to Abdul Kerim's people. But that is hardly a medical question.

I am, Sir, yours faithfully,

ERNEST H. GRIFFIN.

48, Upper Berkeley-street, Portman-square, W. 1,
Feb. 24th, 1925.

ASSOCIATION WITH UNQUALIFIED PERSONS.

To the Editor of THE LANCET.

SIR,—From letters which I have received I gather that some practitioners are in doubt as to the bearing of the following paragraph in the Warning Notice issued by the Council:—

"5. Association with Unqualified Persons.

"Any registered medical practitioner who, either by administering anæsthetics or otherwise, assists an unqualified or unregistered person to attend, treat, or perform an operation upon any other person, in respect of matters requiring professional discretion or skill, will be liable on proof of the facts to have his name erased from the Medical Register."

I am directed to say that this warning does not apply to any person whose name appears upon the Dentists Register, whether so entered in virtue of a diploma or under the Dentists Act, 1921. A registered medical practitioner is entirely at liberty to give an anæsthetic for such a dentist.

I think it might be helpful if the attention of medical practitioners was drawn to their position in regard to this matter.

I am, Sir, yours faithfully,

NORMAN C. KING,

Registrar, General Council of Medical Education and
Registration of the United Kingdom.

Feb. 24th, 1925.

COLOUR IN ANIMALS.

To the Editor of THE LANCET.

SIR.—It might be of interest to those biologists engaged in the study of colour in animals (Mr. J. Barcroft will shortly give three lectures on this subject at the Royal Institution) to bear in mind the paradoxical pupil reaction. The discovery that after section of one sciatic nerve paradoxical effects appear in the contralateral eye about the twelfth day was in itself remarkable. But the further discovery that any section or injury of a nerve is reflected in the pupil reactions, proving thereby an intimate functional relationship between the efferent portion of the pupil-dilator mechanism and every portion of the periphery through the medium of the sensory nerves, suggests that possibly the explanation so eagerly sought for, the law governing the adaptation of colour in animals to their surroundings, lies in this direction. It is in full support of the fact that blinded frogs and chameleons lose this power of adaptation of the colour of their skins to their surroundings.

I am, Sir, yours faithfully,

HORATIO MATTHEWS, M.D.

Harley-street, W., Feb. 6th, 1925.

ROYAL SANITARY INSTITUTE.—A sessional meeting of the Institute will be held on Friday and Saturday, March 6th and 7th, in the Town Hall, Halifax, when discussions will take place on the Working of the Milk and Dairies (Amendment) Act, 1922, to be opened by Mr. John Pollard, M.R.C.V.S., and on Some Food Dangers by Mr. H. T. Lea. The chair will be taken at 4 P.M. on Friday by Prof. A. Bostock Hill. Those proposing to attend the reception, luncheon, and visits in connexion with the meeting should notify the hon. local secretary, Dr. Cyril Banks, Town Hall, Halifax, not later than Monday, March 2nd.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—J. H. Clapp, London Hosp.; J. L. Hopkins, Guy's Hosp.; O. W. Percival, London Hosp.; C. C. Po, Guy's Hosp.; J. Shutt, Leeds and London Hosp.; R. F. Stubbs, Manchester; and B. Temple-Raston, St. Mary's Hosp.

Medicine.—K. V. Mead, St. Thomas's Hosp.; C. C. Po and P. B. Skeels, Guy's Hosp.; B. L. Steele, Univ. Coll. Hosp.; and R. F. Stubbs, Manchester.

Forensic Medicine.—A. Henson, Charing Cross Hosp.; K. V. Mead, St. Thomas's Hosp.; T. K. Natesan, London Hosp.; and R. F. Stubbs, Manchester.

Midwifery.—N. E. Challenger, McGill; T. K. Natesan, London Hosp.; O. W. Percival, Sidney; C. C. Po, Guy's Hosp.; J. Shutt, Leeds and London Hosp.; B. Temple-Raston, St. Mary's Hosp.; I. Waynik, Charing Cross Hosp.; and G. H. Weeber, Middlesex Hosp.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part II., with Second-class Honours.—Dorothy E. Crellin, distinction in medicine; Constance Irene Ham, distinction in surgery and obstetrics; Arthur H. Lowther, distinction in pathology and obstetrics; and Rosalie E. Lucas, distinction in medicine.

Pass.—Arthur F. Alford, Kenneth F. Alford, Alexander S. Cox, Sidney J. H. Griffiths, Frederick E. Hollingshead, John A. Hooker, Kenneth F. Platt, David C. Prowse, Lennox G. Robertson (distinction in obstetrics), Herbert Rogers, Gertrude M. Terrell, and Maria M. Tewater.

In Medicine (completing Examination).—Ernest R. Clutterbuck.

In Surgery (completing Examination).—Helen M. Dixon.

In Public Health (completing Examination).—Arthur H. Marshall.

In Group I. only (Surgery and Obstetrics).—Elizabeth E. Benson, Margaret P. Posthuma, Herbert J. Satchwell, and Kathleen M. Willmore.

In Group II. only (Pathology, Medicine, and Public Health).—Charles F. Rowe Killick.

Part I. (including Forensic Medicine and Toxicology).—Geoffrey W. R. Bishop, John F. O. Bodman, Muriel E. Drew, Francis S. Dymond, George L. Feneley, Francis R. Gedye, Arthur P. Gorham, Mildred B. Harvey, Thomas P. Lalonde, Maurice E. J. Packer, Charles B. Perry, Leslie B. Phillips, Ernest S. Rogers, and Arthur A. B. Vincent.

EXAMINATION FOR DIPLOMA IN PUBLIC HEALTH.

Vincent Ryan.

In Part II. (completing Examination).—John Ledingham.

In Part I. only.—Nora A. McD. Rodger and William W. S. Sharpe.

UNIVERSITY OF LONDON.—A course of four lectures on Puerperal Sepsis will be given in the lecture theatre at St. Thomas's Hospital Medical School (Albert Embankment, S.E.) by Prof. B. P. Watson, at 5 p.m. on March 2nd, 3rd, 4th, and 5th. At the first lecture the chair will be taken by Dr. H. Russell Andrews. Admission free.—A course of two lectures on Vital Statistics will be given at University College by Prof. Harald Westergaard, at 5.30 p.m., on March 9th and 11th. The lectures will be delivered in English. Admission free.

University College.—A special course for the Primary Fellowship of the Royal College of Surgeons of England, in preparation for the June examination, will begin at University College, Gower-street, London, W.C., on Monday, March 2nd.

UNIVERSITY OF LEEDS.—Dr. T. Wardrop Griffith has placed before the Council of the University his resignation of the professorship of medicine. In his letter he points out that, in harmony with the rules of the Leeds General Infirmary, he becomes a member of the consulting staff next September, by which date he will have served for 20 years on the full staff. It was this fact which had led him to anticipate the age-limit for the tenure of office which attaches to professorships in the University; for, although members of the consulting staff have the privilege of admitting a limited number of patients to be under their care in the infirmary and continue to work within its walls, he felt that the best interests of the University would be served if the professor of medicine occupied a position on the full staff. At the meeting of the University Council on Feb. 18th a resolution was adopted, in which the resignation of Prof. Griffith was accepted with deep regret, and a fitting tribute was paid to his work for the University. Prof. Griffith was senior professor at the Leeds Medical School. He was appointed to the chair of Anatomy in 1887 and transferred to the chair of Medicine in 1910, a continuous record of 38 years. In both departments his courses of lectures have been notable for their vivid quality and the perfection of arrangement and delivery. His work in the chair of Medicine has been acknowledged by his admission to the Order of St. Michael and St. George and the conferment of the honorary doctorate of Laws by his own University of Aberdeen.

HUNTERIAN SOCIETY.—The Hunterian Oration on Angio-hæmic Anæmia will be delivered by Dr. H. Letheby Tidy, on March 2nd, at 9 p.m., at the Mansion House.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The Milroy Lectures will be delivered on March 5th, 10th, and 12th at 5 o'clock at the College, Pall Mall East, S.W., by Dr. Salusbury MacNalty on Epidemic Diseases of the Central Nervous System. Any member of the medical profession will be admitted on presentation of card.

INTERCHANGE OF HEALTH OFFICERS.—On the recommendation of the Society of Medical Officers of Health, the Ministry of Health have nominated Dr. James Fenton, M.O.H. for Kensington, and Dr. Alfred Greenwood, M.O.H. for Kent, for the interchange of health officers to be held in Jugo-Slavia during May and June next, under the auspices of the Health Section of the League of Nations. For the interchange to be held in Belgium about the same time the Society recommended Dr. R. J. Maule Horne, M.O.H. for Poole, who has been duly nominated by the Ministry. On the recommendation of the Chief Medical Officer of the Ministry of Home Affairs of Northern Ireland, the Ministry of Health have also nominated Dr. Norman C. Patrick for the Belgian interchange.

MEDICAL TOURS IN MOROCCO.—The French Compagnie Transatlantique is organising two new tours in Morocco for medical men and their families. The first tour will start from Bordeaux on March 30th, and will terminate on April 30th at Marseilles. The second will start from Marseilles on April 18th, and will finish at Bordeaux on May 14th. The journey through Algeria and Morocco will embrace all the places of interest from Algiers to Marakesh, and the entire transport will be by motor-car, each vehicle seating ten passengers. The cost of the tour is 4800 French francs per head. Further information may be obtained from Dr. Victor Gardette, 3, rue Alexandre de Humboldt, Paris (XIV.), who is undertaking the arrangements of the tours.

PUBLIC HEALTH STUDY.—The next interchange of public health officials to be organised by the League of Nations will take place early in March, when ten medical officers from the Republics of South America will meet in Cuba and spend the succeeding months until August in a tour of study arranged by the public health authorities of the United States, Canada, and various European countries. These officials will study the general character of the health organisations of the United States, Canada, and England, and on the continent of Europe several types of organisations where particularly striking results have been obtained.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A discussion on post-graduate teaching in London has been arranged to take place at 1, Wimpole-street, on Wednesday, March 18th, at 6 p.m. Sir Arbuthnot Lane, President of the Fellowship, will preside, and all members of the medical profession in London are invited to attend and to give their criticisms of the existing facilities, and suggestions for their improvement and extension. On Monday, March 2nd, at 5.30 p.m., Prof. H. MacLean will lecture for the Fellowship in the West Lecture Hall on Renal Disease: Its Diagnosis and Treatment. A three-weeks' course in medicine, surgery, and gynaecology will begin at the Royal Waterloo Hospital on March 2nd. Lectures and demonstrations will be given by the staff in the wards and out-patient department, with special reference to gynaecological diagnosis, hernia, diseases of the stomach, intestines, &c. From March 4th to 28th Dr. Frederic Thomson will hold a series of demonstrations in the Diagnosis and Treatment of the Acute Infectious Diseases at the North-Eastern Fever Hospital (Tottenham). The demonstrations will be given on Wednesdays and Saturdays at 11 a.m. The Central London Ophthalmic Hospital has arranged an afternoon course in ophthalmology, starting from March 9th to April 4th. The members of the staff will deal with the different aspects of diseases of the eye, and for those desiring operative work a class can be arranged. From March 16th to 28th the Chelsea Hospital for Women will begin a fortnight's course in gynaecology. Operations, lectures, and demonstrations will be available. The Brompton Hospital for Diseases of the Chest will conduct a fortnight's course from March 16th, which will include artificial pneumothorax, bronchitis, demonstrations of cases, X ray work, protein tests, and the varying phases of chest affections. The Royal Northern Hospital, in conjunction with the Royal Chest Hospital, will give an intensive course in medicine, surgery, and the special departments from March 16th to April 4th. Copies of the syllabus of the above-mentioned courses, together with the February issue of the Bulletin, will be sent on application to the Secretary of the Fellowship, 1, Wimpole-street, London, W.

Dr. David Alexander Volume has been appointed an official member of the executive council of the Presidency of the Virgin Islands.

WESTON-SUPER-MARE HOSPITAL.—This institution has become so inadequate that an attempt is being made to raise between £40,000 and £50,000 to enlarge or improve it, and in the first 21 days of an intensive campaign over £22,000 was obtained. In the summer the population of Weston swells to 100,000, but the hospital contains only 41 beds, of which 6 are fever beds. In addition to more medical wards, a number of new or improved departments are needed.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY. The annual general meeting of this society will take place in Paris this year on April 20th, at Prof. Carnot's Library, Laboratoire de Thérapeutique, Faculté de Médecine (Ecole Pratique), when discussions will be held on (a) the Treatment of Diabetes by Insulin, from the Hydrological Point of View, and (b) the Spa Treatment of Rheumatic Exudations following Traumatism. On the following day visits will be paid to hospitals, the Radium Institute, the Institut d'Hydrologie, and other places of interest. The hon. secretary is Dr. E. P. Poulton, 36, Devonshire-place, London, W. 1, from whom further particulars may be obtained.

GLASGOW WESTERN INFIRMARY.—Like the Glasgow Royal Infirmary, the annual report of which was summarised in our last issue, the Western Infirmary has had a year of exceptional revenue from legacies, the total sum received under that head exceeding £94,000. The ordinary revenue, although increased, failed, however, to meet the ordinary expenditure by nearly £11,000. The infirmary, which has just completed its first half-century, has a daily average of 518 patients. It is hoped to establish a bio-chemical department at a cost of £25,000, towards which a donation of £5,000 has been received. A memorial chapel is approaching completion.

REDLANDS HOSPITAL FOR WOMEN, GLASGOW.—The new home of this hospital, formerly the Glasgow Women's Private Hospital, has been opened by Lady Rhondda. Its special object is the treatment of women by women doctors, the patients whom it is intended to benefit being those who cannot be treated at home or afford to go to a nursing home, and are undesirous of going to a general hospital. The hospital began in 1903 with eight beds; there are now 50. The cost of purchase and equipment has been above £20,000, and the new name is that of a large private residence which has been converted to hospital uses with remarkable success.

THE LATE DR. J. L. OWEN.—John Lewis Owen, M.R.C.S., L.R.C.P. Lond., of Holyhead, Anglesey, died recently in a London nursing home, at the age of 57, following an operation. A native of Anglesey he studied medicine at Edinburgh, where he was a demonstrator of anatomy in Surgeons' Hall. He qualified in 1888. For a time he was resident medical officer at the Union Infirmary, Sheffield, and resident surgeon at Denbighshire Infirmary, before setting up in practice at Holyhead, where he worked for 25 years. For many years he was medical officer of health and public vaccinator to Holyhead Union and Board of Guardians. He was also surgeon to the Admiralty and Trinity Corporation, Holyhead, and also a justice of the peace for his native county. He leaves a widow and a daughter.

MANCHESTER HOSPITALS.—The past year's accounts of the Manchester Royal Infirmary show a deficit of £24,000, the result, to a certain extent, of the abandonment of the custom of placing the whole of the year's legacies to income account—only 25 per cent. has been so dealt with, that the income may be equalised. There has been a remarkable increase in the number of accident patients treated—at over 24,000 they were nearly 6000 more than in 1921. It has been observed that the number of accident cases mounts steadily from January to July, when they began as steadily to decrease. There are 1250 patients on the waiting list. The most urgent need is additional accommodation for the nurses. It is desired so to increase the number that their working hours may be reduced from 63 per week for day and 73 for night-duty to an all-round week of 56 hours. To do this 70 additional nurses would be required.—Manchester Northern Hospital for Women and Children is about to appeal for a building fund of £180,000.—The Manchester and Salford Hospital for Skin diseases also contemplates large extensions. A "Norris Midwood Memorial Wing" is to be built to commemorate the late Mr. Midwood, who was hon. treasurer for nearly 30 years. It is hoped to include a large department for artificial sunlight treatment.

THE LATE DR. A. ROBINSON.—On Feb. 17th Alfred Robinson, M.D. Durh., L.S.Sc., medical officer of health for Rotherham, died after several weeks' illness. He was born in 1860 at Merthyr Tydfil and studied medicine at St. Bartholomew's Hospital and the University of Durham, and graduated M.B. Durh. in 1883 and M.D. in 1887, having previously qualified M.R.C.S. in 1882, and L.S.A. in 1881. He went to Rotherham in 1884, where his first medical appointment was that of medical officer to the Rotherham Workhouse, which he resigned after 21 years' service. He was appointed borough medical officer and police surgeon in 1892. He was at one time president of the Sheffield Medico-Chirurgical Society and also of the Yorkshire Branch of the Society of Medical Officers of Health. For many years he was connected with the Volunteer movement, and did service during the war, retiring as Major of R.A.M.C. He inaugurated the Child Welfare Centre in Rotherham and also a maternity home, and was chiefly responsible for the establishment of an isolation hospital, a small-pox hospital, and subsequently a sanatorium.

ADULTERATION OF FOOD IN SALFORD.—Mr. G. D. Elsdon, the borough analyst of Salford, in his annual report shows that in certain foods in common use there is adulteration on a rather extensive scale. Of the 1388 samples taken under the Sale of Food and Drugs Act, 6.9 were returned as adulterated, as compared with 5.6 per cent. of the samples in 1922, and 8.7 in 1921. In a sample of "Beef and Malt Wine" the mixture was made up of over 75 per cent. of water, nearly 22 of sugar, and 0.2 per cent. of equal parts of meat and malt extracts. The amount of alcohol was 1.5 per cent. and salicylic acid 0.07 per cent. Of 104 samples of drugs, only three were found adulterated. Of 56 samples of dispensed medicines made up from "prescriptions," six were returned as unsatisfactory.

THE LATE DR. FRANK W. A. GODFREY.—By the recent death of Frank William Albion Godfrey, M.B., C.M. Edin., of Scarborough, at the age of 64, in a Leeds nursing home, following complications arising from an attack of influenza, Scarborough has lost one of its best-known practitioners. Frank Godfrey was born at sea while his parents were on a passage to Australia. He received his early education in Australia and studied medicine at the University of Edinburgh, where, in 1883, he graduated with honours. After holding hospital appointments in Edinburgh and Scarborough, he became assistant to the late Dr. Hartley, of Malton, whose daughter he married. He finally settled in Scarborough, where later he became an honorary consulting surgeon to the hospital and dispensary. He was a county magistrate and J.P. for Scarborough, a member of the Leeds and West Riding Medico-Chirurgical Society, a former president of the York Medical Society, and, in 1909, president of the Yorks Branch of the British Medical Association. He was one of the founders of the Ganton Golf Club and a Past-Master of the Old Globe Lodge of Freemasons. Dr. Godfrey is survived by Mrs. Godfrey and three daughters.

POOR-LAW UNIONS AND VOLUNTARY HOSPITALS.—In his address to the 50th Central Conference of the Poor-law Guardians of England and Wales the Chairman, the Rev. Lancelot R. Phelps, Provost of Oriel, said that the voluntary hospitals were so hard put to it that the guardians must come to their aid. There was here a field of constructive adventure, and if the guardians could fill it they would do much to increase the efficiency of labour by shortening the time of sickness. This could best be accomplished by specialisation and getting rid of the old idea of the mixed workhouse, by reckoning up the needs of a district, converting some of the workhouses into hospitals pure and simple, and making provision for other classes of inmates. The provision for the sick within a district formed by several unions should be under the care of a joint committee representing the Unions and the voluntary hospitals.

A BIRMINGHAM AMALGAMATION.—A scheme for the amalgamation of the Royal Orthopaedic and Spinal Hospital and the Birmingham Cripples' Union has been approved by the General Committee of both hospitals. The Orthopaedic Hospital, which was established in 1817, has long been in need of extension; the Cripples' Union dates from 1896. The scheme is based upon the complete pooling of all buildings, equipment, and financial resources, and a union of staffs. Arrangements for a considerable increase in the number of hospital beds for the treatment of cripples of all ages are under consideration. The Cripples' Union, with 180 beds, is the third largest hospital charity in Birmingham, and the Orthopaedic Hospital has recently received from its chairman, Mr. J. H. Francis, a gift of leasehold premises at Edgbaston which will accommodate 30 convalescents. It is hoped that the amalgamation will enable adequate provision to be made for Birmingham and the

surrounding areas, by the aid of local clinics in Coventry, the Black Country towns, &c., and the organisation of a system of after-care such as is already in operation in the city in connexion with the Cripples' Union. During the past 12 months the combined expenditure of the two institutions exceeded £40,000.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The eighteenth meeting of this Commission was held at the Home Office, Whitehall, on Feb. 19th, Lord Lawrence of Kingsgate in the chair. The British Lental Association, represented by Dr. John H. Badcock, L.D.S., Mr. Ernest Y. Richardson, L.D.S., and Mr. Bryan J. Wood, L.D.S., gave evidence on the question of making dental treatment a universal benefit under the Health Insurance Act, and the scope, administration, and cost of such a benefit. The British Society of Dental Surgeons, represented by Sir Frank Colyer and Dr. E. W. Fish, gave evidence on the same range of subjects. Thereafter Mr. R. J. Meller, M.P., and Mr. E. F. Spurgeon, representing the Prudential Approved Societies, were examined on a variety of matters relating to the administration of the society. The Commissioner announced that proof copies of the oral evidence and the relative statements submitted at the meeting of Feb. 5th are now on sale at His Majesty's Stationery Office. (2s. 3d.)

MINERS' WELFARE SCHEME.—The levy of a penny per ton on all coal raised in Great Britain for the Miners' Welfare Scheme is to be continued for another five years, both coalowners and miners being unanimous that it should be continued. The joint committee of owners and men will thus be able to prolong one of the largest and most valuable experiments in industrial welfare that this country has produced. The funds already allocated or in hand amount to nearly £3,000,000. One-fifth of the levy goes to a general fund and is expended on mining education and research into problems of health and safety. By grants from the fund pithead baths, recreation grounds, clubs, and institutes have been established, and convalescent homes for miners endowed. Such a scheme might well be adopted by other great industries.

HARROGATE INFIRMARY.—The supporters of this hospital have at last, thanks to the honorary medical staff, found a way out of the difficulties caused by the proposed enlargement. Two schemes had been proposed—the extension of the existing building, and the erection of a modern hospital on a new site. The first was roundly condemned by the 16 members of the honorary staff as "bad from all points of view"—an opinion confirmed by the experts who were consulted by the Building Committee; finance was felt to be an insuperable obstacle to the second. Thereupon the honorary staff proposed a plan of their own. They suggested the purchase of a site of six or eight acres and the building upon it of a medical department of 40 beds, with a kitchen adequate for 120 beds. It was claimed that the wards of the present infirmary would thus be relieved of medical cases, and that more room would be found for surgical cases without the need for alterations. The urgent need of additional accommodation would thus be met, and the nucleus formed of a modern hospital, to be completed as money becomes available. At the annual meeting of subscribers the scheme, which will cost £40,000, was opposed. The present accommodation of the infirmary is 60 beds.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 14TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 150; scarlet fever, 1653; diphtheria, 1045; enteric fever, 42; pneumonia, 1742; puerperal fever, 36; cerebro-spinal fever, 9; acute poliomyelitis, 6; encephalitis lethargica, 51; dysentery, 9; ophthalmia neonatorum, 119. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of 12 over the number for the preceding week. Twenty-nine cases were notified from Derbyshire, 6 from Lincolnshire (Sleaford, 6), 16 from Northumberland, 22 from Notts, and 61 from Yorks, North Riding, (Middlesbrough, C.B. 57).

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, 65 from measles, 11 from scarlet fever, 133 from whooping-cough 41 from diphtheria, and 354 from influenza, as compared with 291, 202, 195, and 142 in the four preceding weeks. In London itself the deaths from influenza numbered 92, from whooping-cough 47, and from diphtheria 11.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 2nd.

TROPICAL DISEASES AND PARASITOLOGY: Special Meeting at 5.30 P.M.

Paper:

Dr. Henry E. Meleney (Union Medical College, Peking): Kala-azar in China: with Special Reference to its Histo-pathology in Experimentally Infected Hamsters. Histological sections will be shown, and lantern slides illustrating some of the special features of the infections.

EPIDEMIOLOGY

COMPARATIVE MEDICINE

DISEASE IN CHILDREN

Special Discussion: at 8 P.M.
The Control of Tuberculosis and the Milk-supply (adjourned from Feb. 9th).

Speakers:

Dr. M. J. Rowlands, Dr. Stenhouse Williams, Dr. David Nabarro, Sir Layton Blenkinsop, Dr. Nathan Raw, Mr. G. P. Male, Sir Henry Gauvain, Dr. A. Stanley Griffiths, and others.

Tuesday, March 3rd.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.).

Cases will be shown by Mr. Jenner Verrall and others.

PATHOLOGY: at 8 for 8.30 P.M. at the Lister Institute, Chelsea, S.W.

Demonstrations:

T. Lumsden: The Effects of an Anti-serum on Cancer Cells in vitro.

H. Schutze and S. S. Zilva: Experimental Tubercle in Rats.

Communications:

V. Korenchevsky: Some Important Points in the Technique Necessary for the Accurate Study of Metabolism in Rabbits.

B. Korenchevsky and M. Carr: Studies in the Internal Secretion of Sexual Glands: Influence of the Testis and Prostate on the Nitrogen Metabolism of Rabbits.

R. St. J. Brooks: The Serological and Biochemical Reactions of Pathogenic Plant Bacteria.

J. C. G. Ledingham: The Guarneri Body.

S. P. Bedson, H. B. Maitland, and M. Burbury: Foot-and-Mouth Disease in the Guinea-pig.

Wednesday, March 4th.

BALNEOLOGY AND CLIMATOLOGY

EPIDEMIOLOGY AND STATE MEDICINE

MEDICINE

THERAPEUTICS AND PHARMACOLOGY.

Special Discussion: at 5.30 P.M.
The Nature, Prevention and Treatment of Fibrositis.

Dr. W. Edgecombe will open the Discussion for the Section of Balneology, followed by Dr. J. A. Glover (Epidemiology), Sir William Willcox (Medicine), and Dr. P. Hanuli (Therapeutics).

Other Speakers:

Dr. Ackerley, Dr. Midelton, Dr. Kerr Pringle, Sir Percy Bassett-Smith, Dr. R. Hill, Mr. J. E. R. McDonagh, Dr. M. B. Ray, Dr. Oliver Heath, Dr. C. E. Sundell, and Dr. Higgins.

(The Discussion will be continued on Thursday, March 5th, at 5.30 P.M.)

SURGERY: at 8.30 P.M.

Communication:

Mr. Pinthu Sai (Bangkok): A Case of Sarcoma of the Breast

Discussion on

The Mortality of Appendicitis, to be opened by Mr. Joseph Adams and Mr. McNeill Lowe.

Thursday, March 5th.

BALNEOLOGY AND CLIMATOLOGY

EPIDEMIOLOGY AND STATE MEDICINE

MEDICINE

THERAPEUTICS AND PHARMACOLOGY

Special Discussion: at 5.30 P.M.
The Nature, Prevention and Treatment of Fibrositis.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Mr. Beckwith Whitehouse: (1) Uterus and Vagina Excised for Epithelioma of Vagina. (2) Sarcoma Botryoides of Cervix Uteri. (3) Mesenteric Dermoid.

Prof. Louise McIlroy: Retroplacental Hematoma from a Case of Toxæmia of Pregnancy.

Short Communications:

Dr. J. S. Fairbairn and Dr. Z. Mennell: Toxæmia in Early Pregnancy with Jaundice, Hyperemesis and Multiple Neuritis.

Mr. Everard Williams and Dr. Russell Reynolds: A New Method of Determining the Patency of the Fallopian Tubes by Means of X Rays.

Paper:

Dr. Sidney Forsdike: Investigation of the Uterus and Fallopian Tube by Inflation with Air and X Rays.

Friday, March 6th.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases and Specimens will be shown.

ANÆSTHETICS: at 8.30 P.M.

Paper:

Mr. F. S. Rood: Extradural Anaesthesia.

Saturday, March 7th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)

Cases and Specimens will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

WEDNESDAY, March 4th.—9 P.M., Sir Bernard Spilsbury: Wounds and Other Injuries in Their Medico-Legal Aspect (Second Lettsomian Lecture).

HUNTERIAN SOCIETY.

MONDAY, March 2nd.—9 P.M. (at the London Mansion House).—Dr. H. L. Tidy: Anglo-Hæmic Anæmia. (Hunterian Oration.)

LECTURES, ADDRESSES, DEMONSTRATIONS &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 2nd to SATURDAY, March 7th, 1925.—

WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. Monday, March 2nd, at 5.30 P.M., Prof. H. MacLean on Renal Disease—Its Diagnosis and Treatment.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynecology. Lecture-Demonstrations will be given in the Wards and Out-patient Departments.—NORTH-EASTERN FEVER HOSPITAL, St. Anne's-road, Tottenham, N. Wednesday and Saturday, at 11 A.M., Demonstrations on the Diagnosis and Treatment of the Acute Infectious Diseases will be given by Dr. Frederic Thomson.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.1.

POST-GRADUATE COURSE: FEB.—MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, March 2nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Chorea: Dr. Kinnier Wilson.

TUESDAY, March 3rd.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Pathology of Cerebral Tumours: Dr. J. G. Greenfield.

THURSDAY, March 5th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Radiology in the Diagnosis and Treatment of Nervous Diseases: Dr. Russell Reynolds.

FRIDAY, March 6th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Surgical Treatment of Spastic Conditions: Mr. Percy Sargent.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, March 5th.—12 noon, The Neuron: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, March 2nd.—12 noon, Cerebellum: Dr. Hinds Howell.

The Fee for this Course will be £2 2s.

Dr. H. J. MacBride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, March 4th.—3.30 P.M., The Oculomotor Nerves: Mr. Leslie Paton.

Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course. J. G. GREENFIELD, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, March 3rd.—4.30 P.M., Dr. J. Browning Alexander: Modern Views on the Treatment of Diabetes.

FRIDAY.—4.30 P.M., Mr. W. Ibbotson: Nasal Catarrh: A General Discussion.

Daily, In-patient and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, March 5th.—4 P.M., Dr. Still: Some Hæmorrhagic Affections in Childhood.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.

THURSDAY, March 5th.—5 P.M., Mr. L. G. Phillips: Some Common Obstetric Difficulties.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, March 3rd.—5 P.M., Dr. Wilfrid Fox: Nævi.

THURSDAY.—5 P.M., Dr. H. G. Adamson: Benign Growths of the Skin.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, March 2nd.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.

2 P.M., Dr. Scott Pinchin: Medical Out-patients.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients.

THURSDAY.—11 A.M., Sir Henry Simson: Gynecological Wards. 12 noon, Mr. Sinclair: Abdominal Surgery (Lecture). 2 P.M., Mr. Bishop Harman: Eye Dept.

FRIDAY.—10.30 A.M., Dr. Dowling: Skin Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children.

10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, Cavendish-square, W.

FRIDAY, March 6th.—4.30 P.M., Dr. E. W. Goodall and Dr. G. E. Friend: A Discussion on the Differential Diagnosis of Scarlet Fever, Rubella, and Measles and Allied Rashes.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)

MONDAY, March 2nd.—(At the Children's Hospital.) Mr. Morrison: Surgical Diseases of the Kidneys in Childhood.

TUESDAY.—(At the Southern Hospital.) Mr. W. R. Williams: The Treatment of Whitlows.

WEDNESDAY.—(At the Northern Hospital.) Dr. Pemberton: Subinfections.

THURSDAY.—(At the Stanley Hospital.) Miss R. Nicholson: Ovarian Tumours.

MANCHESTER MEDICAL SOCIETY.

THURSDAY, March 5th.—4 P.M., Joint Meeting with the Liverpool Medical Institution, at Liverpool. Prof. A. Ramsbottom: Dizzy Attacks. Mr. J. B. Macalpine: Vesical Papilloma. Dr. H. Platt: Considerations on Loose Bodies in Joints.

ANCOATS HOSPITAL.

THURSDAY, March 5th.—4.30 P.M., Dr. Norman Kletz: Dyspepsia.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, March 3rd.—4.15 P.M., Dr. T. H. Oliver: Practical Points in Diabetes.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).

FRIDAY, March 6th.—4.30 P.M., Dr. D. Dougal: Displacements of the Uterus in Relation to Pregnancy and Labour.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH

TUESDAY, March 3rd.—4 P.M., Dr. C. E. Douglas: Albuminuria and Pregnancy. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.

TUESDAY, March 3rd.—6 P.M., Prof. R. H. A. Plimmer: Common Errors in Diet.

Appointments.

BYRD, C. B., L.R.C.P. Lond., M.R.C.S., has been appointed

Certifying Surgeon under the Factory and Workshop Acts for the Patterdale District of the County of Westmorland.

SHAW, WILLIAM FLETCHER, M.D. Manch., appointed to the Chair of Obstetrics and Gynecology in the University of Manchester.

Cheltenham General Hospital: LIDDERDALE, F. J., M.B., B.S. Durh., D.P.H., Hon. Physician; DAVEY, J. B., M.B., M.R.C.S., L.R.C.P., D.T.M., Hon. Pathologist.

St. Paul's Hospital for Skin and Genito-Urinary Diseases: WALKER, KENNETH, F.R.C.S. Eng., Honorary Surgeon; EVANS, Sir THOMAS J. CAREY, F.R.C.S. Eng., and WINSBURY WHITE, H. P., F.R.C.S. Eng., Honorary Assistant Surgeons.

Vacancies.

For further information refer to the advertisement columns.

Barnet, Wellhouse Hospital.—Asst. R.M.O. £150.

British Hospital for Mental Disorders, &c., 72, Camden-road, N.W.—Hon. P.

Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.

Cardiff, Welsh National School of Medicine.—Asst. Lecturer in Dept. of Physiology. £400.

Derbyshire County Council.—M.O.H., &c. £1400.

Ealing Borough.—Asst. M.O.H. £600.

Federated Malay States.—Research Studentship in Tropical Medicine. £700.

Grimsby, County Borough Education Committee.—Den'tal S. £300.

Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300.
Inverness, Northern Infirmary.—Jun. M.O. £100.
King's College Hospital, Denmark Hill, S.E.—Jun. Obstet. and Gynaecol. S.
Liverpool Open-air Hospital for Children, Leasowe, for Non-Pulmonary Tuberculosis.—Jun. M.O. £200.
London Temperance Hospital, Hampstead-road, N.W.—Dermatologist.
Manchester, Ancoats Hospital.—Res. M.O. and Pathological Reg. at rate of £175 and £100 respectively.
Manchester, Christie Hospital.—Cancer Research Worker. £500.
Manchester, Hulme Dispensary, Dale-street.—Hon. S.
Manchester, Salford Royal Hospital.—H.S. and Cas. H.S. Each at rate of £125.
Metropolitan Asylums Board, Infectious Hospitals Service.—Asst. M.O.'s. £500.
Metropolitan Hospital, Kingsland-road, E.—Hon. Anaesthetist.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Ophth. S.
Nottingham General Hospital.—Pathologist. £350 and private fees allowed.
Oldham Royal Infirmary.—H.S. a rate of £200.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Anaesthetist. £20.
Royal Chest Hospital, City-road, E.C.—Phys. Also Hon. Radiologist.
Royal Dental Hospital of London, Leicester-square, W.C.—Asst. Dent. S.
Royal Northern Hospital, Holloway, N.—M.O. to Out-patient Dept. at rate of £125. H.S. at rate of £75. Also Asst. Radiologist. £150.
St. Mary's Hospital Institute of Pathology and Research, Paddington, W.—Research Studentship at rate of £200.
St. Pancras Metropolitan Borough.—M.O.'s Infant Consultations. 1½ guineas per consultation.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. at rate of £75.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—S. to In-patients and S. to Out-patients.
Sheffield Royal Hospital.—Hon. Radiologist.
Southampton County Borough.—Asst. M.O.H. £600.
Stockport County Borough.—Asst. Med. Off. Health. £600.
Sudan Medical Service.—Two Med. Inspectors. £E.720.
Sutton, Surrey, The Downs Hospital for Children.—Jun. Asst. M.O. £500.
University College Hospital, Gower-street, W.C.—Obstet. Phys.
West London Hospital, Hammersmith-road, W.—H.P. and 2 H.S.'s. Each at rate of £100.
West Riding County Council.—Dist. Tuberculosis O. £600.
Wilkesden General Hospital, Harlesden-road, N.W.—Temp. Asst. Hon. Radiologist.

Births, Marriages, and Deaths.

BIRTHS.

CREASY.—On Feb. 17th, at Devonshire-place, W., the wife of Dr. Rolf Creasy, junr., of a daughter.
 GRANT.—On Feb. 11th, at Sidney House, Shrewsbury, the wife of W. J. Grant, M.D., F.R.C.S., of a son.
 MACDONNELL.—On Feb. 19th, at 89, Lower Baggot-street, Dublin (Nursing Home), the wife of J. J. MacDonnell, M.B., of a daughter.
 MATTHEW.—On Feb. 15th, at Redgarth, Dundee, the wife of Dr. David Matthew, of a son.

MARRIAGES.

LOCK—PUNNETT.—On Feb. 18th, at Holy Trinity Church, Tunbridge Wells, Percy Gonville Lock, M.A. Camb., M.R.C.S., L.R.C.P., to Clare, widow of Edward John Punnett, of Tonbridge.
 READER—HARMER.—On Feb. 14th, at Bickley, Kent, N. L. M. Reader, M.S., F.R.C.S., to Mabel Kathleen, daughter of Mr. and Mrs. P. J. Harmer, of Cotswold, Bickley, Kent.

DEATHS.

ALLBUTT.—On Feb. 22nd, suddenly, at S. Radegund's, Cambridge, the Rt. Hon. Sir Thomas Clifford Allbutt, K.C.B., M.D., Regius Professor of Physic in the University of Cambridge, in his 89th year.
 CUTHBERTSON.—On Feb. 15th, at Bexley, Captain John Oswald Cuthbertson, R.A.M.C., M.B., B.A., in his 54th year.
 HACKETT.—On Feb. 15th, at Ocala, Eldorado-road, Cheltenham, Colonel R. I. D. Hackett, C.B.E., M.A., M.D., late Army Medical Service.
 MARTIN.—On Feb. 19th, at "Strangford," Church-road, Ashford, Kent, Albert Edmund Samuel Martin, F.R.C.S. (Ireland), aged 41.
 MORRELL.—On Feb. 19th, suddenly, at Sheffield, Reginald Arthur Morrell, M.R.C.S., aged 39.
 SIMONS.—On Feb. 15th, at Bath, Lieut.-Colonel Robert J. Simons, R.A.M.C., of Corsham, Wilts., in his 59th year.
 N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GERMAN HOSPITAL, DALSTON.—The annual report shows that the number of in-patients treated last year was 1971, including 200 accident cases, nearly all of which were English. The system of patients' contributions has become a stabilising financial factor, and is expected normally to produce between £7000 and £8000 a year.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, FEB. 17TH.

Silicosis and Workmen's Compensation.

Mr. CECIL WILSON asked the Home Secretary whether, in view of the serious effect of silicosis on the curtailment of life in persons engaged in grinding trades, he could see his way to the introduction of a Bill amending the Workmen's Compensation (Silicosis) Act, 1918, so as to cover disablement due to silicosis or silicosis accompanied by tuberculosis in the grinding trades.—Sir WILLIAM JOYNSON-HICKS replied: The Act of 1918 empowers the Secretary of State to make a scheme for the payment of compensation in any industry or group of industries involving exposure to silica dust. No further legislation therefore is necessary. The question of a scheme for the grinding trades has been referred for advice to the Departmental Committee on Compensation for Silicosis, and further action must depend on the Committee's report.

Labelling of Manufactured Foods.

Sir WILFRID SUGDEN asked the Minister of Health if he would give facilities for the introduction of legislation requiring manufactured food to be labelled with full details of its contents and ingredients.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: Any legislation which may be introduced on these lines would have my right hon. friend's careful consideration, but he is afraid it is not likely that any special facilities could be given in this connexion.

Increase in Population.

Mr. HERBERT WILLIAMS asked the Minister of Health if he would state the total estimated increase in population from the armistice up to December, 1924; the total number of houses completed in that period; and the number demolished during the same period.—Sir KINGSLEY WOOD replied: The total estimated increase in the population of England and Wales from the armistice up to December, 1924, is 1,402,000. In connexion with State-assisted schemes 263,396 houses have been completed during this period. Complete information as the number of houses erected without State assistance is not available, but during the two years for which figures are available—viz., to Sept. 30th last—some 126,000 houses were built by private enterprise without State aid. My right hon. friend has no information as to the total number of houses demolished during the period, but according to reports of medical officers of health for the year 1920 to 1923 inclusive action by local authorities under Section 18 of the Housing, Town Planning, &c., Act, 1909, resulted in the demolition of 2568 houses.

WEDNESDAY, FEB. 18TH.

Industrial Accidents in 1924.

Lord HENRY CAVENDISH-BENTINCK asked the Home Secretary the total number of industrial accidents for 1924; and the number of fatal industrial accidents for the same period.—Sir W. JOYNSON-HICKS replied: The total number of accidents reported under the Factory and Workshops Acts in 1924 was 169,726, of which 953 were fatal. These figures are provisional only and may be subject to slight correction. I regret that I am unable to give the figures of accidents in industries not covered by the Factory Acts.

Mentally and Physically Defective School Children.

Colonel DAY asked the President of the Board of Education what was the number of mentally deficient and the number of physically defective children in public elementary schools and the number in each group for whom provision was made in special schools.—Lord E. PERCY replied: According to the returns from local education authorities for 1923, it would appear that there are, in England and Wales, about 30,000 educable mentally defective children and about 106,000 physically defective children, among whom are included about 49,000 classed as "delicate," and that of these children about 11,000 mentally defective and about 67,000 physically defective children (including about 36,500 children classed as "delicate") are attending public elementary schools. At the present time there is accommodation in special schools for 16,565 mentally defective children and for 16,608 physically defective children. For full details I would refer the hon. and gallant member to Section VI. of the report of the Board's chief medical officer for 1923.

Demolition of Slum and Insanitary Areas.

Captain GARRO-JONES asked the Minister of Health whether he was aware that the chief obstacle to the demolition of slum and insanitary areas was now the lack of alternative

accommodation; and whether he would cause a survey of such possible accommodation to be commenced at once and give instructions that the survey should encompass not only vacant houses of all types, but also houses used as workshops and unoccupied institutions, as, for example, the casual ward of the Hackney Union.—Mr. NEVILLE CHAMBERLAIN replied: Schemes for the clearance of insanitary areas provide for the building of alternative accommodation for the re-housing of the occupants who will be displaced. Local authorities have power to acquire and adapt existing property, but the adaptation of existing buildings has usually been found to be costly and unsatisfactory, and I do not think that the advantages of a survey, such as is suggested, would be commensurate with the cost of making it.

Vaccination Exemptions in 1923.

Mr. SAVERY asked the Minister of Health the number of children on behalf of whom exemption from vaccination was claimed during the year 1924; and how many of those claims were allowed.—Mr. NEVILLE CHAMBERLAIN replied: The last year for which particulars are at present available is 1923. During that year statutory declarations of conscientious objections to vaccination were received by vaccination officers in respect of 284,551 children. I have no information as to the number, if any, of statutory declarations which were not accepted because they did not comply with the statute or were otherwise invalid.

Tuberculosis Order, 1914.

Sir FRANCIS WATSON asked the Minister of Agriculture whether it was intended to reintroduce the Tuberculosis Order of 1914 with regard to cattle, which sought to eliminate certain classes of diseased animals from a herd.—Mr. WOOD replied: This matter is now under the consideration of the Government and I hope to be in a position to make a statement at an early date.

Public Health Acts Amendment Bill.

Mr. ROBERT WILSON asked the Minister of Health if he proposed to introduce a Public Health Acts Amendment Bill on the lines of the Amendment Acts of 1890 and 1907, embodying provisions which had been passed in private Acts by the Local Legislation Committee of the House of Commons.—Mr. NEVILLE CHAMBERLAIN replied: I hope to be able to introduce such a Bill, but I cannot say whether it will be possible to introduce it this session.

Poor-law Medical Officers' Salaries.

Mr. WARNE asked the Minister of Health the number of Poor-law medical officers and the cost of salaries per annum; and the number of deaths in workhouses and the bodies removed for medical and dissection purposes in the years 1914 and 1923.—Mr. NEVILLE CHAMBERLAIN replied: Information giving the number of Poor-law medical officers is not available, nor is separate information as to their salaries. The approximate total remuneration of Poor-law medical officers, dispensers, and nurses in the year 1922-23 was £1,900,000. 59,524 deaths occurred in Poor-law institutions in 1914, 60,911 such deaths in 1923. The number of bodies removed to medical schools in England and Wales for the purpose of anatomical examination and operative surgery was in 1914, 301, and in 1923, 388.

Assistance to Crippled Children.

Sir CHARLES CAYZER asked the Minister of Health what provision, if any, was made by the State for assistance in any way to crippled children.—Mr. NEVILLE CHAMBERLAIN replied: Grants are available from the Exchequer towards expenditure incurred by local authorities for the treatment and after-care of crippled children in accordance with arrangements approved by the responsible department of State, which may be either the Board of Education or the Ministry of Health.

TUESDAY, FEB. 24TH.

Royal Commission on National Insurance.

Mr. HAYDAY asked the Prime Minister whether he was prepared to recommend the extension of the terms of reference of the Royal Commission on National Health Insurance.—Mr. BALDWIN replied: No Sir, it is not proposed to extend the terms of reference of a commission constituted to deal with the particular question of National Health Insurance.

CHILD WELFARE.—The annual general meeting of the National League for Health, Maternity and Child Welfare, and of the National Association for the Prevention of Infant Mortality will be held at Carnegie House, 117, Piccadilly, London, W.1, to-day (Friday), Feb. 27th, at 3 P.M., when Lieut.-Colonel F. E. Fremantle, M.P., will give an address on Parliament and the Public Health. Dr. Amand Routh will be in the chair.

Notes, Comments, and Abstracts.

NUTRITION.

By J. V. A. SIMPSON, M.D. LOND., D.P.H. CAMB.,
DEPUTY MEDICAL OFFICER OF HEALTH AND SCHOOL
MEDICAL OFFICER, TORQUAY.

IN attempting to outline what is meant by the term "nutrition" it is at once seen that there is great difficulty of exact statement, for nutrition is a complex process. With reference to the use of the Dunfermline scale, Dr. Alister Mackenzie wrote that in judging and classifying nutrition "the general appearance of the child, the condition of the skin and subcutaneous tissues, the muscular tone and development, the state of the mucous membranes, the vigour or listlessness which may appear in the child's facial expression, carriage, movements, voice, interest, all contribute to our decision."¹ And Sir George Newman said: "Sound nutrition is a general physiological condition which connotes a healthy body in all respects and the good tone and health of its various constituent parts In regard to diagnosis, therefore, the school medical officer has as yet neither an absolute standard of nutrition nor a single criterion to guide him. He must form a considered and careful opinion on all the facts before him."²

Nevertheless doctors differ, and the personal element must necessarily be a powerful influence in much of the practice of medicine. In certain laboratory tests, in face of definite clinical physical signs, there can be little dispute over the findings and the interpretation of the results, but on such a question as nutrition a variety of conflicting opinions are frequently obtained, even from expert clinicians. Therefore the search for a practical yet simple index of physical fitness has been given much emphasis during the last few years; and progress has taken place mainly along three lines. In the first case the idea of using the Dunfermline scale has been adopted; in this the child is placed in one of four groups: (1) "Excellent" means the nutrition of a healthy child of good social standing; (2) children whose nutrition just falls short of standard 1 are in this group; (3) children "requiring supervision" and are on the borderline of serious impairment constitute this group; (4) children "requiring medical treatment" are those whose nutrition is seriously impaired. This has many advantages, one of which is that whereas the usual "good," "fair," "poor" headings may cause the inspector to place all doubtful cases in the middle group, a fourfold division calls for more thought and generally receives it. Although no considerable progress has been made in developing a scale along these lines, the possibilities have probably not yet been fully explored.

The second method consisted in the use of a single physical characteristic as a measure of fitness, that almost exclusively used being weight; and in employing this criterion, it is essential that a certain amount of deviation from the average be allowed, because this actually occurs among healthy individuals. The limits of this "zone" are not easily made and appear to have been based upon opinion rather than upon investigation, and it has certainly been demonstrated quite clearly "that even for healthy children the variability in weight differs in a marked degree according to sex and age, and it would appear necessary to delimit normal variations for each sex, age, and other groups."³ The third method is to employ variations in more than one physical characteristic, such as weight, sitting height, chest circumference, and vital (lung) capacity; of these the most elaborate is that of Dreyer,⁴ and the possible advances in this direction would appear to be numerous. This method and that of Flack are extremely valuable, and in the annual report (1923) of the school medical officer, Manchester, there is a section dealing with important results in secondary school boys with modifications of these methods. Of other methods the "Pedihsis" factor⁵ of Pirquet has been used, and the standard of Wood⁶ has received wide application in America, where his table has been employed in routine school work.

Excluding the more detailed methods, for these perhaps are not always easily applicable to very young children, the results of several investigations into the reliability of the indices are now available; primarily it would appear that there is no simple gauge of nutrition.^{7 8 9} Failing a complete physical examination, however, all the children who are 7 per cent. underweight for height, age, and sex may be regarded as undernourished.¹⁰ Although such standards cannot diagnose disease, and are only to be subsidiary to complete clinical examination, yet it has been shown that this method seems worthy of use; even if no complete clinical picture of the child's physical condition is given by it, yet "the relation of weight to height and age is the best single index of general health and nutrition

as well as the best criterion of normal growth that we possess."¹¹

The Results of Tests in an Open-air School.

With this in view, and bearing in mind the fact that no measurements other than weight and height were available, it was decided to test the Baldwin-Wood tables and a standard in connexion with the children in the open-air school at Torquay. This investigation involves the records of 148 children extending over a period of about 4½ years; and as the annual reports of the Board of Education recommend six months as a minimum period of stay at an open-air school, any children who were at this school for a less period have been excluded from this survey. Of the 148, about a third are still at the school, but these are included because they have been there for more than six months. The findings should show how far this standard judges malnourished children, for the majority were admitted for malnutrition, anæmia, or allied condition; further, it should be possible to test the results of the school itself, for the application of the same standard to the children as they enter and as they leave the school is a method freed from personal bias. Thus the ratio of cases classed as malnourished before and after treatment at this school will have a significance, the value of which must be admitted as quite definite. In addition, it is possible to find out from these tables the average annual increase of growth for age, sex, and height, and consequently the expected increase can be compared with that actually obtained; this is most valuable, for of greater importance than the weight or height at any given age is the annual increment of growth.

Applying the Baldwin-Wood method to the 148 children, and counting as malnourished all below 7 per cent. of the standard weight for age, sex, and height, results were obtained as shown in Table I.:-

TABLE I.

—	On entering the school.			On leaving the school.		
	Normal	Mal-nourished.	Per-centage mal-nourished.	Normal	Mal-nourished.	Per-centage mal-nourished.
Boys ..	40	37	48.0	64	12	15.6
Girls ..	26	45	63.8	52	20	28.6
Total ..	66	82	55.4	116	32	21.6

The average time spent at the school is given in Table II.:-

TABLE II.

—	Normal.	Malnourished becoming normal.	Malnourished remaining malnourished.
Boys ..	1.6 years	1.8 years	2.2 years
Girls ..	1.7 ..	1.7 ..	1.6 ..

From this it is seen that there is a greater percentage of girls than boys malnourished, in spite of the fact that usually there are slightly more boys than girls at the school. Whether or not this is a mere chance selection it is scarcely possible to say. If it is not, then, although the medical officer drafts more boys than girls to the school, this standard would judge a greater proportion of girls as suffering from malnutrition; this might possibly be due to the greater height of girls at some ages. Approximately just over half the children admitted are below this standard; and it is difficult to say if this standard of malnutrition is correct, for while the majority are admitted for debility, malnutrition, anæmia, and allied conditions, yet a number (in this series approximately 15 per cent.) were admitted as contacts of tuberculous cases, or as children with heart disease, chorea, old infantile paralysis—conditions which would not clinically be called malnourished. The children have been admitted during the four years by no less than three different medical officers, which should equalise the personal factor of selection, and so it would appear that this standard just fails to class as malnourished a definite percentage (in this series about 30 per cent.) of the children. This agrees partly with the American findings,⁹ although there it was found that many more children clinically suffering from malnutrition are missed—it was thought that about two-thirds of the malnourished escape with this standard.

As judging the work of the open-air school the standard is distinctly useful and shows very good results; for whereas 1 out of every 2 children was definitely below the limit on admission, only 1 out of 5 is below when leaving. And this would probably show an even better result had it not been for the fact that quite an appreciable number,

classed as malnourished on leaving, have left for a special reason—school-leaving age, leaving the district, admission to other institutions. And in addition to this some of the malnourished are among those still in the school who, as explained, are included in this series, and they will doubtless pass the limit in course of time.

The Cases Analysed.

A further analysis of the cases is of great interest; other investigators have shown that the children under the limit are usually taller for their ages than were those in more normal condition of weight.¹² The paucity of data in these figures did not permit an analysis by sex and age for this purpose; but it was shown that the children who remained malnourished tended to put on more height than either those malnourished cases becoming normal, or the normal group. To make any comparison feasible, two year groups were taken together and the average annual increase in height worked out. The results were as given in Table III.

TABLE III.—Average Increase in Height per Year.

—	Ages.	Group 1. Malnourished remaining malnourished.	Group 2. Malnourished becoming normal.	Group 3. Normal.
		Inches.	Inches.	Inches.
Boys ..	6-7	2.4	1.7	1.8
	8-9	1.9	1.6	1.8
Girls ..	8-9	2.0	1.8	1.8
	10-11	1.9	1.7	1.8

Group 1 in Table III. make rather more than the average increase in height and this agrees with other investigations,¹² so that it would appear that there has been a retardation in height as well as in weight, and that as soon as favourable circumstances permit there is not only an improvement in weight, but a definite and greater than average increase in height. One of the problems met by the nutrition worker and noted by W. R. P. Emerson is the fact that as fast as children who are underweight make gains in weight, their height increases as well and the new height calls for additional weight.

According to age, sex, and height, the average annual gain in weight can be obtained from the Baldwin-Wood tables, and this expected average gain for the whole period of stay at the school has been worked out for each child individually in the Torquay series. On comparison with the actual gain during the same time, figures were obtained as given in Table IV.

TABLE IV.—Average Gains in Weight (in Pounds).

—	Group 1. Malnourished remaining malnourished.		Group 2. Malnourished becoming normal.		Group 3. Normal.	
	Expected gain.	Actual gain.	Expected gain.	Actual gain.	Expected gain.	Actual gain.
Boys ..	14	13½	10	12½	8½	10½
Girls ..	12½	12	12	16	9½	13

It is seen that the children remaining malnourished gain approximately as much as the average expected increase in weight (although they have put on more than the average in height), but the other groups gain considerably more than the expected addition of weight (and they only gain the average in height). So while the gain in weight in Group 1 is not sufficient to bring the children above the malnutrition standard, yet in the other two groups the increase is quite adequate, even taking into account the fact that the extra height automatically demands a higher standard of weight in the Baldwin-Wood scale. In other words, it is frequently found that the advance in weight sufficient to bring children up into the safety zone is accompanied by more than the expected increase in height for the same period. A prominent investigator recently made the dictum that if the inches are looked after, the pounds will look after themselves; but it is better to consider both, the one in relation to the other, for obviously it is evident that a number of children have at the start more inches than they are able to sustain by pounds.

Conclusion.

This investigation can be criticised on several grounds; paucity of data is apparent, especially when considering averages, and the division into age- and sex-groups, and an American scale has been used on English children. But it shows that further investigations on these weight-height-age tables may possibly be profitable in exploring the wide

field of nutrition and malnutrition, especially with the object of obtaining uniformity of classification as far as possible. The weight-height ratio is important to the extent that the mortality experience of insurance companies indicates definitely significant facts in this connexion; at younger ages a limited amount of overweight appears an advantage, associated with more favourable mortality records. According to the report of the Joint Committee of the Actuarial Society of America and the Association of Life Insurance Medical Directors (New York, 1922), underweight for height is a serious impairment in early adult life. Persons 30 per cent. underweight have a 50 per cent. excess mortality at these early ages. It would seem that the records of insurance companies indicate that there is an optimum weight—that is, a weight-height ratio in relation to age that is associated with the most favourable mortality experience—and that this optimum weight, or best build, is not the average. Such, then, indicates the obvious importance of this ratio. And, further, any such standard is to be desired not only as a help to ascertain all cases of unsatisfactory nutrition, but also to assess and check the available methods of dealing with this defect. In connexion with the results in this survey, the findings may certainly claim to show something of the improvement brought about in malnourished children by continuous open-air school work; for although it is only a day school in Torquay, yet it has been carried on winter and summer alike through the whole period, and no heating at all has been required in the class rooms or rest sheds—probably due to the mild equable climate. And the method of assessment is independent of the personal factor present to some extent in clinical work.

I wish to thank Dr. T. Dunlop, M.O.H., Torquay, for permission to use the figures and details required in this investigation.

References.

1. Annual Report, School Medical Officer, Carnegie Dunfermline Trust, 1912.
2. Annual Report, Chief Medical Officer, Board of Education, 1914.
3. Clark, T., Sydenstricker, E., and Collins, S. D.: Indices of Nutrition, U.S. Public Health Reports, No. 842, 1923.
4. Dreyer, Georges, and Hanson, G. F.: The Assessment of Physical Fitness, 1920. THE LANCET, August 9th, 1919, &c.
5. Pirquet, Clemens: An Outline of the Pirquet System of Nutrition, 1922.
6. Wood, Thomas D.: Right Height and Weight for Boys and Girls.
7. Clark, T., Sydenstricker, E., and Collins, S. D.: Weight and Height as an Index of Nutrition, U.S. Public Health Reports, No. 809, 1923.
8. Clark, T.: Plea for More Attention to the Nutrition of the School Child, National Education Association, Dept. Child Hygiene, Washington, L.C., 1924.
9. Dublin, L. I., and Gebhart, J. C.: Do Height and Weight Tables Identify Undernourished Children? Amer. Jour. Pub. Health, 1923.
10. Ibid.
11. Baldwin, B. T., Wood, T. D., and Woodbury, R. M.: Weight-Height-Age Tables, American Child Health Association, 1923.
12. Emerson, W. R. P.: Nutrition Work in the City of Rochester, U.S.A., Amer. Jour. Pub. Health, 1924.

BLACKBURN'S HEALTH WEEK.

THE corporation of Blackburn some time ago set up a "Publicity Committee on Health," and as part of the outcome of its activities a health exhibition lasting for 10 days was opened on Feb. 11th, the object being to educate the citizens, so that, in the words of the Mayor, they might, by their own efforts and knowledge, avoid sickness and disease, and thus help to secure for every child born in Blackburn a birthright of mental and bodily health. The public are asked to recognise that health is not merely the avoidance of disease, but a positive condition of the body to be brought about and maintained by the observance of proper rules of living. The exhibition was entirely educational and the commercial element was intentionally excluded. The importance of fresh air, sunshine, and of good and proper feeding inspired the salient exhibits, which were organised by the Central Council for Infant and Child Welfare. The corporation of Glasgow sent exhibits to show the value and importance of fresh air, and the gas, electricity, cleansing, and other departments of the Blackburn Health Department also lent exhibits. Special efforts were made to instruct visitors on the importance of pure milk. From the exhibition handbook we learn that Blackburn has had for many years special powers for preventing the sale of tuberculous milk, the veterinary surgeon being empowered to visit farms from which such milk is being sent to the borough. Blackburn's gross expenditure by the health committee—less income from Government grants—is £16,805, which works out at a net charge per head of the population of 2s. 7½d. and the net charge on Blackburn ratepayers expressed as a penny rate

is 5·9 pence—an extremely moderate rate. During the 10 days the exhibition was open daily short lectures were given on health topics; the town's maternity home, welfare and school clinics were open for inspection; and "Health Sermons" were preached on Sunday at most churches and chapels in the town.

THE COST OF SCIENTIFIC PUBLICATIONS.

It has been decided by the Treasury, as a result of representations from the National Union of Scientific Workers, to provide in the 1925-26 estimates for an increase in the grant to the Royal Society towards the cost of scientific publications from £1000 to £2500. It is not intended that the Royal Society should spend the grant on its own publications, but that it should administer it for the benefit of subsidiary societies—such as the biochemical, the chemical, and the geological societies—which are hard put to it to find money for making known the results of their research work. It is pointed out in the current issue of the *Scientific Worker* that, with an additional £1500 available, the Royal Society may be in a position to consider more applications from individual research workers for assistance to enable their results to be published.

PUBLIC HEALTH IN BASUTOLAND.

Mr. E. G. Dutton, Acting Government Secretary, in his report for 1923 states that treatment at the Government dispensaries was given to 48,318 patients during the year. In the hospitals 2377 patients were treated. The number of surgical operations performed was 2133. The general health of the territory was good, and, with the exception of typhus fever and small-pox, there were no serious epidemic diseases; 68 cases of measles, 49 of chicken-pox, 9 of diphtheria, 111 of whooping-cough, and 22 of enteric fever were reported, all more or less sporadic. No case of scarlatina was recorded. Typhus fever is still epidemic in all the districts in the territory; 958 cases were reported, with 120 deaths. This is a considerable increase over the previous year, due in part to the regulations regarding notification being more strictly observed. Propaganda as regards prevention has been carried out in various ways and assistance has been given by the native press. Small-pox of a mild type was epidemic during the year; 671 cases with 14 deaths were reported. Most of the cases occurred in the central districts of the country. This is a continuation of the epidemic reported in 1922. The following were notified during the year: influenza, 337 cases, no deaths; dysentery, 56 cases, 1 death; pneumonia, 106 cases, 2 deaths; cerebro-spinal meningitis, 8 cases, 1 death. Free treatment for syphilis continues to be given, and it is noted that many are availing themselves of the privilege. Venereal disease is accountable for much ill-health and disablement in spite of the efforts of the medical officers to instruct in the way of clean living and personal hygiene. The Leper Settlement continues to do good and useful work. The inmates at the end of 1923 were 213 males and 254 females. There were 66 admissions, 5 readmissions, 42 deaths, 10 desertions, and 31 discharges during the year. The various forms of treatment are being vigorously pushed with much success, and a considerable number await discharge in the near future. There has been a marked fall in the death-rate in the asylum, which may be attributed partly to the intensive modern treatment now given and partly to the more favourable early-stage condition of the patients now being admitted. The employment of the more able-bodied lepers in useful and remunerative work contributes much to their happiness and health. The men get 1 acre of land and the women ½ acre to cultivate, the produce of which is bought by the Government. Two large solaria have been built for the treatment of both sexes by graduated exposure to sunlight. The farm produced good crops during the season and there has been an ample supply of milk, together with potatoes, fruit, and vegetables to supplement the dietary. These have gone a long way to improve the general health of the patients. Basutoland, a native territory in South Africa, is bounded on the west by the Orange Free State, on the north by the Orange Free State and Natal, on the east by Natal and East Griqualand, and on the south by the Cape Province. Its area is 11,716 square miles. The altitude varies from 5000 feet to 11,000 feet above sea-level, and the climate is, on the whole, healthy. The census of 1921 showed 495,937 natives and 1603 whites, besides 1069 coloured and 172 Asiatics.

INDEX TO "THE LANCET," VOL. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Milroy Lectures

ON

EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

Delivered before the Royal College of Physicians of London on March 5th, 10th, and 12th, 1925.

By ARTHUR SALUSBURY MACNALT, M.A.,
M.D. Oxf.,

A MEDICAL OFFICER OF THE MINISTRY OF HEALTH; EXAMINER
IN PUBLIC HEALTH IN THE UNIVERSITY OF OXFORD.

LECTURE I.*

I WOULD in the first place wish to thank the College for the honour they have conferred on me by their appointment to deliver the Milroy Lectures for 1925. I have taken as my subject the epidemic diseases of the central nervous system. It is one which accords with the intentions of the founder of these lectures, touching as it does upon a consideration of the part which contagion plays in the origination and spread of acute or pyrexial disease.

INCREASING SUSCEPTIBILITY OF THE CENTRAL NERVOUS SYSTEM TO ATTACKS OF EPIDEMIC DISEASE.

Acute poliomyelitis, encephalitis lethargica, and cerebro-spinal meningitis, from the very nature of the region of the body attacked, are of serious and grave import; cerebro-spinal meningitis, in view of its frequently fatal issue in the acute stage, poliomyelitis and encephalitis lethargica chiefly by reason of their disastrous after-effects.

Since 1897 epidemics of poliomyelitis have occurred in England and Wales, fortunately not to the extent to which they have been met with in America. The years of the war have familiarised us with severe outbreaks of cerebro-spinal meningitis on a scale of severity previously unknown in this country. In the last year of the war, 1918, encephalitis lethargica appeared in our midst as a recognisable disease, and has subsequently, in succeeding years, manifested itself in epidemic form (see table). As will after-

ENGLAND AND WALES.—Table Showing Notifications and Deaths of Civilians from Cerebro-spinal Fever (C.S.F.), Poliomyelitis (Pol.-my.), Polio-encephalitis (Pol.-enc.), and Encephalitis Lethargica (Enc. leth.) since These Diseases Became Generally Notifiable.

Year.	C.S.F.		Pol.-my.		Pol.-enc.		Enc. leth.	
	Ca.	De.	Ca.	De.	Ca.	De.	Ca.	De.
1913	305	—	729	206	—	—	—	—
1914	315	—	509	177	—	—	—	—
1915	2566	1593	517	172	—	—	—	—
1916	1306	918	589	190	—	—	—	—
1917	1465	1013	357	168	—	—	—	—
1918	798	612	228	231	—	—	—	—
1919	848	619	553	181	62	—*	541	264
1920	583	531	293	133	36	—*	890	471
1921	411	414	488	129	51	40	1479	724
1922	344	360	355	109	31	27	454	337
1923	301	281	587	79	57	40	1025	530

Ca. = Cases. De. = Deaths.
* Included under poliomyelitis.

wards be shown, there are grounds for belief that this increased incidence of epidemic nervous diseases is associated with an increased susceptibility on the part of nervous tissue in certain individuals to these diseases.

To what causes are we to attribute this increased and rapidly increasing susceptibility of the central nervous system to attacks of epidemic disease? It

will be found that no decisive answer that would accord with the prevailing trend of epidemiological inquiry can be given to this interrogation at the present time. It will not be unprofitable, nevertheless, to give some attention to the possible explanations, not necessarily incompatible, that may be advanced upon the subject.

(1) The first view may be described as the *Communication Theory*. Modern methods of transportation bring individuals in contact with one another more frequently than has been the case in the past, and so increase the facilities for the spread of epidemic infection. Infection may thus travel with the speed of modern transport from one country to another or from one part of the same country to another. The increase of large towns, the tendency of urban populations to assemble in crowded gatherings enhance the opportunities for personal infection, and a disease which in the eighteenth and nineteenth centuries might have been sporadic or endemic is rendered epidemic or pandemic in the twentieth century.

There is much substance in this view as regards increase of opportunity for infection. The transportation of troops to and fro in all parts of the world during the war undoubtedly favoured epidemics of influenza and cerebro-spinal meningitis. At the same time it will be recalled that both cerebro-spinal fever and poliomyelitis had been increasing in frequency and assuming epidemic form prior to the war, while the increase in encephalitis lethargica subsequently to those years possibly implies an increasing susceptibility of nervous tissues to infection. Modern methods of communication, therefore, cannot supply the whole explanation.

(2) *Epidemic Cycles*.—It may be suggested that these diseases of the nervous system occur from time to time in epidemic cycles, and that at present such an epidemic wheel is turning full circle among mankind. It is well established in the case of the acute zymotic diseases that such epidemic cycles occur.

Hirsch,¹ in tracing the history of epidemics of cerebro-spinal meningitis has shown that the disease occurs in epidemic waves or periods. In this respect it resembles the periodicity of influenza, but, owing to its much lesser morbidity, it exercises less devastating effects on populations, advances much more slowly, and in periods of epidemic prevalence its distribution is less world-wide than influenza. Unfortunately, the rapidity of modern transport and more frequent international communication appear to be modifying this latter feature of cerebro-spinal fever, as may be seen from the many countries affected in the recent epidemic period.

The recurrence of these epidemic waves of cerebro-spinal fever is irregular. Our best information on this point comes from the United States, where epidemics have been recurring since 1898, some of them on a large scale. The figures of incidence of cerebro-spinal meningitis in non-epidemic periods indicate, as for influenza and measles, that the approach of an epidemic wave of cerebro-spinal fever is signalled by an increase in the number of cases; a similar increase in sporadic cases is seen in the wake of an epidemic. In endemic centres of the disease the advent of an epidemic can be anticipated by noting the rising increase of cases in the notification returns. It may be the case that poliomyelitis and encephalitis lethargica behave epidemiologically like their sister disease and from time to time appear in epidemic periods. If so, we may be under the hand of a heavy epidemic visitation. We have no authentic records of previous epidemic cycles of poliomyelitis and encephalitis lethargica; possibly, as regards these two diseases, we are still in the shadow of their first epidemic periods. In each disease it is established that the *materies morbi* is always present in affected countries. For the initiation of an epidemic wave it may be surmised that several factors come into play from time to time, which, either by increasing the virulence of the causal

* Lectures II. and III. will be published in subsequent issues of THE LANCET.
5297

virus or by lowering the defensive forces of the human organism, or by the exercise of both influences, bring about an epidemic.

(3) "*Epidemic Constitution*" of *Influenza*.—More comprehensive than the last hypothesis, but in some respects allied to it, is the view of those who would group influenza, cerebro-spinal fever, poliomyelitis, and encephalitis lethargica as arising from some common condition. This view has been succinctly summed up in the following terms²:—

Various epidemiological records go far to establish: (a) that the epidemiological features of the cycle of years within which influenza explodes are different from those of the influenza-free cycles; (b) that preceding epidemic influenza there is often a rise in general morbidity of the population, an "epidemic constitution" develops favourable to influenza, there are early though often mild and atypical clinical forerunners of the disease, and parallel or allied clinical maladies are seen; and lastly (c) that there are concurrences, similarities, and inter-relationships between outbreaks of cerebro-spinal fever, poliomyelitis, and outbreaks of influenza, bronchitis, and pneumonia.

The term "epidemic constitution" is admittedly vague, and the evidence is conflicting with regard to the favouring part played by influenza in the aetiology of epidemic nervous disease. In the first place influenza, in the absence of identification of the causal organism, defies definition. The authorities who have had most clinical experience in regard to epidemic diseases of the central nervous system fail to recognise an association between them and influenza.

Many cases of epidemic poliomyelitis and encephalitis lethargica are mistaken for influenza in the first instance through failure to diagnose the prodromal stages of these maladies. Until we know more of the aetiology of influenza, and until the concept of an epidemic constitution favouring the occurrence of epidemic nervous diseases can be demonstrated more clearly, it seems well to regard cerebro-spinal meningitis, poliomyelitis, and encephalitis lethargica as distinct and separate diseases, and unwise to assume that all cases of disease occurring in the course of a widespread epidemic are necessarily an integral part of the epidemic. If in doing so the epidemiologist is sinning against the light he can at all events plead that the light should be made more luminous.

(4) *Soil and Seed in Epidemic Nervous Disease*.—In another view which I venture to bring before you consideration is given both to influences at the present time reacting on the central nervous system in man, and to the possibilities of an origin of new species of organisms which can give rise to epidemic nervous disease. On this hypothesis, which is not exclusive of the views already considered, there are two factors involved, the special susceptibility of the region of the body attacked and the neo-parasitic nature of the virus of the disease attacking, or to use a hackneyed metaphor, both the soil and the seed play their part. The central nervous system of man is harnessed willy-nilly to the chariot of modern progress; it is made to work not necessarily more efficiently, but at a more rapid pace; it is exposed day by day to demands upon its attention, claims on its vitality, and shocks and vicissitudes which the nervous systems of our forefathers never knew, and which we in our childhood barely envisaged. We are now able to travel distances at speeds which the past would regard as magical. This Ariel-like facility of motion and of concentrating our labours of necessity causes increased strain on the nervous system. In towns the retina is always fatigued by coloured posters and moving vehicles by day, and at night by electric light and changing light signs. The world gets through an increased amount of work in the shortest possible time; but the penalty is paid in "nervous breakdowns," neurasthenia, and other manifestations of nervous fatigue to which the dwellers in the pastoral age were strangers.

It is a truism of medicine that a disease is prone to attack an individual at the weakest or most fatigued point of bodily resistance. To this rule the central

nervous system is no exception. Nissl found that marked changes, indicated principally by disintegration of the chromatin granules, occur in the body of every nerve-cell after severance of its axis-cylinder. In the case of a child of 6 years suffering from poliomyelitis, seen by me during the course of an epidemic of this disease in 1917, the patient had fractured the left forearm two months previous to the onset of poliomyelitis. The muscles paralysed were those of the injured arm. Possibly, by a process of ascending degeneration from the nerves involved in the traumatic injury, the anterior horn cells innervating the muscles of the left forearm were injuriously affected, and the virus of poliomyelitis subsequently attacked the anterior cornua at their most vulnerable point. Similarly, we may postulate that fatigued or over-worked tissues of the central nervous system are thereby rendered more susceptible to the attacks of invading organisms. The pioneer work of Hughlings Jackson had already begun as far back as 1870 to point out that study of the individual patient comes before the study of the disease, for a disease is rarely typical, but is modified by the characteristics of the patient. The environmental conditions under which the human nervous system functions to-day are modified; the system itself is subjected to more frequent and urgent stimuli than formerly. May not the soil thus be prepared to receive the seeds of disease?

In this connexion it is of interest to note that the outbreaks of encephalitis lethargica in Vienna, Paris, and this country first appeared at a time when individuals had been exposed to the mental strain of several years of war, and that the cases occurred then chiefly in large urban centres of population where such strain was likely to be more acutely felt.

The possible evolution of new organisms affecting the human central nervous system is the second and most important factor in the hypothesis under discussion.

In speculating upon the possibility of the advent of the organisms of epidemic nervous disease this might have taken place in one of the following ways: (1) The organisms may have been in the first instance harmless parasites of man and in the struggle for existence have taken on inimical characteristics. (2) They may have been organisms causing catarrh of the naso-pharynx or gastro-intestinal tract which now tend to affect the brain and spinal cord. Captain S. R. Douglas, F.R.S., in a personal communication, draws attention to the fact that the organisms of poliomyelitis and of epidemic encephalitis are filtrable viruses, like those of the "common cold." The catarrhal forms of these diseases seen in the abortive or mild types afford some support for this view. (3) The organisms may resemble the pneumococcus in being widespread amongst human beings and capable, under certain conditions, of giving rise to autogenic infection. As regards cerebro-spinal fever, the bacteriological evidence is not in favour of this suggestion. (4) The organisms may have been saprophytes in nature but are now assuming the rôle of human parasites. For this hypothesis no evidence has as yet been forthcoming. (5) They may be epizootic organisms which are becoming increasingly transmissible to man and afterwards from man to man. The evidence bearing upon this question is discussed subsequently. For any one of these possibilities a lowering in resistance of the defensive powers of the human nervous system would be an important contributory factor.

EPIDEMIC NERVOUS DISEASE IN ANIMALS.

The information in regard to similar epidemic diseases of the central nervous system in the lower animals is scanty, and there appears here to be a large *terra incognita* unexplored by the comparative pathologist. Considering first cerebro-spinal fever, Sophian³ says that pure meningitis in domestic animals is uncommon, and that many of the so-called cases of meningitis are toxæmias in which spinal and cerebral symptoms occur.

The evidence for an epizootic form of poliomyelitis was equally indefinite until the outbreak described by Cleland and Campbell.⁴ This was an epidemic form of encephalomyelitis which occurred in the late summers of 1917 and 1918 and was restricted almost entirely to certain dry inland parts of New South Wales. The disease affected human beings as well as horses, cattle, sheep, and goats. Breinl⁵ regarded the disease as a clinically aberrant form of poliomyelitis in which the brain was extensively involved, and Flexner,⁶ who had opportunities of examining post-mortem material from the outbreak, confirms this view.

In the investigation of encephalitis lethargica the possibility of a similar disease occurring in the lower animals has not been ignored. Parsons has placed on record a full account of the investigations made in this country on the subject. A number of alleged outbreaks of encephalitis lethargica⁷ affecting dogs and cats, and in one instance farm horses, were inquired into, but on the whole the clinical signs displayed did not suggest encephalitis lethargica beyond being coincident in point of time with a high general incidence of that disease throughout the country. Much has been made of the recent discovery that spontaneous encephalitis due to protozoan-like parasites as described by Wright and Craighead⁸ and Veratti and Sala,⁹ occurs in rabbits, mice and geese.¹⁰ McIntosh¹¹ has pointed out that the histology of this spontaneous encephalitis differs from that of encephalitis lethargica, whether occurring naturally in man or experimentally produced in animals, while the staining of the parasites in the spontaneous form supplies another point of differentiation.

There is, therefore, only evidence that poliomyelitis may affect simultaneously man and animals in epidemic form, as in the outbreak described by Cleland and Campbell. And in this outbreak the infection may have been transmitted from man to domestic animals. There is no substantial evidence for the suggestion that the increasing incidence of epidemic nervous disease is due to the transmission of epizootic organisms to man.

Cosmic Influences.—In considering the epidemiology of the three diseases it will be found that each one of them is subject to certain influences which it is customary to class together as causes predisposing to the disease. Overcrowding and lack of free ventilation in cerebro-spinal meningitis is a good example. In particular, all these diseases show an epidemic seasonal prevalence peculiar to each one of them. Cerebro-spinal fever prevails in the winter, encephalitis lethargica in the spring, and poliomyelitis in the late summer and early autumn. Sudden changes of temperature seem to be favourable to the meningococcus; continued hot weather, as in 1911, aids the spread of poliomyelitis. In the case of the latter disease it may be that our much maligned climate has saved us from epidemics of the magnitude seen in the United States.

It is established that the *materies morbi* of cerebro-spinal fever and of poliomyelitis and by analogy that of encephalitis lethargica also is always present in the upper respiratory passages of persons in affected countries in non-epidemic periods. The epidemiologists of the seventeenth and eighteenth centuries paid much attention to the part played by weather in promoting epidemics of disease. It may prove well in the future to follow in their footsteps, and to study more closely than has yet been done the influence of meteorological conditions in the initiation of epidemics of the central nervous system.

EPIDEMIC NATURE OF CERTAIN DISEASES OF THE CENTRAL NERVOUS SYSTEM.

It is within comparatively recent times that the epidemic nature of certain diseases of the central nervous system has been recognised, and in regard to two of them at all events—namely, poliomyelitis and encephalitis lethargica—this knowledge is far

from widespread among medical practitioners. The reasons for this are possibly the impression of earlier teaching when nervous diseases were regarded as rare and exceptional and always due to a chronic process, a thrombosis or arterial affection or some other degenerative change giving rise to sclerosis of the nervous tissue, quite apart from any question of infectivity; the sporadic character assumed by types of epidemic nervous disease, and the failure to recognise mild and abortive forms as connected with the same disease, have occluded and still continue to mask the infective nature of many small outbreaks.

Cerebro-spinal Fever.

The senior disease of the triad on record is cerebro-spinal meningitis. This is first known to have occurred at Geneva in February, March, and April 1805; it caused the death of 33 persons, but, curiously enough, the Commission appointed by the Swiss Government were of opinion that there had not been enough cases to merit the name of epidemic.

In spite of many subsequent large outbreaks the contagious character of cerebro-spinal fever was largely ignored until the war period, when the disease became epidemic in this country and elsewhere, and was extensively studied and reported upon. In 1914 the findings as to infectivity of the disease published by Netter and Debré,¹² by Sophian³ and others, had not, as now, become common knowledge. The Local Government Board made cerebro-spinal fever compulsorily notifiable throughout England and Wales in 1912, and thus far the epidemic and infectious nature of the disease was officially recognised.

Belief in its sporadic character was strengthened by the disconnected way in which the bulk of the cases occur in epidemics, by statistical evidence that only a relatively small proportion of those exposed to infection ever contract the disease, and that direct contagion from case to case is exceptional. On the other hand, a number of instances of direct infection are recorded by Reece¹³ and others.

The secret of these apparent anomalies has been disclosed partly by the epidemiologist and clinician in recognising mild and abortive cases of cerebro-spinal fever, which at first sight bore no apparent relation to the cardinal nervous symptoms manifested by severe examples of the disease, but chiefly by the bacteriologists in their discovery of the healthy carriers of the meningococcus and of the various types of virulent and avirulent meningococci. The research work on the bacteriology and serology of cerebro-spinal fever organised by the Admiralty and the War Office with the invaluable coöperation of the Medical Research Council is beyond all praise, and the additions made to scientific knowledge will for ever remain on record as a testimony to the good that came out of the evil of war and disease.

Here I would especially mention the typing of meningococcal strains done by Gordon¹⁴ and the valuable work of my colleague, Dr. J. A. Glover,¹⁵ in relation to overcrowding, the carrier-rate and many other phases presented by cerebro-spinal fever. The President¹⁶ in the Lumleian Lectures on Cerebro-Spinal Fever, delivered in 1919, has made so full an exposition of the subject which he has enriched by his own researches, that for many years to come writers on the same theme can but follow in his pioneer footsteps.

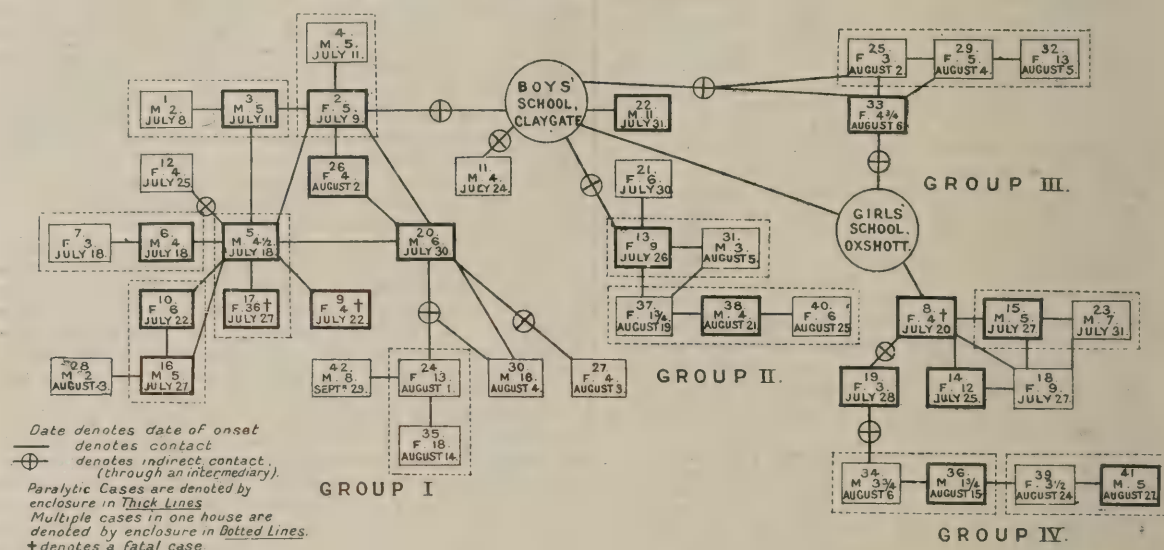
The apparent breaks and gaps in the chain of case-to-case infection in cerebro-spinal fever are due to several reasons. In the first place, the delicate characters of the meningococcus limit the opportunities for transference of the disease outside the human body. Secondly, while contacts of cases of cerebro-spinal fever are infected by the meningococcus, it does not of necessity follow that they develop the disease. They may possess enough powers of resistance to tide over the time of potential attack, so that the invading organism perishes in their nasal and oral passages without penetrating to the meninges: in this case the chain of infection is completely broken; or, as occurs

more commonly in epidemic periods, the contacts harbour the meningococcus for a greater or less length of time as transient or permanent carriers and transmit the infection to more susceptible individuals. A third possibility is that the contact develops the disease in a mild or slight form, the existence of which escapes recognition.

Glover¹⁵ has made clear the important fact that a wave of high carrier-rates precedes and accompanies an outbreak of cerebro-spinal fever. In other words, there is a carrier epidemic (for the most part entirely devoid of symptoms) in advance of and in association with the much smaller case-epidemic. Whilst endorsing Arkwright's dictum, "the number of the carriers constitutes the epidemic," and accepting the commonly recognised views that individual lack of susceptibility and healthy carrier transmission suffi-

previously recognised poliomyelitis as an infection, but to Medin belongs the credit of classifying poliomyelitis as an epidemic disease. Medin in his paper states that Bergenholz noted 13 cases occurring in the department of Norrbotten in 1881. Groups of cases of poliomyelitis were reported in Europe and in America from 1887 to 1897. W. Pasteur,¹⁹ in 1897, described the first English epidemic, recording poliomyelitis in seven members of one family at Much Hadham, a small village in Hertfordshire. Hospital cases in London were collected and described by Dr. Thomas Buzzard²⁰ in 1898 and Dr. F. E. Batten²¹ (1902-04). About this time the classical monograph on the subject was written by Ivor Wickman,²² of Stockholm, the pupil and assistant of Medin, who made a thorough study of the epidemiology, and first recognised and described the so-called abortive or non-paralytic cases.

EPIDEMIC POLIOMYELITIS. DIAGRAMMATIC REPRESENTATION OF SPREAD OF INFECTION.



ciently account for the apparent sporadicity of the disease, even in times of epidemic prevalence, one is impelled to believe that the factor of direct personal infection plays no small part in the epidemic spread of cerebro-spinal fever, masked though it may be by the failure to diagnose mild associated forms of the malady and by the rapidity of modern methods of transit. This factor is more clearly demonstrated when an epidemic of cerebro-spinal fever has lasted in a country for some length of time. Foster and Gaskell¹⁷ adduced evidence of the disconnected way in which cerebro-spinal fever prevailed in England in 1914-15. Later on, however, Reece¹⁸ pointed out that the general distribution of troops among whom the epidemic started, the greater number of which were stationed in the Eastern and South-Eastern parts of England, influenced the prevalence. The modern records indicate, therefore, that there is ample evidence for the recognition of cerebro-spinal fever as an infectious epidemic disease.

Acute Poliomyelitis.

Still later in point of time of recognition as an epidemic disease comes poliomyelitis. It was not until 1890 at the International Medical Congress, Berlin, that Medin,¹⁸ a Swedish physician, described in some detail the epidemiological features of poliomyelitis, based on his study of 44 cases in the Stockholm epidemic of 1887, and suggested that the infection might be spread by mild or anomalous and unrecognised cases. Strümpell and Pierre Marie had

From 1908, when a small outbreak of eight cases of poliomyelitis was observed at Upminster, in Essex, by Dr. W. W. Treves,²³ up to the present time, epidemic outbreaks have occurred in appreciable numbers in this country, and have been placed on record by Reece,²⁴ Farrar,²⁴ Macewen,²⁵ and others. All the large epidemics abroad, notably in America, began to impress the infectious character of the disease on the medical profession. Pathological investigations at this stage by Landsteiner and Popper,²⁶ by Flexner and Lewis²⁷ in New York, by Leiner and von Wiesner²⁸ in Vienna, and by Landsteiner and Levaditi²⁹ in Paris, supplemented the mass of epidemiological and clinical evidence assembled in regard to the infectious nature of poliomyelitis.

It is now well established that infection may be conveyed by (1) persons suffering from an acute typical attack of poliomyelitis; (2) individuals having a mild or atypical form of the malady; (3) healthy persons who have been in close contact with the sick but have not themselves developed an attack; and (4) chronic carriers who have apparently quite recovered from a previous typical attack. Infectivity in acute cases is greatest during the early stages of the malady.

The subjoined diagrammatic representation of the spread of infection relates to a small outbreak of acute poliomyelitis in Esher and the Dittons Urban District and Epsom Rural District, which I investigated for the Central Health Authority in 1917.³⁰

It is interesting to note in this example in how many cases of poliomyelitis the possibility of infection by direct contact was demonstrated. Where this evidence is lacking the chain of infection appears to be maintained through the medium of a healthy carrier. Attention has already been called to this feature of epidemics of poliomyelitis. Müller³¹ lays stress upon the fact that adults who have been in contact with infection may act as "carriers" of poliomyelitis and quotes illustrative examples. In the New York epidemic of 1916 the virus of poliomyelitis was recovered from apparently healthy persons who had been in contact with children ill of the disease.

Encephalitis Lethargica.

There remains now for consideration the infectious nature of encephalitis lethargica. In studying this question the epidemiological evidence already available in regard to cerebro-spinal fever and acute poliomyelitis greatly facilitated an understanding of the behaviour of encephalitis lethargica. No evidence has been elicited that the virus of this disease is conveyed through intermediate agencies, such as water, soil, food, clothing, biting insects and flies, &c. The question then arises as to the spread of the disease by personal contagion.

In the early days of the study the evidence as to case-infection was scanty. Bernard and Renault,³² referring to the French Ministry of Hygiene's inquiry, state that out of 464 cases notified in 55 departments from January to May, 1920, there was no obvious case of contagion. Smith³³ in the United States, out of 181 cases, records a similar experience. In 1919, from the evidence already obtained, I inclined to the view that encephalitis lethargica was an epidemic and infectious disease³⁴; the same opinion was early expressed by Netter.³⁵ In 1918 a few mild cases of the disease were noted, but no clear association between these and declared nervous forms of the disease was traced. Yet, even then, a considerable number of cases occurred in definite areas, such as Birmingham, Sheffield, and Tredegar, although apparently unrelated to one another, while in certain districts, as, for example, in the county borough of Stoke-upon-Trent, a restricted topographical distribution of the cases was observed.³⁶ More recently the tendency of encephalitis lethargica to be concentrated in its distribution in certain areas has also been observed in isolated agricultural districts. Dr. Dittmar, of the Scottish Board of Health, notes six cases of the disease in a rural part of Ross-shire arising during the years 1922 and 1923. As regards infection in utero or placental transmission, there are cases reported by Harris,³⁷ Kononowa,³⁸ Novaes and Sousa,³⁹ and others.

I have reported multiple cases of encephalitis lethargica in families which occurred at Mansfield in 1918, and at Eastbourne and Weybridge in 1919. Since 1919 I have collected notes of a number of additional examples of multiple cases of encephalitis lethargica in England and Wales, and other cases have been recorded from time to time in various parts of the world. An interesting example is that communicated by Van Boeckel⁴⁰; at Ruddervoorde, in West Flanders, in 1919, where the disease attacked four families who were closely inter-related. Of 26 persons, 17 were attacked, and 4 of these died. Kling and Liljenquist,⁴¹ of Stockholm, found, in February, 1921, that encephalitis lethargica was prevalent in certain villages in Lapland, the morbidity rate varying from 7.1 to 45.0 per cent. In some families several members contracted the disease simultaneously, and in two houses almost all the inhabitants were affected. Side by side with the severe and typical cases were catarrhal and febrile cases, cases with slight affection of the ocular movements, and a few cases of obstinate hiccup. Special attention has been devoted to this subject in France by Netter,³⁵ who records a number of multiple cases in households.

The most striking example of an institutional outbreak of encephalitis lethargica was investigated by me at Derby, England, in August, 1919.⁴² In a home for girls an explosive outbreak of illness occurred affecting 12 persons (females) out of 22 persons (females) resident in the institution. The following were the dates of onset of the disease: Two patients were attacked on August 14th, 1919; two on the 15th; four on the 16th; two on the 17th; one on the 19th; and one on the 27th. No further cases of illness occurred after August 27th. The range of age-incidence was from 15 to 40 years; the stress of the disease fell on the lower ages (15-18 years).

It will be recalled that with a filtered emulsion of cerebral tissue from the first case Prof. McIntosh⁴³ succeeded in transmitting a fatal lethargic illness to a monkey, and on histological examination of the monkey's brain Prof. Turnbull found lesions identical with those of human cases of encephalitis lethargica. The clinical features of the Derby outbreak were so characteristic of encephalitis lethargica that from this aspect alone little doubt can be felt that one was dealing with cases of the disease. Furthermore, two of the girls that recovered from the acute illness have subsequently manifested the typical mental sequelae of encephalitis lethargica. John and Stockebrand⁴⁴ have reported a similar outbreak in an asylum at Mulheim in the summer of 1922. Here 28 cases with 13 deaths occurred in 20 days, six being in nurses and two in doctors. Dysphagia and ophthalmoplegia were frequent symptoms.

The existence of these multiple cases and epidemic outbreaks in encephalitis lethargica would not necessarily imply that the disease is communicable from one person to another. The multiple cases might have been infected with the virus of the disease from a common source. But the following appears to be an undoubted example of personal contagion. A woman, aged 63, was attacked by encephalitis lethargica on Dec. 5th, 1918. She was removed to a nursing home on Dec. 17th. A nurse, aged 39, who took charge of the patient at night in the nursing home, fell ill with the same disease about Dec. 26th or 27th. Both patients recovered. Instances are also on record where a patient admitted to hospital for some other disease has acquired encephalitis lethargica, presumably from another patient who suffered from this disease and was in an adjoining bed. We are also aware of the existence of mild and ambulant cases of illness in association with declared cases of encephalitis lethargica; several instances of the kind were encountered during the considerable rise of incidence of the disease that occurred in 1924 in Liverpool, Sheffield, and elsewhere; through their medium the conveyance of infection; from one person to another seems to be more than probable.

The presence of these "carriers" in encephalitis lethargica indicates that the disease is in accord with cerebro-spinal fever and poliomyelitis as one in which the pathogenic agent is more frequently present in the human organism than the clinical evidence would imply. The work of Eastwood, F. Griffith and Scott,⁴⁵ &c., has already established this conception as true for cerebro-spinal fever. Also the cases first reported by S. A. Kimmier Wilson,⁴⁶ Parkes Weber,⁴⁷ Crouzon,⁴⁸ and others of symptomatic paralysis agitans following on an attack of encephalitis lethargica lead to the suggestion that certain cases of paralysis agitans in its chronic form may have their origin in an undetected attack of encephalitis lethargica, although Pierre Marie and Mlle. Lévy⁴⁹ and Cruchet oppose this view.

It is well not to disdain the study of the natural history of disease and the grouping of allied diseases. A considerable time elapsed before the infectious nature of cerebro-spinal fever and poliomyelitis was established. Recognising the similar features in these diseases to those of encephalitis lethargica and applying the knowledge we possess of them to the study of the latter disease, the conclusion seems to be justified, and is gaining universal

acceptance, that encephalitis lethargica is equally infective, and liable to manifestation in epidemic form.

REFERENCES.

1. Hirsch, A.: Treatise on Geographical and Historical Pathology.
2. Ministry of Health Report on the Pandemic of Influenza, 1918-19. Reps. on P.H. and Med. Subjects, No. 4, London, 1920, xvi.
3. Sophian, A.: Epidemic Cerebrospinal Meningitis, London, 1913, 18.
4. Cleland, J. B., and Campbell, A. W.: (a) An Experimental Investigation of an Australian Epidemic of Acute Encephalomyelitis, Ann. Rep. of Director-General Pub. Health for N.S.W., 1917; (b) Acute Encephalomyelitis: a Clinical and Experimental Investigation of an Australian Epidemic, Brit. Med. Jour., 1919, I., 663-6; (c) The Epidemiology of Acute Encephalomyelitis ("X" disease) in Australia, Proc. Roy. Soc. Med. Lond. (Sec. Epidem. and State Med.), 1919-20, xiii., 185-205; (d) The Australian Epidemic of Acute Encephalomyelitis: a Consideration of the Lesion, Jour. Nerv. and Ment. Dis., 1920, li., 137.
5. Breinl, A.: Med. Jour. Australia, 1918, i., 209, 229.
6. Flexner, S.: Epidemic (Lethargic) Encephalitis and Allied Conditions, Jour. Amer. Med. Assoc., 1923, lxxxi., 1688-1693.
7. Parsons, A. C.: Encephalitis Lethargica, Ministry of Health Reports on Public Health and Medical Subjects, No. 11, 1922, 29-32.
8. Wright, J. H., and Craighead, E. M.: Infectious Motor-paralysis in Young Rabbits, Jour. Exper. Med., 1922, xxxvi., 135.
9. Veratti, E., e Sala, G.: (a) Sull' infezione erpetica sperimentale nel coniglio, Nota I.a, Boll. d. Soc. Med.-Chir. di Paria, 1923, xxxv., 266; (b) Sull' infezione erpetica sperimentale nel coniglio, Nota II.a, Ibid., 709; (c) A proposito di uno virus encefalitico de Kling, Ibid., 1924, xxxvi., 45.
10. Da Fano, C.: Spontaneous and Experimental Encephalitis in Rabbits, Med. Sci., 1924, x., 355.
11. McIntosh, J.: Rep. of Discussion on Encephalitis Lethargica, Med. Soc. Lond., THE LANCET, 1924, ii., 1016.
12. Netter, A., and Debré, R.: La Meningite Cérébro-spinale, Paris, 1911, 136.
13. Reece, R. J.: Forty-eighth Annual Report of the Local Government Board, 1918-19 (Report of the Medical Department), Cmd. 462, 1919, 48-61.
14. Gordon, M. H.: Medical Research Committee Reps. on Cerebro-spinal Fever, 1916 and 1917, London.
15. Glover, J. A.: Brit. Med. Jour., 1918, ii., 509; Military Overcrowding and the Meningococcus Carrier-rate, Medical Research Committee's Publications, March 9th, 1918; Jour. Roy. Army Med. Corps, 1918, xxx., 23.
16. Rolleston, H. D.: Lumleian Lectures on Cerebro-spinal Fever, THE LANCET, 1919, i., 541, 593, 645.
17. Foster, M., and Gaskell, J. F.: Cerebro-spinal Fever, Cambridge, 1916, 123.
18. Médin: Tenth Int. Med. Cong., 1891, II. Abth., vi., 37; Hygieia, 1890, lii., 657; Arch. Méd. des Enfants, 1898, 1-257, 321.
19. Pasteur, W.: Clin. Soc. Trans., 1898, xxx., 143.
20. Buzzard, T.: Cases Illustrating the Infective Origin of Infantile Paralysis, THE LANCET, 1898, i., 847.
21. Batten, F. E.: Brain, 1911, xxxiv., 45; Lumleian Lectures on Acute Poliomyelitis, Brain, 1916, xxxix.
22. Wickman, I.: Beiträge zur Kenntniss der Heine-Medischen Krankheit, Berlin, 1907.
23. Treves, W. W.: Brain, 1909, xxxii., 285.
24. Reports and Papers on Epidemic Poliomyelitis, Reps. to Local Govt. Board on P.H. and Med. Subjects (N.S. No. 61), London, 1912, x., 87.
25. Macewen, H. A.: Report on the Prevalence of Poliomyelitis in Certain Districts of Lancashire and Westmoreland, 1913. Reps. to Local Govt. Board on P.H. and Med. Subjects (N.S. No. 98), London, 1914.
26. Landsteiner and Popper: Ztsch. f. Immunitätsforsch. Orig., 1909, ii., 377.
27. Flexner and Lewis: Jour. Amer. Med. Assoc., 1909, liii., 1639, *ibid.*, 1910, liv., 178.
28. Leiner and von Wiesner: Wien. Klin. Wochenschr., 1909, xxii., 1698.
29. Landsteiner and Levaditi: Compt. rend. Soc. de Biol., 1909, lxxvii., 592.
30. MacNalty, A. S.: Report on an Outbreak of Epidemic Poliomyelitis in Esher and the Dittons Urban District and in Epsom Rural District, 1917. Reps. to Local Govt. Board on P.H. and Med. Subjects (N.S. No. 120), London, 1918.
31. Müller: Arch. f. Schiff- u. Trop.-Hyg., 1910, xiv., No. 17.
32. Bernard, L., and Renault, J.: L'enquête épidémiologique du Ministère de l'Hygiène sur l'encéphalite léthargique en France. Bull. de l'Acad. de Méd., Paris, 1920, 3e série, lxxxiii., 470.
33. Smith, H. F.: Public Health Reports, U.S.A., 1921, xxxvi., 207.
34. MacNalty, A. S.: General Considerations on Encephalitis Lethargica, Med. Suppl. to Forty-eighth Ann. Rep. Local Govt. Board, London, 1918-19, 71.
35. Netter, A.: Encéphalite léthargique, Bull. et Mém. Soc. Méd. des Hôp. de Paris, 1920, Nos. 12 and 26.
36. MacNalty, A. S.: Extracts from a report on the disease as observed in Stoke-upon-Trent, Rep. Loc. Govt. Board, London, 1918 (N.S. No. 121), 68-69.
37. Harris, W.: Acute Infective Ophthalmoplegia or Botulism, THE LANCET, 1918, i., 568.

(Continued at foot of next column.)

Lettsomian Lectures

ON

WOUNDS AND OTHER INJURIES IN THEIR MEDICO-LEGAL ASPECT.

Delivered before the Medical Society of London

By SIR BERNARD SPILSBURY, M.B., B.Ch. Oxf.,

LECTURER IN MORBID ANATOMY AND HISTOLOGY, ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE; HON. PATHOLOGIST TO HOME OFFICE.

LECTURE II.*

In the last lecture I considered in some of its aspects the medico-legal problem presented by contusions, laying emphasis upon the rapid failure of the circulation after death and its bearing upon the post-mortem development of bruising. I then devoted some time to an analysis of crushing injuries of the chest and abdomen, pointing out how frequently serious internal injuries occur without any external manifestation. In the last part of the lecture injuries produced by firearms were described, with special reference to the means of distinguishing self-inflicted injuries from those produced by others.

Incised wounds are produced by weapons having a cutting edge which is drawn along or struck against the skin; similar injuries may be produced by objects having a sharp edge—for example, broken glass. An incised wound generally has a length greater than its depth, and retraction of its edges causes it to gape to a greater or less extent; the elasticity of the skin in part accounts for this, but the retraction of the divided muscles is the cause of the wide gaping of wounds which penetrate deeply. When examined shortly after infliction the skin and deeper structures are cleanly and smoothly divided; the margin is not bruised unless the weapon is blunt. Where the skin is lax the movement of the weapon, especially if it is blunt, may draw the skin along until it becomes folded. If the fold is incompletely divided intact skin will separate the two portions of the wound; if completely divided the skin margin will be notched. The blood-vessels are divided cleanly in an incised wound, blood escapes freely, and spurting from small arteries

* Lect. I. was published in THE LANCET last week. Lect. III. will appear in a subsequent issue.

(Continued from previous column.)

38. Pappenheim, M.: Zentralb. f. d. Ques. Neurol. u. Psychiat., 1922, xxxviii., 1.
39. Jorge: Bull. de l'Off. Internat. d'Hyg. Publique, 1920, xii., 1275.
40. Van Boeckel: Les cas de Ruddervoorde, cité par P. Masoin: Observations sur l'encéphalite léthargique, Bull. de l'Acad. Royale de Méd. de Belgique, 1920, xxx., 313.
41. Kling and Lilienquist: Compt. rend. de la Soc. de Biol., Paris, 1921, lxxxiv., 521; Kling: Norsk. Mag. f. Lægevidensk., 1922, lxxxiii., 843.
42. MacNalty, A. S.: Report on Outbreak of Encephalitis Lethargica in a Girls' Home, Ann. Rep. of the Chief Medical Officer, Ministry of Health, 1919-1920, Appendix VII.
43. McIntosh, J., and Turnbull, H. M.: Experimental Transmission of Encephalitis Lethargica to a Monkey, Brit. Jour. Exper. Path., London, 1920, i., 89-102.
44. John and Stockbrand: Münch. Med. Wochenschr., 1922, 1500, 1544.
45. Reports on Cerebro-spinal Fever, Reports to Local Government Board on Public Health and Medical Subjects (N.S. No. 110), 7, 41, 56.
46. Wilson, S. A. K.: Cases of Symptomatic Paralysis Agitans Following Encephalitis Lethargica, Proc. Roy. Soc. Med., 1920 (Clin. Sect.), xiii., 65.
47. Weber, F. P.: Ambulatory Case of Lethargic (Epidemic) Encephalitis Followed by Symptomatic Paralysis Agitans, Proc. Roy. Soc. Med., 1920, xiv. (Clin. Sect.), 4.
48. Crouzon, O.: Encéphalite aiguë parkinsonienne, Rev. de Méd., 1920, xxxvii., 359-363.
49. Marie, P., et Lévy, G.: Le syndrome parkinsonien dans l'encéphalite, Bull. Acad. de Méd., 1920, 3me série, lxxxiii., 539.

produces characteristic rows of blood spots on surrounding objects.

Lacerated, in contrast with incised, wounds are produced by objects which tear the tissues, such as nails, machinery, hard projections, or the teeth of animals; they have ragged and generally contused margins and irregular bases, and the adjacent skin surface is often abraded. The roots of hairs which are in the line of the wound are not torn across but project from the edges of the tear. Blood-vessels are crushed as well as torn, and bleeding is generally less copious than in incised wounds, but if the wound should be situated in the vulva, where the tissues are very vascular and are readily torn or crushed, fatal hæmorrhage may result from a lacerated wound.

In one variety of lacerated wounds blood-vessels in the deeper part of the skin may escape injury to a large extent, forming bridges across the wound; these injuries will bleed even less freely, and are found in parts where the skin is immediately over bone; the majority of scalp wounds are of this nature and similar wounds are found along the orbital margins, on the shins, and over bony prominences. Violent contact with a hard, smooth surface produced by a fall or by a blow with a blunt weapon, crushes and splits the skin in the area of most marked compression against the bone. Such an injury, although it is clearly a lacerated wound, is often described as a cut.

Cut-throats form the most important group of incised wounds, a large proportion of dangerous incised wounds occurring in this region; they are almost always suicidal or homicidal.

The only example in my series of a fatal accident was in a drunken man who in falling drove his head through a pane of glass; he was found dead with three incised wounds on the right side of the head; they ran horizontally, the uppermost crossing the pinna and extending into the scalp, the middle situated just below the ear being 4 in. long and extending down to the spine, the third, a very superficial wound, being at a slightly lower level. No important blood-vessels were divided. A fall through glass often produces multiple wounds in the same direction, and the situation of these injuries is unlike that of suicidal or homicidal wounds.

A fatal case of suicidal cut-throat has generally only one deep wound in the upper part of the neck; beginning on the left side, it may be far back, it extends across the front and in some cases to the right side of the neck; it is straight or only slightly curved, has a slight downward inclination and crosses the front of the neck at or above the level of the thyroid cartilage. Sometimes the wound runs horizontally across the front of the neck at a lower level; occasionally the wound is on the right side, when it runs more obliquely from above downwards and forwards and does not cross the middle line. These are the positions of the wounds when the weapon is held in the right hand. A suicide will sometimes insert the weapon into the first cut, making one or more additional incisions which increase the depth or extent of the wound.

Thus an elderly man cut his throat late at night in a quiet street, inflicting an injury in the upper part of the right side of the neck. The wound was 3 in. long and extended forwards and downwards from a point 2½ in. below the right ear almost to the middle line half way between the thyroid cartilage and the chin. The injury consisted of two cuts, one from the hinder end for rather more than half the length of the wound; the knife was then inserted into the wound and the cut extended further forwards. A deep notch in the skin indicated the junction of the two cuts. The common facial vein was divided at a short distance from the internal jugular vein. The man walked about 200 yards after closing the weapon, a pocket-knife, and placing it in his pocket; he was found dead on the footpath; in his hand was a blood-stained handkerchief which had been used presumably to try and staunch the blood. Death was due to air embolism through the common facial vein. The man

was probably making his way to his doctor, having repented after he had cut his throat, but he became exhausted and withdrew the handkerchief from the wound, and air entered the open end of the vein.

A suicide sometimes cuts his throat in front of a mirror, in order to see that the weapon is placed as he desires; almost invariably the neck is bared before the attempt is made. If the weapon is again inserted into the cut the structure most often damaged is the larynx, in which several cuts may be found when there is only one skin incision. It frequently happens that a suicide makes a number of other attempts on the neck before producing the fatal wound. These tentative cuts are very superficial; they start near the main wound, and run approximately in the same direction; a dozen or more may be present, when they will be close together and may run into one another. A suicide sometimes injures other parts of the body before cutting his throat; a series of parallel cuts may be found across one wrist, usually the left, or across the front of the left chest, but it is rare for a suicide to employ the same weapon both for stabbing and cutting in different parts of the body. Such a case is described later in the lecture.

An unusual case with a wound in another part was that of a Japanese gentleman who first made a half-hearted attempt at suicide by hara-kiri, a wound 7½ in. long being found across the front of the abdomen; the wound penetrated down to the deep fascia. He had then cut his throat in no uncertain fashion, inflicting an injury 6 in. long in the upper part of the neck on the right side: the wound started three-quarters of an inch from the middle line at the back, and passed forwards and downwards to the middle line in front; at the back were eight separate tentative cuts. The wound gaped widely and the thyroid cartilage was exposed and was cut in three places, none of the cuts passing completely through it; the internal jugular vein was completely divided, there was a small opening in the common carotid artery, and the body of the fourth cervical vertebra was nicked in two places. A suicide occasionally takes poison and then cuts his throat, and I have seen two cases in which a suicide drank strong hydrochloric acid.

In the following case the plane of the wound was unusual for a suicide. An elderly man had a wound 7½ in. long across the upper part of the front of the neck; it was straight and horizontal, extending further on the left side with the right end undercut. The wound penetrated deeply upwards and backwards immediately above the hyoid bone; the front wall of the pharynx was divided for more than an inch and the cut extended into the root of the tongue on the left side. The only vessel divided was the left common facial vein, close to its termination. Air entering through the cut vessel had caused death from air embolism. This case and the one already described are the only two suicidal cut-throats in the series in which death was due to air embolism; in each case the common facial vein was divided.

The next two cases are examples of multiple suicidal injuries of the air passages; they are seldom seen excepting in the insane and those who are in delirium. The first was that of a man who cut his throat whilst suffering from lobar pneumonia with delirium; the wound crossed the middle of the neck, was 3 in. long and gaped widely; it consisted of at least two deep cuts, and there were incisions in the exposed cartilage and another in the upper part of the trachea. Close to and parallel to the main wound were ten superficial cuts. There were six superficial cuts in the right cheek; on the front of the chest were 12 similar cuts internal to the left nipple; they were parallel, extended from left to right and slightly downwards, and lay within an area measuring 3 in. by 3 in. There were five parallel superficial cuts on the right wrist, several on the front of the left wrist, one of them deeper, and a number of superficial parallel cuts and one

deeper cut on the inner side of the right thigh 4 in. above the knee.

In the other case a woman whose mind was affected by excessive drinking attacked a man who was in bed with her, drew a knife across his throat, and inflicted a superficial injury; she then cut her own throat, and a gaping wound $3\frac{1}{2}$ in. long ran horizontally across the front of the neck. In the exposed air passages were four deep incisions, one through the first ring of the trachea, a second between the cricoid and thyroid cartilages, and two others close together through the upper part of the thyroid cartilage, where a piece of the cartilage was missing. The margins of the skin incision on the right side were notched in two places by the additional cuts in the air passages. The thyroid gland was cut in several places, but the only blood-vessel opened was the right external jugular vein. There were four tentative cuts close to, and parallel with, the gaping wound.

Occasionally laceration is found in the deeper part of an incised wound. A man who cut his throat had a gaping horizontal wound $4\frac{1}{2}$ in. long across the middle of the neck, chiefly on the left side; the wound was deep in the middle and undercut at the right end; the larynx had been opened by a deep cut through the thyroid cartilage and a part of the left sterno-mastoid muscle was cut. On the left side the wound penetrated deeply and appeared to be lacerated, and a tear extended along the left wall of the œsophagus for a distance of 2 in. The deeper part of the wound had been torn open with the hands after the throat was cut.

Except in lunatics suicidal wounds in the neck usually have a fairly characteristic position and direction. Homicidal, whilst sometimes simulating suicidal wounds may have any position and may run in any direction. The difference is well seen when multiple wounds are present; in suicidal injuries it is rare to find more than one deep wound in the neck, any other injuries being superficial tentative cuts; in homicidal cases there are no tentative cuts, but several deep wounds may be found. When two injuries are so severe that either alone would produce rapid loss of consciousness, as, for example, when the carotid arteries are cut on both sides in two separate incisions, we have the strongest presumption of homicidal causation.

A very unusual case was one in which a husband was put on his trial for the murder of his wife by cutting her throat. At the time of her death she was six months pregnant and was suffering so severely from chorea gravidarum that she had great difficulty in feeding herself and had to be assisted in dressing. A medical man who had examined her three days before she died found her incapable of any continuous muscular effort of the nature of a grip; she suffered much from restlessness and sleeplessness. Early one morning her husband ran out of the bedroom bleeding from wounds which he said had been inflicted by his wife, who had attacked him with a razor whilst he was lying beside her in bed. One wound extended along the right jaw from the angle to the middle line, the bone was exposed, and the facial artery divided. Two wounds, each 4 in. long and skin deep, were found on the back of the left side of the neck. There were cuts on the palmar aspect of three fingers of the left hand.

On entering the bedroom the woman was found dead on the floor by the side of the bed with a pile of bedclothes around her. When she was turned over an open razor was found near her right hand. There was a pool of blood on the bed and in the blood a hairpin and much hair, one strand being 8 in. long and $\frac{3}{4}$ of an inch thick. Splashes of blood were found for $5\frac{1}{2}$ ft. above the level of the bed on an adjacent wall; they had been flung from the blood-stained razor when it was raised to inflict the later injuries.

On examination of the dead body the following injuries were found. There was a long, deep, incised wound around the right side of the neck from the

middle line behind almost to the middle line in front. At the back it penetrated to the spine and at the side completely divided the common carotid artery and the internal jugular vein and opened the œsophagus. On the left side of the neck was a similar wound extending from the middle line at the back, where it overlapped the other wound, to the front of the neck where they almost met. On this side the internal jugular vein was opened and the common carotid artery almost completely divided. A third wound crossed the lower part of the back of the scalp; it was 4 in. long and about three-quarters of an inch deep; there was a superficial cut on the right side of the front of the neck. There were also superficial wounds on the right ear, the lower lip, on the palmar aspect of the right ring and index fingers, and across the knuckles of the left index and middle fingers. As the husband and wife were the only persons concerned, the facts were capable of three different interpretations—the one given by the husband, that his wounds were caused by his wife who had then taken her own life; another, that the man's injuries were inflicted by his wife and that he had wrested the razor from her and inflicted the injuries upon her. The third explanation was that the husband had attacked and killed his wife and that his injuries were self-inflicted. The wife had shown no sign of insanity, and in view of the severe chorea from which she was suffering it seemed improbable that she could have grasped a razor so firmly as to have inflicted several serious injuries upon herself, whilst the slight cuts on the ear and lip might well have been the misdirected attempts of another person. The wound across the back of the scalp could only with difficulty have been self-inflicted. When the two deep wounds in the neck are considered, the infliction of one of them would be followed by such a rapid fall of blood pressure that there would scarcely have been time before consciousness was lost, for the weapon to have been transferred to the other hand for the infliction of the second injury. But the division of the muscles on one side of the neck would have produced instant flexion of the head to the other side and would have rendered impossible the production of a clean cut on that side as a self-inflicted injury. An assailant, grasping her by the hair, could have slashed the neck, producing all the injuries; the hair found on the bed indicated that the head was held when the cut through the scalp severed a portion of the hair, causing it to fall on the bed when the grasp was relaxed. In my view the woman's injuries could not have been self-inflicted. The wounds on the palmar aspects of the fingers of the husband and wife might well have been caused in each case by an attempt to grasp the weapon wielded by the other, and the wounds on the knuckles of the woman's left hand were suggestive of injury inflicted by another person.

The husband was found not guilty of the murder, the jury probably being influenced by the fact that he had injuries upon himself, one at any rate of a severe nature, and also by the evidence that he was a quiet, sober, hardworking man, whose relations with his wife had always been happy. The verdict was equivalent to one of suicide, but I am certain that the injuries could not have been self-inflicted.

One of the most difficult homicidal cut-throats to distinguish from a suicidal injury is that inflicted when the assailant attacks the victim from behind and draws the weapon across the front of the neck. The position and the direction of the wound depend upon the relative positions of the two persons; it generally makes a clean sweep of all the soft tissues in the path of the weapon; it is often more curved than a suicidal injury, and the plane of the wound may differ from a suicidal cut, but in some cases it closely resembles one.

An important distinction between homicidal and suicidal cut-throats is that the suicide almost invariably bares the neck, but the murderer cuts through the clothing. When the injury is inflicted from behind the assailant makes a sweeping movement which starts before it reaches the throat and passes beyond the

limit of the wound; clothing may be cut in its passage before or after the wound is inflicted, and blood will be found on the edge of the cut if the weapon has already passed across the neck. The two next cases are examples of the value of information obtained from cuts upon the clothing.

In the first case the dead body of a young married woman was found one morning in a quiet lane. She had a gaping wound 4 in. long on the front and right side of the neck; the internal jugular vein was completely divided, the larynx was opened in front and on the right side, and the oesophagus was incised at its upper end. A fur collar round the dead woman's neck had been cut by the weapon in line with and to the right of the wound. A razor belonging to the husband and found in his bedroom had dried blood upon it, and adhering to the blood were rabbit hairs similar to those which formed the fur collar. The weapon had cut the collar after inflicting the injury; this gave the direction in which the cut had been made. The dead woman was wearing a knitted jumper, and across the front of the left shoulder of the article was what appeared to be a tear. On close examination this appearance was found to be due to a clean cut, the material becoming unknitted and giving the appearance of a tear; no blood was present on the cut edges. The weapon, therefore, had been drawn across the front of the left shoulder, and then passed across the neck, cutting through the fur collar after it emerged from the wound. The cuts in the clothing afforded a clear proof that the injury was a homicidal one. The husband was charged and was convicted of murder.

In the second case a young woman had her throat cut in the road by her lover from behind. A gaping wound was found on the front and right side of the neck; it was between 5 and 6 in. long and was unusually curved, the right extremity passing at the back almost vertically upwards behind the ear. The common carotid artery and the internal jugular vein had been opened in the wound, and there was a large cut in the lower part of the larynx. After the injury had been inflicted the girl ran through a gate and along a winding garden path in the dark, opening the back door and passing through the scullery into the kitchen where she pointed to her throat before she fell, having covered a distance of about 75 yards. She was wearing a beaver hat with a broad brim, and a clean cut passed through the brim on the right side; the lower edge of the cut was smeared with blood, showing that it had been made by the weapon after it had passed through the neck.

In four cut-throat cases, two of them suicidal, air embolism was the cause of death; in none of these was there any injury to the main arteries, and in none were the large veins completely divided. The internal jugular vein was opened in one, in two others the common facial vein was completely divided close to its termination, and in the fourth case another tributary close to the internal jugular vein. Air embolism occurs when the internal jugular vein is opened, or when a large tributary is cut across close to the main vessel rather than when the main vein is completely cut through. In two cases, both homicidal, the cervical sympathetic nerve had been partly or completely divided; in these cases the pupil was smaller on that side than on the other.

One case in the series was a suicidal incised wound of the abdomen in an elderly woman; there was a cut 2½ in. long in the middle line of the abdomen below the umbilicus. She was admitted into hospital with a large part of the small intestine and the omentum protruding through the wound; these were replaced and the wound sutured, but she died shortly afterwards. The weapon, a razor, was found folded up and placed in a box in the bedroom in which she was found. Suicide was also indicated by the presence of several superficial cuts radiating from the umbilicus, chiefly on the left side, 14 superficial parallel cuts on the front of the left wrist, a similar cut on the left thenar eminence, and many others on the left side of the neck.

The last example of an incised wound was in a man who was found by the night watchman in the lavatory of a theatre after it was closed for the night. He was bleeding from a wound in the left arm and died shortly after he was found; a small blood-stained razor was found upon him. The wound was slightly more than 2 in. long and crossed the front of the left forearm 1½ in. above the wrist. Several tendons were divided and the radial artery was completely severed; the incision extended down to the radius. No other wound was found and the organs were pale from loss of blood.

STABS.

Punctured wounds or stabs are injuries produced by instruments which pierce the skin; the weapon must therefore be pointed. These wounds generally have a depth greater than their length. Stabs form a class of injury intermediate between incised and lacerated wounds. The appearance of the wound depends upon the weapon which has been used to produce it; a sharp-edged and pointed knife, especially if it has a double edge, cuts as it pierces the skin and deeper tissues and the wound will everywhere be clean cut. A knife with a thick back produces a wound which is incised where the edge cuts its way, and lacerated where the back tears through the tissues. A pointed instrument which has no cutting edge, such as a butcher's steel, or a hatpin, only tears the tissues.

The edges of stabs require very careful scrutiny to determine whether they are mainly incised or lacerated in character, and it is impossible to give an opinion when suppuration has developed in the wound. A large variety of pointed articles has been used for the production of stab wounds—pins, needles, hatpins, knives, skewers, and fragments of broken glass; some of these, such as broken glass, are responsible chiefly for accidental injuries, and the same is true of pins, needles, hatpins, &c., but suicidal and homicidal injuries have also been inflicted by such means.

The small size of the skin wound and the depth of penetration render it difficult by external examination to judge the direction and to estimate the damage; there may be little external bleeding if the weapon has penetrated into one of the body cavities. The difficulty of judging the direction by probing the wound is increased when divided muscles retract and alter the shape of the wound.

In one case a man was stabbed behind the ear and the wound ran horizontally and penetrated into the spinal canal; when it was explored with a probe it appeared to run down the neck, the sterno-mastoid muscle having been divided and retracting to such an extent as to produce a pocket below the entrance wound which was almost 2 in. deep.

The degree of damage to the deep tissues in a wound also depends on the weapon; one which combines a sharp-cutting edge with a point will pierce and cut everything in its path and will be far more dangerous to life than a blunt-pointed object having no cutting edge, which will tend to push aside rather than pierce blood-vessels, or viscera such as the lungs, which yield readily to pressure.

Accidental stabbing injuries rarely endanger life apart from subsequent sepsis. I have collected 18 cases of deaths from stab wounds; none of these were accidental, 11 were homicidal, and the remainder suicidal. Many of the homicidal and suicidal stabs were inflicted with a weapon which had a cutting edge, and the length of the wound depended upon the extent to which the cutting surface had been used.

A suicide stabbing himself in the chest with a pocket knife sometimes withdraws the weapon from the wound by an exact reversal of the movement which has inflicted the injury; no further injury to the skin may be produced than that required to drive the weapon into the tissues, and the surface wound may have a diameter, when allowance is made for the elasticity of the skin, rather less than the breadth of the penetrating portion of the weapon; the edges of such a wound may be everted as the weapon is gripped

by the skin during withdrawal. In homicidal cases the movement of the victim during the infliction of the injury is likely to cause the wound to be enlarged during withdrawal, and the surface wound will then be of greater width than the blade of the weapon.

Suicidal stabs are usually made over vital areas, the front of the chest in the region of the heart being the commonest situation. The wounds are generally multiple, are situated within a small area, and have much the same direction in the tissues. Suicidal stabs in the neck are infrequent, but a combined incised and stab wound is occasionally seen: a cut is made in the neck and the point of the weapon is driven deeply into one part of it. Stabs and incised wounds are frequently associated in suicides, the failure to produce the desired result by stabbing causing the suicide to use the cutting edge of the knife on other parts of the body. In five stabbing cases incised wounds were found on the neck or elsewhere. In one case death was brought about by drowning in a bath after a number of stabs and incised wounds had been inflicted; in two others, both insane persons, the suicide also jumped from a window.

One of these cases was a young woman who had become insane as the result of influenza and pneumonia during the epidemic of 1918: she inflicted injuries upon herself with a table-knife, four superficial incised wounds being found on the upper part of the neck on the left side; they were typical suicidal wounds, parallel and running slightly downwards towards the right. There were 11 superficial cuts on the lower part of the front of the left chest mainly internal to the nipple. She then thrust three table-knives down her throat, one passing down the oesophagus into the stomach where it cut the mucous membrane. Another knife had stabbed through the epiglottis and the posterior pharyngeal wall and was then pushed down in the cellular tissues in front of the spine to the posterior mediastinum: it penetrated into the right pleural cavity, in which it lay free. The third knife followed the track of the second and was found with the blade projecting into the pleural cavity, the upper half of the handle being in the mediastinal tissues; the pleura contained half a pint of blood. She then jumped from the bedroom window, falling a distance of over 20 feet which caused a bruise on the temple and some meningeal hæmorrhage.

The suicide who drowned himself in a bath had an unusual distribution of stabs associated with incised wounds. There were six wounds on the neck: two were short incised wounds on the right side of the neck a short distance below the ear and the angle of the jaw respectively; another incised wound four and a half inches long was at a slightly lower level—at its front end it penetrated upwards and backwards for one inch towards the floor of the mouth. There were two other slight cuts in the neck, and a stab wound immediately above the sternum which extended for a distance of one and a half inches to the left and slightly upwards. There were at least seven tentative cuts close together on the upper part of the left side of the neck. There were two stab wounds in the left chest below the nipple: one was superficial, the other penetrated into the left pleural cavity. There was a superficial stab immediately below the sternum and there were two stabs in front and on the inner side of the left elbow. No important structures were divided in any of the wounds.

An injury which combined the characters of an incised wound and a stab was found in the upper part of the right side of the neck of a man who had committed suicide. The wound was almost two inches long and was parallel to the lower border of the jaw and extended behind the angle: it was very superficial in front, but at the back it penetrated for almost three inches, passing backwards and slightly inwards, dividing the internal carotid artery, the internal jugular vein, the vagus nerve, and the sterno-mastoid muscle: it extended into the erector spinæ muscles behind. There were three other superficial cuts

close to the main injury, and one on the right temple. A suicidal stab wound in an old man passed through the upper part of the anterior abdominal wall obliquely downwards, pierced the gastro-hepatic omentum, and penetrated into the body of the pancreas.

A difficult case was that of an old man 78 years of age, who was bedridden and lived with his wife aged 80. According to her statement he was left for half-an-hour propped up in bed, and on her return was found dead, with blood on the front of his clothes, a large pair of scissors lying upon his abdomen. He had a stab wound on the front of the left chest a short distance above and to the inner side of the nipple. The weapon had entered the chest through the fourth intercostal space, crossing the left ventricle of the heart and penetrating into the right: the pericardium contained much blood. He had a transverse cut an inch long on the left side of the neck extending slightly across the middle line: it appeared to be a single wound and had entered the upper part of the larynx where several parallel cuts were seen in the thyroid cartilage. He was in a very feeble condition and it was thought that the injuries might have been inflicted by his wife, who was also very feeble, but it was found that the stab in the chest had not passed through his vest and night-shirt, both being unbuttoned in front and the edges of the night-shirt turned in. A verdict of suicide was returned.

Stabs through the left ventricle of the heart do not always allow blood to escape from the cavity of the ventricle, the wound being closed by muscular contraction and later being sealed up by clot. This was the case in a man, obviously insane, who stabbed himself over the heart with a penknife, and attempted to cut his throat, inflicting 18 superficial wounds on the left side of the neck: he then threw himself out of a window. The stabs were five in number, situated close together on the front of the left chest wall internal to the nipple; they all penetrated into the pleural cavity in front of the lung, two passed through the parietal pericardium close together and the cavity contained half an ounce of blood clot. One passed completely through the anterior wall of the left ventricle close to the interventricular septum, where a small opening was present at the base of one of the papillary muscles. The fall from the window had fractured the right lower jaw and both thighs, extending into one knee-joint; he also had a lacerated wound on the forehead. He survived the injuries for a few hours and did not die from the penetrating wound of the heart, the small amount of blood in the pericardium having escaped from the edges of the wound and not from the interior of the ventricle.

Homicidal stab wounds, in contrast with suicidal, are more frequent in the neck, the chest taking second place, and the abdomen coming last. These wounds often have a position and direction which would render it difficult or impossible for them to have been self-inflicted. Thus a woman was stabbed, and 13 wounds were found upon her body. The wound which was mainly responsible for her death was a stab about an inch and a half long, situated in the lower part of the neck on the right side immediately above and parallel to the outer part of the clavicle. The wound penetrated for about 4 in., running inwards and slightly downwards, dividing one cord of the brachial plexus, opening the right subclavian artery, and entering the pleura immediately below it, cutting the apex of the lung and penetrating to the outer surface of the trachea. The right pleura contained 15 oz. of blood. Another stab four-fifths of an inch long entered the lower part of the back of the left chest $3\frac{1}{2}$ in. from the spine, and extended for more than 2 in. into the lower lobe of the lung. The pleura contained about 4 oz. of blood. There were two stabs at the back of the left chest internal to the scapula, each measured 1 in., and they ran upwards and inwards for a distance of $2\frac{1}{2}$ and 3 in. respectively through the subcutaneous tissues and muscles. There was a stab $1\frac{1}{2}$ in. long in the upper part of the neck on the left side close to the scalp; it penetrated for more than 2 in. inwards and slightly

upwards without injuring any important structures. There were several irregular cuts, most of them superficial, on the lips, the left cheek, the neck, and the left upper arm; no large blood-vessels had been divided in these wounds. The chief wound in the neck could only with difficulty have been self-inflicted; the three wounds at the back of the chest were clearly homicidal injuries, and the injuries on the face were unlike suicidal wounds.

Since homicidal stabs may pass in any direction it is particularly difficult to estimate the extent of the injury, and a part of the track of a wound may be missed during an operation to repair the damage. In a case of stabbing in the abdomen where a small knife had been used, the wound in the abdominal wall was half an inch long and was situated 2 in. above the pubic bone immediately to the right of the middle line. The track of the injury was obliquely downwards and backwards, passing into the peritoneal cavity and transfixing a coil of small intestine 18 in. above the ileo-caecal valve; it then passed through the parietal peritoneum on the right pelvic wall and extended for a distance of 3 in., opening the external iliac vein. Acute abdominal symptoms developed two hours after the injury had been inflicted; an operation was performed, a large quantity of blood was evacuated from the peritoneum, and the wound in the intestine was found and sutured, but the further course of the track was not discovered and the patient died a few hours later from peritoneal hæmorrhage.

A stab which penetrates into one of the body cavities—e.g., pleura or spinal canal—may cause death from internal hæmorrhage with little or no external bleeding. In the case already referred to of a homicidal stab wound behind the ear, the victim was a young Canadian soldier who was on leave in London during the war and who was known to be in possession of a fairly large sum of money. He was struck on the side of the head, fell down immediately, and died in a few minutes. On examination a stab was found directly below the right mastoid process. The wound was horizontal and just under half an inch in length; the track passed inwards and slightly backwards, the right occipital artery was completely divided, and the weapon had pierced the dura mater in the occipito-atlantal space without injuring the spinal cord. Hæmorrhage from the artery passed inwards along the track into the subdural space and surrounded the whole of the spinal cord, and a large part of the base of the brain, causing death from meningeal hæmorrhage. The depth of the wound was almost 2 in. It was suggested that the injury might have been caused by a fragment of broken glass, but it was clear that a wound so narrow and so deep could not have been caused by that means.

Homicidal stabs in the neck sometimes run very obliquely downwards, penetrating into the chest and producing rapidly fatal injuries. In one case a wound was found immediately above the sternum slightly to the right of the middle line; it was half an inch long and vertical in position. The weapon passed downwards and slightly backwards in the superior mediastinum, opening the left innominate vein, and extending through the left parietal pleura. Blood from the injured vein accumulated in the pleural cavity, which after death contained over six pints. There was a cut in the shirt corresponding with the wound in the neck.

In another case there was a wound on the front of the neck on the left side 2 in. above the clavicle; it was one and three-fifths of an inch long and was vertical; it passed almost directly downwards through the sterno-mastoid muscle and the internal jugular vein, entering the left pleural cavity at the apex, cutting the subclavian artery, and penetrating into the apex of the left lung for a distance of three-quarters of an inch. Hæmorrhage from the cut vessel was almost entirely internal, and 3½ pints of blood were found in the left pleural cavity.

In a case of murder a wound in the neck, like one of the suicidal cases quoted above, combined the characters of a cut throat and a stab. It was 5½ in. long, situated in the upper part of the front of the neck more on the right than the left, and ran slightly upwards from left to right. The larynx had been opened between the thyroid cartilage and the hyoid bone and gaped widely. On the left side of the neck the wound penetrated deeply as a stab, dividing the sterno-mastoid and other muscles, dividing completely the left common carotid artery, and partly dividing the internal jugular vein. It cut through the intervertebral disc between the fourth and fifth cervical vertebrae from its margin to the middle line and half divided the spinal cord. The wound appears to have been made by a single stroke, the weapon being thrust deeply into the left side of the neck, and withdrawn across the right side of the neck.

In three homicidal cases death was due to injury of the heart. In one the weapon passed completely through the left ventricle and interventricular septum, a large amount of blood escaping into the pericardium and left pleura. In another the weapon penetrated from above and transfixed the pulmonary artery, passed through the right ventricle into the left auricle. In both cases death followed rapidly, but in the second case the victim ran a distance of 40 yards before she fell unconscious.

In the third case the weapon passed through the front wall of the left ventricle close to the interventricular septum, the cut on the inner surface of the ventricle being small; he survived the injury for about 22 hours. An operation was performed and the wound in the heart was sewn up. At the post-mortem examination the wound in the heart was closed by blood-clot; a small amount of blood was found in the pericardial cavity which had escaped from the wound.

In two homicidal cases death was caused by injury of the lung. In one there were two wounds, one penetrating the right lung from the front, the other the left lung from above, the stab having been made immediately above the inner end of the clavicle; death occurred three days later. In the other case the injury was inflicted on the front of the left chest immediately below the clavicle; it penetrated into the lung, and after death, which occurred 12 days later, the pleura contained between five and six pints of blood. Hæmorrhage from a peptic ulcer in the stomach, which began a week after the injury was inflicted, and continued to the end, probably determined the fatal issue.

DONATIONS AND BEQUESTS.—The late Mr. James Maxwell Grant Proffit, Glenluce, Wigtonshire, and Portland-place, W., after the fulfilment of several personal bequests, left his residuary estate, subject to his sister's life interest, for a trust fund of which one-half is to be applied for inquiry into the nature, cause, prevention, treatment, and cure of tuberculosis, and one-half for a similar inquiry regarding cancer, as a board of special trustees shall decide. The value of the bequest will be about £160,000 net. The board of the trust fund is to consist of the chairman for the time being of Barclays Bank and chairman of the Chartered Bank of India, Australia and China, the President of the Royal College of Surgeons of England, and the President of the Law Society. The trustees may, amongst other powers, apply the funds of the trust in financing persons or institutions conducting such research, in the equipment and (or) endowment of institutions or laboratories for this purpose, and in publication of the results of such researches. —An anonymous donor has presented £50,000 to the Governors of the Royal Technical College, Glasgow; a condition of the gift is that the sum is to remain as the permanent capital of the College. —Sir Robert Hargreaves Rogers, Bexley, Kent, left £500 each to Bexley Cottage Hospital and Bexley Victoria Homes. —Following the gift of £1000 to Newark Hospital by Mr. H. W. Adams, a local councillor, from charity funds at his disposal, it was announced at the governors' meeting on Feb. 24th that £5000 had been subscribed towards the erection of a nurses' home by Mr. Harry Coulthby, of Cleveland, U.S.A. The donor was born at Claypole, a village near Newark.

THE DIAGNOSIS OF INCIPIENT INSANITY IN YOUNG ADULTS.

BY H. S. LE MARQUAND, M.D., M.R.C.P. LOND.,
ASSISTANT MEDICAL OFFICER, THE MAUDSLEY HOSPITAL.

THROUGH the controversies which have arisen over the psychological teachings of Freud, psychiatry has been brought of late to the notice of the general practitioner more than ever before.

As the family doctor deals with the earliest signs of bodily disease, so he is the first to treat the early symptoms of mental disorder, seeing the patient in the most hopeful stage. But in the cases with which this article deals, the onset of symptoms is so insidious that the serious nature of the trouble is often not suspected until this early period has passed. It would, then, be an advantage if one could indicate some of the signs and symptoms which would place the doctor on his guard; and this is likely to be especially important in the near future when there will be an extension of the voluntary boarder system and of clinics for border-line cases.

Forms of Insanity Occurring in Adolescence.

For the purpose of classification, the form of psychosis occurring in adolescence may be grouped under three headings: (1) Confusional psychosis; (2) manic-depressive psychosis; (3) dementia præcox. This article does not deal with the first two conditions, for they are not peculiar to early adult life, and their sudden onset and acute mental symptoms remove them from the category of "incipient insanity." But the third heading—dementia præcox—includes a large number of cases which are peculiar to early adult life, and which present grave difficulties to early diagnosis because of their insidious onset, when the symptoms may closely resemble those of one of the common neuroses. It is with these cases that this article is intended to deal.

The term dementia præcox has been much criticised because it covers such a variety of cases, but even if it be not the clinical entity which it was once supposed to be, yet its use is a great convenience. It includes those patients who exhibit an inability to grapple with their environment, a consequent turning away from reality to live in a phantasy world of their own, with a progressive deterioration, both emotional and intellectual.

Insidious Development of Dementia Præcox.

The gradual onset of the trouble must always be in the mind of the general practitioner, as he may be consulted at any stage of the disorder. The usual course may be summarised as follows. A shy, seclusive individual gradually becomes more and more self-centred and apart from his fellows. He loses interest in outside affairs and his emotions and desires weaken. Less and less energy remains for his life's work, and he retires from it to occupy himself with phantasy. Misconstructions, to which he was ordinarily rather prone, develop into delusions, as he projects his own apathy on to others. Hallucinations add to the variety of his phantasies and he loses the power of distinguishing one from the other. Abnormality of conduct follows. Then, in many cases, the apathy becomes profound, intellectual deterioration sets in, and a condition of profound dementia results. If this gradual trend of events be remembered, the disorder may be suspected when no very definite signs are present; but, as well as the general consideration of the case, there are certain signs of a more definite character which may be noticed in the early stages.

Early Dementia Præcox: Some Characteristic Signs.

Mental Signs.—A point in the history which is worth noting is the occurrence of moral lapses or minor

disorders of conduct. For example, one patient had been in constant trouble in the R.A.F., for committing petty offences "out of bravado"; another had twice stolen worthless articles. In the first case it was two years before mental trouble was suspected.

The psychotic often interpolates in his conversation which may be otherwise quite rational, remarks of an unusually bizarre character. Such expressions as "my heart feels compressed and light"; or "I feel I have no blood in my body," are the type of thing met with. The fantastic character varies from a remark put in a slightly unusual form to such a statement as "I have no roof to my mouth," an obvious delusion. When pressed to explain these statements the replies of the patient are unsatisfactory and inconsequent. Often the symptoms of which he complains are put in a peculiar way. He may state that one part of his mind is struggling with the rest, or that one part appears to be talking to the other. While he may then have insight into the symptom, a remark such as that not infrequently heralds the more complete dissociation which will be shown by hallucinosis. Symptoms of this kind should be regarded with suspicion.

The question of insight is one of some interest. While a neurotic always has insight into his condition—that is, he always ascribes his condition to some natural physical cause—a psychotic typically has no insight. But in these early cases of dementia præcox the patient usually ascribes his condition to something wrong with his brain or his head, and he only gradually loses insight as the disorder progresses. A stage is often passed through when the patient sometimes has insight into his condition and at other times has not; or he has insight into some symptoms and not into others; or, again, he has insight into the several symptoms themselves, but plainly does not recognise the profound nature of the disability from which he is suffering. For example, one extremely depressed patient quickly recognised that her depression was abnormal and best treated by medical means, whilst still maintaining the truth of the delusions on which the depression was founded.

Though an intellectual defect is not a marked sign in an early case as a general rule, yet it may occur and must not be overlooked. For example, one apparently intelligent patient could not remember the date of the beginning or end of the war, nor any particulars of its onset and progress.

Physical Signs.—The text-books describe a number of physical signs of dementia præcox. Amongst these, transverse wrinkling of the brows, wasting of the thenar and hypothenar eminences, and the tendency of the hair to stand on end are not commonly found in the early stages. But complaint may be made of the development of hair in unusual situations. Sweating may be confined to one limb or portion of the body. The circulation in the extremities is frequently poor, and the patients show cold and blue hands and feet which may become oedematous.

Dementia Præcox and the Neuroses.

Now it is during the long development of the psychosis that confusion with one of the neuroses may occur. All the neuroses merge into one another in indefinable grades, but for the sake of convenience they may be classified into: (1) Neurasthenia; (2) hysteria; (3) compulsion neurosis; (4) anxiety neurosis. Cases will be described in which the diagnosis between these conditions and that of dementia præcox was uncertain, so that the important points may be exemplified.

Dementia Præcox and Neurasthenia.—CASE 1. Male, T. B., aged 26, clerk. This patient came up to hospital complaining of an excessive feeling of tiredness, with a consequent loss of energy. He suffered from headache and slept badly. He gave a clear account of himself, showing no cognitive defects. He expressed affection for his mother, and anxiety at not having the energy to work for her. He said that he was seclusive, and he appeared to be unduly suspicious of a brother-in-law who lived in the house. He

had not been subjected to any particular stress, but he had worried a good deal over the habit of masturbation which he had endeavoured to suppress.

From these symptoms a diagnosis such as neurasthenia would be considered fairly safe, and the condition would be regarded as likely to clear up with simple advice as to rest or a holiday in the country. The patient was admitted to hospital in February, 1923, and on investigation some rather more suspicious facts were elicited. Lately he had become rather surly and morose, he had sometimes locked himself in his room, and he had been heard tramping about at night. However, considering the case as a whole, he showed then but little affective change. What change there was, was not towards the apathy of a dementia præcox, for he showed symptoms of anxiety. There was no cognitive impairment. He showed considerable loss of conative power in his lack of energy. After some months in hospital, where his behaviour was normal, he was discharged "recovered" and went back to work. For six months he remained at work, but with ever-increasing difficulty. He became apathetic and hopeless, and on readmission to hospital he passed into a state of catatonic stupor, in which he remained for five months. Now (Feb. 25th) he has recovered to the extent of working well in an institution, but he shows some intellectual deterioration.

In general, this case shows the importance of keeping the possibility of a psychosis in the mind in a young adult with neurasthenic symptoms, and shows also the value of a careful history revealing the change which had been taking place in the disposition. There were other points of interest. When he first came up to hospital his symptoms were few, yet his disability was profound—a disability not limited, as in many neurotics, to his work, but extending to all his activities. He had had no extra strain to cause a breakdown. In fact, the early dementia præcox often seems to be absolutely disabled, with, as it were, very little to show for it. His symptoms are few, often consisting, as in this case, of headache and loss of energy with a feeling of anxiety about his condition, the cause of which he cannot understand. On the other hand, the typical neurotic complains of many symptoms, of which he is rather pleased to talk, and despite which he is often able to continue his work satisfactorily. In the early stages the degree of disability of the dementia præcox is much more pronounced. It was noticeable that when this patient began to relapse a game of tennis produced complete exhaustion and great depression.

Another point of interest is that when first seen he showed anxiety about his condition. Despite the text-book description of dementia præcox, this anxiety is usually found in the early stages rather than the apathy which is characteristic of the later phases of the disorder.

Dementia Præcox and Hysteria.—Hysteria and dementia præcox are conditions which usually appear to be entirely distinct, yet cases arise in which the diagnosis is at first by no means easy.

CASE 2.—Male, aged 24. He was the eldest of nine children, and had won several scholarships while qualifying as a teacher. After teaching for three months he broke down, becoming "nervy" and excitable, unable to reply to questions or to stand noise. He stopped at home and was treated by a doctor for about a year before admission to hospital. On admission, he gave a coherent account of the development of his illness, showing no cognitive defects at all. He usually spoke in a whisper, saying he had lost his voice, but sometimes this was nearly normal. He had a habit of holding all his muscles rigid for a few minutes at a time, and his explanations were vague. He did not express much anxiety about his condition, and quickly settled down in the institution, yet sometimes he reacted emotionally to trifling incidents.

The emotional variability, the aponia, the absence of cognitive change, suggested the diagnosis of hysteria. The history of being idle at home for so long, the absence of desires for the future, the profound disability with only a few hypochondriacal symptoms suggested dementia præcox. The latter diagnosis was the correct one, for the patient became more and more apathetic, neglectful of his person, inclined to over-eat himself, and absolutely idle. But up to the time of his discharge intellectual change had not made

appreciable progress, and he remained capable of conversing on abstruse subjects, such as psychology, thus exemplifying in a marked manner the dissociation between the cognitive and conative elements. It is to be noted that he broke down after he had qualified in his profession. In point of fact, a number of patients appear to break down while trying to educate themselves to a higher level than their capacity justifies.

Dementia Præcox and the Compulsion Neurosis.—Now this neurosis varies from the recurring doubts about having left the gas on, common to all normal people, to a form so severe that the worrying thoughts nearly drive the patient to despair. It is these severe types which approach the psychoses most nearly. At first sight a psychosis characterised by apathy would seem to have little in common with a neurosis characterised by doubt and worry, but again it must be remembered that worry attends the feeling of initial disability in the early psychosis, and on the other hand, the extreme degree of doubt reached by the severe obsessional neurosis limits activity as successfully as the apathy of the dementia præcox. A severe obsessional neurotic, wrapped up in his obsessions, with perhaps a few compulsive ties, has only to lose insight to become a dementia præcox typical in all salient features.

CASE 3.—Female, aged 23. When 18 years old the patient lost energy and had to be dressed and taken about by her mother. After recovery, she remained well until twelve months before admission to hospital, when she complained of apathy, pains in the head, and sometimes thought that people were talking about her. The history of the previous attack sounded like a psychosis, but the recent symptoms appeared to be rather of the neurotic type, especially as she was worried by a number of compulsive acts. She felt compelled to shake her clothes before putting them on, and when she once started washing she felt unable to leave off. There was no loss of insight. The diagnosis at that time was doubtful; the insight she displayed, the anxiety about her disability, showed that if she were a psychotic, she was in an early stage, but the suspicious early history and the great loss of energy rather pointed to this probability than to a neurosis. As she remained in hospital it became obvious that a compulsion neurosis was not sufficient to account for the complete disability under which she laboured. While the obsessions remained about the same she gave evidence of deterioration in her slovenly appearance. Though she expressed anxiety about her condition, this contrasted strongly with her completely apathetic behaviour. Towards the end of her stay in hospital she began to experience fleeting hallucinations, but she always understood their subjective nature and showed no other evidence of cognitive change.

Dementia Præcox and the Anxiety Neurosis.—In this neurosis the patient shows the mental symptoms and some of the physical signs of an exophthalmic goitre, but usually without any marked enlargement of the thyroid. The feeling of anxiety may be present all the time, or acute attacks may intermit with periods of comparative calm. This would appear to be a condition the very antithesis of dementia præcox, but such is not always the case. The anxiety which the early dementia præcox shows may simulate the neurosis and occasion considerable doubt.

CASE 4.—Male, aged 27. The patient, a shy, seclusive youth, had served in the ranks during the war, though he had had a good education. Afterwards he had financial and domestic trouble, the latter because he became engaged to a girl of a lower social status. He became depressed, and made an half-hearted attempt to commit suicide. In hospital he showed a chronic anxiety state with occasional acute exacerbations, not related to any known cause. He made bizarre remarks—e.g., he felt that "his subconscious self was dominating his conscious," but showed no cognitive changes. His affective state was one of anxiety with consequent conative loss. Gradually he improved and took a rational view of his illness, and left hospital quite well.

Now several points in the history—the seclusiveness, his serving in the ranks, and the association with someone of a lower social status—rather pointed to the fact that he was an individual not quite capable of living in the sphere in which he had been born.

Consciously or unconsciously he was creating an environment adapted to his capabilities. As Case 2 sought to overcome his inferiority by educating himself to too high a standard, so this patient sought the opposite solution of deteriorating to a lower level. These facts, together with the attempt at suicide, suggested that the case might regress further to a typical dementia præcox condition. On the other hand, his symptoms in hospital were those of an acute anxiety state, and he steadily improved, becoming, as far as one could judge, as normal as he had ever been. He showed no residual changes, some sign of which one would expect if he were a dementia præcox with a remission. Thus the condition was a temporary breakdown which one may call an anxiety neurosis occurring in an unstable individual. He was still quite well some months after leaving hospital.

The Importance of Mental Symptoms.

From the description of the above cases it will be seen how difficult the diagnosis may be between a neurosis and dementia præcox. But the majority of cases fall more easily into one or other group, and if the general practitioner is on the look-out for the main features that have been described, he will be likely to diagnose this type of psychosis at a much earlier stage than he usually does at present.

The value of trying to classify and note the mental symptoms may itself be doubted, but this is important for several reasons. From the work of Sir Frederick Mott we know that a regressive change in the ovaries or testes and other organs is constantly found in the well-developed dementia præcox. Yet we have seen that the first signs of this serious condition are invariably mental, and only to be diagnosed from mental symptoms. Again, the doctor is often satisfied by finding some slight physical defect, entirely forgetting to investigate the general relation and reaction of the patient to his surroundings. While it is of the utmost importance that no physical illness should be overlooked yet it is worth while as well to consider these disorders from the psychological standpoint, to wonder why some patients react to an unsuitable environment with a neurosis, others with a psychosis, and to try to determine the correct relation of these conditions. The general practitioner can help to solve these and other problems, the solution of which will help to elucidate larger problems of human behaviour in general.

Summary.

(1) Dementia præcox is a common mental disorder in young adults. Following an insidious onset, it runs a prolonged course. The patient exhibits an inability to grapple with his environment, a consequent turning away from reality to live in a phantasy world of his own, with a progressive deterioration affecting primarily his emotions and ultimately his intellect in addition.

(2) The insidious onset causes considerable difficulty to an early diagnosis because the condition is liable to be mistaken for one of the common neuroses.

(3) The diagnosis between dementia præcox and these conditions is important because: (a) the different prognosis and treatment in the two cases; (b) the desirability of early investigation of dementia præcox; (c) the probability of extension of facilities for treating early cases in the near future.

(4) The diagnosis of dementia præcox mainly rests on: (a) considering carefully the history of the case with the development of the personality of the patient; (b) recognising the typical mental symptoms and physical signs, the most typical of which are the emotional apathy and loss of energy together with a poor circulation in the extremities.

I wish to thank the medical superintendent, Dr. Edward Mapother, for permission to publish this article.

PROPHYLAXIS AND THERAPY IN ANIMAL TUBERCULOSIS.

By H. SCHÜTZE, M.D.

(From the Lister Institute.)

NUMEROUS have been the attempts to produce immunity to or to cure tuberculosis in laboratory animals. Very few have been the successes reported, and those few apparently favourable results usually lack any subsequent confirmation or disproof. The reader is left with a single experiment, often of small extent and inadequately described, as a verification of the particular therapeutic theory.

Previous Experimental Work.

In the literature of the last 20 years have been found these accounts of experimental work on this question. Maffucci and di Vestea (1901) treated 124 guinea-pigs with a specific serum and prolonged the average life of these animals by eight days beyond that of the 31 controls.

Noguchi (1909) produced such immunity in four guinea-pigs by inoculating with T.B. dissolved in sodium oleate that one survived indefinitely, one died of intercurrent infection after 90 days, and two remained well for 50 days (subsequent history unknown), while four controls died in 22, 25, 34, and 36 days. Zeuner (1909) treated three guinea-pigs with a sodium oleate vaccine, and found that they lived one, one and a half, and three months longer than three untreated ones. Broll (1910) re-tested Zeuner's vaccine, and prolonged the life of his guinea-pigs as much as four weeks. Two immunised calves, killed ten weeks after infection, showed few post-mortem signs of tubercle, while the control died seven weeks after infection with massive tuberculosis.

Marxer (1911) continued the investigation of Zeuner's vaccine. In his first experiments the following results were obtained:—

(a) Fifteen control guinea-pigs infected with 1/100,000 mg. T.B. Death in 1-9 months; average = 6 months. Eighteen immunised guinea-pigs infected with 1/10,000 mg. T.B. Two alive after 11 months, remainder dead in 1-10 months; average = 7 months.

(b) Four control guinea-pigs infected with 1/10,000 mg. T.B. Death in 1-5½ months; average = 3½ months. Seven immunised guinea-pigs infected with 1/10,000 mg. T.B. Death in 5-10½ months; average = 7½ months. Four treated guinea-pigs infected with 1/10,000 mg. T.B. Death in 1½-6½ months; average = 3 months.

(c) Two control goats died in 1 month. Of five immunised goats one dies in 2 months, four are killed after 3 months, two showing little T.B. and two resembling the controls.

A later report states that subsequent experiments, in which six experimental and six control guinea-pigs were used, failed to confirm these favourable results, all animals dying in about the same time.

Möllers and Wolff (1913) used Zeuner's vaccine and failed to protect guinea-pigs or rabbits:—

Six control rabbits died after 2, 3, 3, 4, 4, and 4 months. Six treated rabbits died after 1, 1, 1, 1, 3, and 7 months. Five immunised rabbits died after 3, 3, 3½, and 6 months, one being killed after 9½ months and showing little T.B.

Von Ruck (1912) inoculated guinea-pigs with a vaccine consisting of the soluble proteins of the tubercle bacillus plus some of its fatty extractives—two controls died in 31 and 41 days with much tuberculosis, five immunised guinea-pigs were killed after 90 days and showed little disease. In another batch the control died in 23 days with much tuberculosis, five immunised animals were killed after eight weeks and showed less infection, nine immunised animals lived till the time of the report (? how many weeks). Cummings (1913) re-tested von Ruck's vaccine on 20 guinea-pigs and found that the ten controls died in 34-94 days, the average being 55, and that the immunised animals died in 32-154 days, the average

being 57. Brown (1919) also used von Ruck's vaccine but with a less virulent infecting strain. His eight controls were killed after 112 days and all showed signs of tuberculosis; the six treated animals killed at the same time showed none.

Frugoni and Grixoni (1909) treated rabbits (? number) with thyroid extract and found they live longer (? how much) than the untreated. Ruppel and Rickmann (1910) claimed to have prolonged life in guinea-pigs for four months by means of immunisation (? details) with a specific serum. Of 14 guinea-pigs treated with a T.B. vaccine sensitised with this serum, ten survived for at least five and a half months and four died after one and a half, one and three-quarters, four and a half, and five months with little or no tuberculosis, whereas the controls (? number) all died in five to six weeks with marked tuberculous disease. Linden (1920) influenced the course of T.B. in guinea-pigs and rabbits favourably by means of copper salts.

Momose (1913) used a vaccine of T.B. treated with 10 per cent. NaOH and extracted with chloroform.

(a) Of five control guinea-pigs infected with 1/1000 mg. all die in 6-12 weeks. Of seven immunised guinea-pigs infected with 1/1000 mg. none die in 12 weeks. Of eight immunised guinea-pigs infected with 1/100 mg. three die in 12 weeks. T.B. lesions less as a rule in the treated than the untreated.

(b) Two control guinea-pigs die in 10 and 12 weeks, showing marked T.B. Of five treated guinea-pigs one dies in 17 weeks and four are killed after 24 weeks and show either no or slight T.B.

(c) Of ten control guinea-pigs six die in 4-14 weeks and four are killed after 10 and 16 weeks, all showing marked T.B. Of ten treated guinea-pigs three die in 7, 8, and 10 weeks, and seven are killed after 10 and 16 weeks, some showing no T.B., others slight T.B.

Rappin (1913) gave a vaccine (? living) of T.B. treated with specific serum and protected guinea-pigs (few details). Ostromushuski (1916) claimed to have protected guinea-pigs and influenced the course of the disease favourably by injecting copper gynocardate. Laitinen (1921) found that 20 guinea-pigs treated with calcium phosphate live one month longer than 30 treated with calcium hydroxide. Seiffert (1924) injected guinea-pigs with T.B. dissolved in NaOH—two controls lived 65 and 70 days, two treated eight days after infection live 64 and 68 days, two treated synchronously with infection live 166 and 170 days. Droussin (1921) declared that a vaccine treated with sodium fluorate and a specific serum (? nature) invariably immunised animals (no details). Serra (1921) raised the resistance of rabbits by feeding with the active principle of the liver (no details). Perrin and Remy (1921) treated four guinea-pigs with extract of nettles, and found that they lived for 24, 61, 63, and 75 days as compared with the 53 and 56 days of two untreated ones. Kahle (1921) considered that silicic acid induced a more chronic type of infection in guinea-pigs with a tendency to healing. Frank (1923) did not confirm the favourable effect of silicic acid. Culpepper and Ableson (1921) treated 12 guinea-pigs with sodium chaulmoograte, with one spontaneous death in 37 days (of 12 controls 11 die in 28-78 days), the remaining animals being killed off one for each death among the controls. Treated animals have improved weights and less advanced T.B. as compared with the untreated ones.

Dreyer (1923) treated four guinea-pigs, 28-39 weeks after infection, with a vaccine extracted with formalin and acetone (diaplyte vaccine): one died 11 weeks after commencement of treatment with signs of slight T.B., the three remaining animals were alive 16-20 weeks after treatment was begun (no controls). He also treated three rabbits five weeks after infection with a bovine strain and found their weights increased, whereas that of the one control remained stationary. Also inspection of the ulcer and nodule at the site of inoculation was regarded as evidence in favour of a beneficial influence exerted by the vaccine.

Boquet and Negre (1923) treated 50 guinea-pigs in three groups with a methylic extract of T.B.—death occurred after averages of 137, 140, and 90 days as compared with the 98, 97, and 90 days of the 18 animals in the three groups of controls. Treated rabbits die, four in 97 days, four in 89 days, as compared with two controls in 63 days. Of eight rabbits given a minute dose the two controls die after three months with massive T.B., and of the six treated animals five die after five and a half months with less than the usual signs of infection and one is killed after nine months showing but a few scars. Raw (1924) inoculated prophylactically with killed human T.B. of attenuated virulence. While five control rabbits died of infection with an attenuated bovine virus within four months, four of the five inoculated animals are still alive after ten months. Row (1924) injecting a vaccine of autolysed T.B. extracted with chloroform into guinea-pigs infected with T.B., kept five out of six alive and well—no T.B. seen on killing—for six months and more. The five controls all died in three to ten weeks.

A list of experiments such as this, neither confirmed nor definitely disproved, is very unsatisfactory, and gives clinicians no indication as to the direction in which they are to seek a likely therapy. To come to any conclusion as to the respective merits of these varied systems of prophylaxis and therapy is difficult, and the paucity of animals under observation often renders it impossible; failure to repeat results when the same type of antigen is used on different occasions is frequent, a spurious protection having sometimes, not impossibly, been obtained by the tubercle vaccine not being absolutely dead, for a living inoculum has been shown by Calmette (1924) and others to be capable of inhibiting a superimposed infection. It is important, therefore, that where attention has been widely drawn to a new remedy, the evidence which animal experiment can afford should be multiplied, and with this in mind the following series of inoculations was performed.

Therapeutic Experiment with Dreyer's Diaplyte Vaccine.

The experiment here described was carried out on the lines of the one reported by Prof. Dreyer. The animals employed were guinea-pigs fed on the regulation diet of oats, hay, and greenstuff. The infecting organism was, in the case of one batch of 18 animals, a human T.B. of medium virulence, "Lyons." The other batch of 18 received an attenuated bovine strain, "H 159 (b)," kindly supplied by Dr. A. S. Griffith. A tenth of a milligramme was inoculated subcutaneously into the thigh of each guinea-pig. Five weeks later, treatment with Dreyer diaplyte vaccine was begun. This vaccine was prepared with a six weeks' old glycerine-broth culture of a bovine strain "B 4." After one repetition of the extraction with formalin and acetone, defatting was complete. A Ziehl-Neelsen film counter-stained with methylene-blue revealed no acid-fast or other recognisable bacteria; one counter-stained with strong carbol-fuchsin showed numerous more or less faintly staining bacilli and their fragments. The vaccine was diluted to the prescribed strength of $\frac{1}{5}$ mg. per c.cm. and given subcutaneously into the flanks of half the guinea-pigs, nine in each batch. The dosage, based on that used by Dreyer, varied from $\frac{1}{2}$ to 1 c.cm., and was given at intervals of one to four weeks, the actual dates and doses being Oct. 19th, $\frac{1}{2}$ c.cm.; Oct. 26th, $\frac{1}{2}$ c.cm.; Nov. 5th, $\frac{1}{2}$ c.cm.; Nov. 12th, 1 c.cm.; Nov. 22nd, 1 c.cm.; Nov. 30th, 1 c.cm.; Dec. 12th, 1 c.cm.; Dec. 20th, 1 c.cm.; Jan. 7th, 1 c.cm.; Feb. 6th, $\frac{1}{2}$ c.cm. The daily weight curves indicate that the animals tolerate the inoculations well. No fall in weight could be related to the treatment and, indeed, throughout the experiment the curves of the treated and untreated guinea-pigs ran very similar courses. The dates of death are shown in the table given below.

Post mortem, similar lesions were seen in both the treated and the untreated—abscesses at the site of inoculation, caseating glands, enlarged spleens, necrotic

and caseating, livers, large and mottled; the lungs might be crepitant or hepatised, and in the case of the animals infected with the human strain, always studded with tubercles, in those infected with the bovine strain, the lungs were generally free from macroscopic signs of tuberculosis.

Guinea-pigs Infected with B. tuberculosis (Half the Number being subsequently Treated with Diaplyte Vaccine).

	Number of days after infection at which death occurred.	Average.
1. Infecting strain "Lyons," human T.B.		
Treated ..	48, 54, 73, 100, 105, 111, 115, 123, 164 ..	99
Untreated .	85, 92, 103, 115, 124, 142, 152, 185, 187 ..	113
2. Infecting strain "H 159 (b)," attenuated bovine T.B.		
Treated ..	112, 117, 120, 135, 150, 153, 155, 172, 213 ..	147
Untreated .	122, 163, 167, 171, 189, 213, 215, 226, 342 ..	201

Similar results have been obtained by Kettle and Caulfield, working independently, and using Dreyer's antigen: Kettle's (1924) ten control guinea-pigs lived on the average 78 days, while the treated ones lived 53 days; in another batch the eight guinea-pigs, given prophylactic as well as therapeutic doses, also lived, if anything, a shorter time than the untreated controls. The fibrosis which Dreyer saw in the lesions of his guinea-pigs and regarded as evidence of a tendency to healing, Kettle was able to demonstrate in his controls as well. And indeed it has been an established fact, since the Royal Commission on Tuberculosis (1911), that in guinea-pigs which live more than 100 days after infection with human T.B. fibroid and calcareous changes are frequent.

Caulfield's (1924) four control guinea-pigs died in 6-15 weeks, average = 10½ weeks; his six treated guinea-pigs died in 7-2 weeks, average = 10 weeks; his four guinea-pigs given prophylactic as well as therapeutic inoculations died in 9-24 weeks, average = 13½ weeks.

The criteria of weight curves, survival rates, and macroscopic post-mortem appearances being applied to the experiment detailed above, no evidence of a favourable influence exerted by this diaplyte vaccine—employed curatively and in the doses recommended—on the course of tuberculosis in guinea-pigs has been observed.

References.

- Boquet, A., and Negre, L.: *Annales Instit. Pasteur*, 1923, xxxvii., 787.
 Broll: *Berl. Tierarz. Wochschr.*, 1910, 47.
 Brown, G. T.: *Therap. Gazette*, 1919, xxxv., 314.
 Calmette, A.: *Annales Instit. Pasteur*, 1924, xxxviii., 371.
 Caulfield, A. H. W.: *Canad. Med. Assoc. Jour.*, 1924, xiv., 616.
 Culpepper, W. L., and Ableson, M.: *Jour. Lab. and Clin. Med.*, 1921, vi., 415.
 Cummings, R. S.: *Jour. Amer. Med. Assoc.*, 1913, 1936.
 Doussin fils: *Jour. de Méd. de Paris*, 1921, xl., 178.
 Dreyer, G.: *Brit. Jour. Exp. Med.*, 1923, iv., 146.
 Frank, A.: *Beitr. klin. Tuber.*, 1923, lv., 470.
 Frugoni, C., and Grixoni, G.: *Berl. klin. Woch.*, 1909, xlv., 1160.
 Kahle, H.: *Beitr. klin. Tuber.*, 1921, xlvii., 296.
 Kettle, E. H.: *THE LANCET*, 1924, i., 68.
 Laitinen, T.: *Ref. Rautmann, Beitr. klin. Tuber.*, 1923, lv., 439.
 v. Linden: *Centralbl. Bact.*, 1920, lxxxv., 136.
 Maffucci and de Vestea: *Ref. Zeitsch. Tuber.*, 1901, ii., 550.
 Marxer, A.: *Zeitschr. f. Immunitätsforsch.*, 1911, x., 118, and xi., 644.
 Möllers, B., and Wolff, G.: *Veröff. R. Koch Stift. z. Bekämpf. Tuber.*, 1913, viii./ix., 74.
 Momose, K.: *Veröff. R. Koch Stift. z. Bekämpf. Tuber.*, 1913, viii./ix., 42, and *Deut. Med. Woch.*, 1913, i., 1029.
 Noguchi, H.: *Centralbl. Bact.*, 1909, lii., 85.
 Ostromushski: *Jour. Russ. Phys. Chem. Soc.*, 1916, 335 (*Ref. Wells, De Witt and Long, Chemistry of Tuberculosis*, 379).
 Perrin, M., and Remy, A.: *Comptes Rendus Soc. Biol.*, 1921, lxxxv., 526.
 Rappin: *Comptes Rendus Soc. Acad. Scienc.*, 1913, clvi., 246.
 Raw, N.: *Brit. Med. Jour.*, 1924, ii., 102.
 Row, R.: *Ind. Jour. Med. Res.*, 1924, xii., 195.
 Royal Commission on Tuberculosis: *Final Report*, 1911, Part II, App. Vol. I, p. 41.
 v. Ruck, K.: *Jour. Amer. Med. Assoc.*, 1912, 1504.
 Ruppel, W. G., and Rickmann, W.: *Zeitschr. Immunitätsforsch.*, 1910, vi., 344.
 Seiffert, G.: *Beitr. klin. Tuber.*, 1924, lviii., 362.
 Serra, P.: *Riforma Med.*, 1921, xxxvii., 1051.
 Zeuner, W.: *Centralbl. Bact.*, 1909, i., 1.

Clinical and Laboratory Notes.

STRICTURE OF ANAL CANAL FOLLOWING IMPROPER TREATMENT.

By WILMOT ADAMS, F.R.C.S. ENG.,

SENIOR SURGEON, STRAITS SETTLEMENTS MEDICAL SERVICE.

I VENTURE to think this case may be of interest in bringing out (1) the disastrous results of unskilled treatment, and (2) the efficacy of local anaesthesia in what was practically a Whitehead's operation.

A Chinese female, aged 38, was admitted to the General Hospital, Penang, on Jan. 23rd, 1923, suffering from anal stricture.

History.—About four months previously she consulted a Chinese medicine man on account of bleeding piles. He guaranteed a cure, and his procedure was as follows. She was heavily dosed with opium and a suppository containing lime was put into the rectum and kept there by pad and strapping for four days. For the first month after this she was fairly comfortable and the optimistic quack assured her she was cured. She then began to have difficulty in the passage of motions and in the control thereof.

Condition on Admission.—The anal canal consisted of a mass of fibrous tissue extending upwards for 1 inch, the lumen of which admitted a No. 6 English catheter. She was completely incontinent and was suffering from a very marked degree of intestinal intoxication.

Operation was performed under local anaesthesia of ½ per cent. novocaine preceded by morphia and hyoscine. The stricture was removed en masse in exactly the same way as the pile-bearing area is removed in Whitehead's operation, and the cut edge of the healthy mucosa above stitched to the skin. This procedure was practically bloodless and anaesthesia was perfect, in fact the patient was sleeping during the latter part of the operation.

Recovery was uneventful. She had no incontinence even during the first few days, and left hospital in the third week with no suspicion of any further stricture developing.

I am indebted to Dr. A. L. Hoops, principal civil medical officer, Straits Settlements, for permission to publish this case.

LARGE UTERINE FIBROID REMOVED DURING PREGNANCY.

By W. WORGER, M.R.C.S.,

SURGEON TO BURNHAM-ON-SEA WAR MEMORIAL HOSPITAL.

THE following case of removal of a large fibroid from a three-months pregnant uterus without interruption of pregnancy is of considerable interest:—

A patient, Mrs. K., was admitted into the Burnham-on-Sea War Memorial Hospital under my care on March 1st, 1924, suffering from a fibroid tumour of the uterus. Seven months previously she had first noticed an abdominal swelling, but it did not cause her any inconvenience. A month ago she had an attack of acute abdominal pain, for which she consulted my partner, who diagnosed a fibroid. Menstruation had been regular until three months ago. She was under her doctor's observation for a month, during which there was no definite increase in size in uterus or abdominal measurements. By examination on admission I found that she had a large abdominal tumour, reaching as high as the umbilicus and attached to the uterus, solid to touch, and showing no contractile movements. Uterus slightly enlarged. On operating I found a large fibroid attached to the fundus of the uterus, there being also a smaller tumour in the posterior wall of the uterus in the lower segment. The uterus was slightly enlarged and I could feel that it contained a foetus. I decided to remove the large fibroid and preserve the uterus, and this I did without a great loss of blood. I also shelled out the smaller tumour, and closed the abdominal opening. The tumour weighed 4 pounds.

The patient made an uneventful recovery and was discharged from hospital on March 24th, 1924. She was readmitted on Sept. 2nd, 1924, and gave birth to a 6 lb. 14 oz. live male child.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF EPIDEMIOLOGY, COMPARATIVE MEDICINE, AND DISEASES OF CHILDREN.

THE adjourned meeting of this Section (see THE LANCET, Feb. 14th) for the discussion of the

CONTROL OF TUBERCULOSIS AND THE MILK-SUPPLY was held on March 2nd, Dr. JOHN MCVAIL, President of the Section of Epidemiology, being in the chair.

Dr. M. J. ROWLANDS spoke of his practical experience in pig-farming, and ascribed the liability of cattle to tuberculous infection to the two factors of bad feeding and overwork.

The Vitamin Factor.

Nowadays, he said, there was practically no vitamin-content in the diet of dairy cows, the whole of the germ was taken out, and an animal that was intended by Nature to produce sufficient milk for one calf at a time when natural vitamin-rich foods were prevalent was made to yield from one to two thousand gallons per annum, working for eight or ten months without rest. Such a drain on the fat and protein must result in a low immunity. Among his pigs tuberculosis had been very prevalent, even under the most scrupulous hygiene, but he had completely eradicated it in one year by attention to the vitamin-content of the diet, without any methods of isolation or disinfection. Almost every prize animal in a certain famous herd of cattle gave positive results with the tuberculin test, while the other members, not fed on artificial foods, showed a far smaller proportion of reactors. The rarity of tuberculosis in sheep, horses, and bullocks was to be ascribed to their more natural life. In collaboration with Dr. Chalmers Watson, of Edinburgh University, he had found that pigs fed on a vitamin-rich diet passed one-third less protein in their stools than those fed on the usual substances. He had found it important to supply animal protein, as there was a conversion loss of 25 per cent. on vegetable protein. Slaughter of all tuberculous cows in the country would give immunity for two years only; it was not possible to pull down all the cowsheds and they were full of tuberculosis; sunlight, cleanliness, segregation, and disinfection were good measures, but would not eradicate the disease. The only satisfactory method was to increase the natural immunity of the animals by providing a diet rich in carbohydrate, protein, mineral salts, and vitamins.

Pathogenicity of the Bovine Bacillus.

Dr. A. S. GRIFFITHS, speaking from the point of view of the bacteriologist, showed a number of charts illustrating the work of the bovine bacillus in human pathology. The Royal Commission of 1911 had disproved Koch's statement that this form of tuberculosis was without serious menace to man, and further investigations had served to confirm their findings. In gland tuberculosis the bovine bacillus had been found in 85 per cent. of cases under 5 years of age; in 18.2 per cent. of adults. In bone and joint tuberculosis the percentages were 30.2 and 5.9; in scrofuloderma 58.3 and 7.7; in lupus 66 and 17.6. There was evidence of a slight increase in the incidence of bovine infection since 1910. The animal form was responsible for 19 per cent. of genito-urinary tuberculosis of all ages, 1.1 per cent. of pulmonary disease (found in three cases only), and 66.6 per cent. of meningitis, taken from the cerebro-spinal fluid during life. Thus some 80 per cent. of the infections that had entered by the alimentary tract were due to the bovine bacillus. These results had served to disprove Calmette's assertion that phthisis entered via the abdominal glands, and there was no evidence

that the bovine form could be converted into the human. There was no clinical distinction between surgical cases of tuberculosis in laboratory animals produced by the two varieties; and such evidence as was available pointed to a slightly higher degree of intrinsic virulence on the part of the bovine. The obvious corollary of such findings was the urgent necessity for removing tubercle bacilli from milk.

Mr. G. P. MALE expressed the disappointment experienced by certain of the veterinarians at the previous discussion on hearing the promulgation of such counsels of despair as pasteurisation and the immunising value of a few live bacilli in the milk drunk. He believed there were certain hopeful features in the situation, such as the increase in the number of farms supplying certified and grade A milk, and the reduction of the proportion of reactors in the herds from 50 per cent. 20 years ago to less than 5 per cent. at the present time. He referred to the remarkable improvement in the hygienic conditions of housing which resulted from the work of Dr. Stenhouse Williams at Reading, where it had been proved that clean milk could be produced in old buildings without material alteration, and the farmers had been satisfied that the production of such milk and the eradication of tuberculosis from their herds was a sound commercial proposition. He admitted the force of the two objections raised—viz., the increase of cost to the consumer and the danger of distributing reactors to other centres, but thought there was no reason why grade A milk could not become the staple supply of the country if only the doctors would support it. This could be sold at a profit by the addition of 1d. per quart to the retail price. The dissemination of reactors, also, only resulted in their becoming collected in the herds of owners who were not anxious to provide tested milk, and such herds would become known to the medical officer of the district. Mr. Male emphatically urged the reintroduction of the Tuberculosis Order; he had helped to work it during the short period it was in force and could speak to its efficacy. Its cost might be some £80,000 per annum, but the cost of sanatorium treatment for children infected with bovine tuberculosis would go a long way towards meeting that sum. In the 12 months of the Order's life over 1500 milk samples containing tubercle bacilli had been traced to their source and the animals slaughtered. There must be close co-operation between the medical officers of health and the veterinary inspectors so as to encourage in every way the production of certified or grade A milk, with regular inspection of herds once every three months.

The Farmer's Point of View.

Dr. STENHOUSE WILLIAMS spoke strongly of the distress it had caused him to hear the worst specimen of farmer held up to the meeting as a type. The Berkshire farmers had taken immense trouble to render their cows perfectly clean. The cows were brought in, washed thoroughly, and the workers then changed their coats, washed themselves and, seated on a clean stool, milked into covered sterilised buckets, which were subsequently placed into sterilised containers over sterilised coolers, and thence into a sterilised ten-gallon churn which was sealed, marked, and unventilated. The retailer in his turn put the milk into a sterilised receiver, and thence into a sterilised bottle, capped and sealed it, and it was thus delivered, fresh and clean, to the consumer's house for 1d. per quart extra. Dr. Stenhouse Williams quoted one such instance of a farmer who had cleared his herds at considerable financial loss, and when he then offered his milk to the local hospital at the ordinary rate his contract was refused. The dealers also refused his milk, and he had to start a dairy business at his own expense in order to get his milk on the market. Within two years it formed one-sixth of the total supply of the town. Such a story was a reproach to the medical profession, and one reason why the consumption of grade A milk was not widespread was that the doctors failed to support it. The alternative

was pasteurisation, as in New York, where it was beginning to be questioned whether the large amount of latent scurvy might not have some connexion with the high percentage of pasteurised milk. In his opinion the far better way was to support the idea of fresh, clean, tuberculin-tested grade A milk, not forgetting that this country could boast the most intelligent farmers in the world.

Importance of Expert Inspection.

Sir LAYTON BLENKINSOP agreed that the veterinarians had been much disappointed at the apparent satisfaction with pasteurisation; he had no doubt that hygienic conditions and the placing of herds under the control of practised veterinary surgeons would result in the eradication of the disease. The best help to the farmer was to give him the advice of competent clinical experience, and no one was keener to follow sound advice than the British farmer. His experience with glanders and mallein-testing in the army had led him to believe that the first essential was recognition of the symptoms of the disease. He agreed as to the necessity for urging the reintroduction of the Tuberculosis Order.

Dr. D. NABARRO said he had no doubt that herds could be freed and kept free for a time, but this freeing of them resulted in a lowering of their immunity; he was not quite convinced of the desirability of so doing, nor was he sure that small doses in milk did not confer a valuable immunity. Of course, cases of gross udder disease or advanced tuberculosis must be slaughtered, but to destroy all reactors was going too far. He believed in the mutability of the bacillus and that the rarity of bovine infection in adults was to be accounted for by its alteration after long sojourn in the human body. He referred to the work of Collie, Beattie, and others on acid-fast bacilli which could be modified by passing through guinea-pigs into bacilli having all the characteristics of tubercle. He urged that these important results should be further investigated, and that such unsolved problems should be put to the test before the country embarked on a wholesale slaughtering of cattle.

Dr. NATHAN RAW expressed it as his opinion that practically all surgical tuberculosis was bovine and bore no relation to pulmonary disease. Some 10,000 children were lost annually through the work of this bacillus and some 5 per cent. of the million dairy cows in the country were suffering from tuberculous disease of the udder. Slaughter was no solution; the most hopeful method of attack was to immunise the calves as they were born. Until this process could be completed pasteurisation or boiling of uncertified milk should be made universal. He had never seen any ill-effects from the use of pasteurised milk. He urged that the Tuberculosis Order should be re-enforced, remarking that Parliament was anxious to take any steps that would ensure a pure milk-supply for the country. The Reading testing centre was a model for the country, but it would be some time before such a standard could be made universal.

Dr. H. SCURFIELD said that the towns which had had milk clauses in force showed no evidence of any reduction of the tuberculosis incidence. He referred to the insidious way in which the infection creeps in to free herds and asked how this was to be explained. Was it due to the fact that a cow might have an early infection which did not give a positive reaction, or was it due to the doping of animals with tuberculin? It was known that a tuberculin test rendered the animal negative to subsequent tests for a certain time. He urged the standardisation of tuberculin and the restriction of testing to competent veterinary surgeons, every cow tested to be marked in some way. He most cordially agreed with the importance of the vitamin diet, and the necessity for spreading institutes such as that of Reading over all the country. In his experience, if sufficient care were taken in following up a sample of tuberculous milk swiftly an infected udder was always found to account for it. He agreed that veterinary surgeons of clinical aptitude were necessary.

Prof. F. T. HOBDAV spoke of the seriousness of this possibility of doping cattle; any unscrupulous dealer had only to get a syringe and some tuberculin to render his cows negative to any test. There should be some control. He believed in the immunisation methods and thought they were well on the way to a successful issue. The country could be free of tuberculous cattle in 20 years by this method.

Dr. HENRY GRAY believed in total eradication as the only way of getting rid of the disease. It was not for the medical profession to consider costs and adopt tinkering methods; it was for them to say what ought to be done to prevent tuberculosis in children and for the public to determine whether it would pay the price or not. Neither housing nor vitamins would settle the difficulty; there was only one cause of the condition and that was infection.

Sir WILLIAM HAMER spoke in favour of feeding and housing methods, having reference to the remarkable results achieved by these measures among human beings.

Sir LEONARD ROGERS pointed out that all milk in India had to be boiled, and the children did very well on it. In his opinion pasteurisation was the best method until the disease could be eradicated in cattle, and grade A milk made the supply of every home.

The PRESIDENT, in concluding a good discussion, spoke of its vast importance and great interest. He deprecated any suggestion as to the existence of two sides in this matter; there was no contradiction; pasteurisation was merely a temporary precaution while the work of eradication was being completed.

A resolution calling upon the Council of the Society to urge upon the Government the immediate re-enforcement of the Tuberculosis Order was carried unanimously.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

Preventive Control of Diphtheria.

At a meeting of this Section held on Feb. 26th, with Dr. JOHN MCVAIL, the President, in the chair, Dr. WILLIAM ROBERTSON, medical officer of health, Edinburgh, read a paper on the above subject. Having remarked that the usual measures with regard to diphtheria had rather the appearance of locking the stable door after the steed was stolen and referred to the anxiety given to all public health departments by the presence of carriers, Dr. Robertson described the methods adopted in Edinburgh to secure a systematic immunisation of the school population. Explanatory leaflets and consent forms were distributed to all scholars under the age of 10 years. Parents were asked to consent to a preliminary Schick testing, then, if necessary, three preventive inoculations and a final Schick testing. In the better class schools as many as 86 per cent. of the parents consented, but in the poorer districts the percentage sometimes fell to 40; when the percentage of consents was 50 or less a second appeal sometimes brought the figure up to 70. When skilled workers were employed and the coöperation of teachers secured, it was possible to make the tests at the rate of 100 to 120 an hour. It was found, as elsewhere, that the proportion of positive reactors was much higher in the better social strata. It also appeared that passing through an attack of diphtheria did not confer a lasting immunity, as judged from the Schick reaction. Experience had shown that in young children, aged 2-5, immunisation could properly be done without a preliminary Schick test. From the preventive point of view, it would be expedient to concentrate attention upon children of pre-school age. It was essential that the method should be applied only by trained persons.

Sir WILLIAM HAMER wished to have more information as to the results, in particular with regard to the New York experience.—Dr. O'BRIEN remarked that the mixture used in Edinburgh was, so far as guinea-pigs were concerned, much less toxic than that employed in New York. He referred to improvements

already effected in the production of antitoxin and looked forward to yet greater improvements.—Dr. S. MONCKTON COPEMAN remarked that in England, so far, only schools used by the wealthier classes and Poor-law schools had made much use of the method. The higher percentage of immunes in the poorer classes was apparently due to more frequent normal exposure, because, in a higher grade school in Norfolk, where there was definite exposure to risk, the proportion of negative reactors had been found to be very large.—Sir GEORGE BUCHANAN hoped that it would be possible to ascertain whether the subsequent attack-rate of the immunised children in New York was lower than that of those not immunised. He congratulated Dr. Robertson on this piece of work and inquired whether reactions on inoculation had given rise to trouble, whether it had been found necessary to warn parents.—Dr. MAJOR GREENWOOD deprecated any premature attempt to "prove" the efficacy of the process by statistics. At present the method should be regarded as a reasonable one, one to be accepted by intelligent people; in time a statistical assessment would be possible.—Dr. RANDALL asked whether immunisation had reduced the number of carriers.—Dr. TROTTER thought that the public health services in Scotland had a considerable advantage over those in England both by virtue of having somewhat greater powers and of being in closer contact with the people.—Dr. HUME thought that the small size of Edinburgh compared with London and the prestige of the medical school explained the greater willingness of the population to follow medical advice.—Dr. SCOTT thought that the variation of the proportion of natural immunes was one of the most interesting problems from the standpoint of immunology; the explanation by subinfection was not really very satisfying.—Dr. FORBES said that Edinburgh stood alone in dealing with the school population. In the south the method had been practically confined to large institutions.—Dr. REGINALD DUDFIELD remarked that, as in the matter of tuberculosis dispensaries, Edinburgh was doing pioneer work. He inquired as to the verification of a history of previous diphtheria and also asked for information on the subject of carriers.—The PRESIDENT tendered his congratulations and those of the Section to Dr. Robertson. It was difficult not to be envious of New York. Probably the medical profession required more education, and he thought that Dr. Hume's remarks on the medical atmosphere of Edinburgh were highly relevant. He also deprecated any premature statistical "proofs."

Dr. ROBERTSON, in his reply, said that it was too early to give statistical results, but in a school which had formerly given much trouble no cases had occurred amongst the immunised. It had not been found necessary to issue warnings as to reactions. There were some reactions at the age of 10–11, but they were confined to slight rises of temperature and local induration. The method was not serviceable in the elimination of carriers. Carriers did not react. Histories of alleged diphtheria were verified from notification records.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held on Feb. 10th, Miss M. CHADBURN being in the chair.

Miss FRANCES IVENS read a paper on the

Prevention of Puerperal Morbidity and Mortality.

She had long been interested in this subject from a gynaecological standpoint, and had welcomed an opportunity to make observations from the obstetrical side to determine to what extent the morbidity, immediate and remote, following childbirth was preventable. Five years ago, with this object in view, she undertook, at the invitation of Dr. E. W. Hope,

then medical officer of health of Liverpool, the supervision of the new maternity home which was started on his initiative. The home could only take in 14 patients, but since its opening in 1920 1000 admissions had taken place. As far as possible, Miss Ivens saw every case before admission and made an examination. A specimen of any abnormal discharge was sent to the city bacteriologist for report. Cases of active syphilis or gonorrhoea were referred to a special institution, and cases of albuminuria, cardiac disease, hyperemesis, &c., were admitted for antenatal care. Cases requiring Caesarean section were sent on to the Stanley or Maternity Hospital. At this home before any internal examination is made the vulva is shaved and washed with lysol solution. In emergency cases tincture of iodine is also used. During labour all those concerned with the case wear sterilised overalls and boiled gloves. The matron or sister conducts all normal cases with the assistance of the pupil midwives, who are all trained nurses. Any perineal rupture is repaired at the earliest possible moment with silkworm-gut. The wound is kept dry and is touched once daily with tincture of iodine. During the puerperium the vulva is swabbed four-hourly during the day with lysol solution and a large sterile pad applied. The patient is encouraged to lie on her side for part of every day and to sleep in an exaggerated Sims position, which is not uncomfortable. Anteversion of the uterus is thus encouraged. In cases of ruptured perineum micturition is performed on the hands and knees so that the wound is not soiled and catheterisation is avoided. Of 1000 patients admitted 206 were pre-maternity cases and 679 were maternity cases, of which 390 were primiparae and 289 multiparae; 118 were postnatal cases. Miss Ivens said that there had been no maternal mortality among these cases and no maternal morbidity according to C.M.B. Rules among the cases delivered in the home.

Miss Ivens proceeded to classify the cases. Contracted pelvis occurred in 130 cases, the high percentage being probably due to the fact that a proportion of the cases were referred from outside clinics, doctors, and midwives for special observation and care. Of the total number of maternity cases (679), natural delivery took place in 601—88 per cent. Among the complications met with were post-partum hæmorrhage (three severe and two slight), adherent placenta, perineal tears, fibro-myomata, twin births (eight pairs), unreduced occipito-posterior position, placenta prævia (eight cases), prolapse of cord, pelvic presentations (25 cases), face presentations (two), eclampsia (one as an emergency). Induction of premature labour was employed in 48 cases. Delivery by forceps was effected in 30 cases and 29 patients required Caesarean section. As to the infants, 39 were stillborn or died in the first ten days, of which 22 were premature; 687 children were born and 648 remained alive. Miss Ivens described 11 cases where there had been some morbidity. Full details of this investigation would shortly be published.

She recognised that it was unwise to draw definite conclusions from such a small number of cases, but she was inclined to believe that the results led to the following among other conclusions: That latent or pre-existing infection is responsible for a considerable percentage of cases of puerperal sepsis; that the organism may not infrequently be isolated from the urine during pregnancy; that intermittent albuminuria during pregnancy is an indication for bacteriological examination of the urine; that cases should be removed from unsuitable surroundings and accommodation in homes should be sufficiently ample for patients to be admitted a day or two before labour is anticipated; that rigidly aseptic technique is important; that well-trained midwives can deliver a very high percentage of maternity cases if efficient antenatal care has been given and if skilled medical help and, if necessary, institutional treatment can be obtained when required; that in view of the need for study of the origin and character of the infecting organism in cases of fulminating puerperal fever

such cases should be placed at the earliest possible moment under the care of an obstetrical specialist and a bacteriologist.

Discussion.

Dr. VIOLET RUSSELL spoke of the technique adopted in private cases. She emphasised the need for efficient sterilisation of (1) the surgeon's hands, (2) the patient's body; she held that gloves should always be used and did not consider that swabbing was much good. The vulva, the vagina, and cervix should be generously painted with tincture of iodine.

Dr. E. PHELPS spoke of the gap between conditions in the practice of specialists and those which obtained in, for example, the East-End of London.

Lady BARRETT said she was specially interested in the cases described by Miss Ivens where there was a pre-existing focus of infection. She was drifting away from the theory that wound infection was the most important cause of puerperium sepsis. The factors which had to be thought of were (1) the focus in the mother, (2) low resistance in the mother, and (3) infection by attendant. A mask might be a more important preventive than a gown. She was not certain that the banished theory of air infection would not have to be revived in view of certain recent experiences of her own.

Miss I. MANN asked what routine prophylaxis was adopted by Miss Ivens against ophthalmia neonatorum.

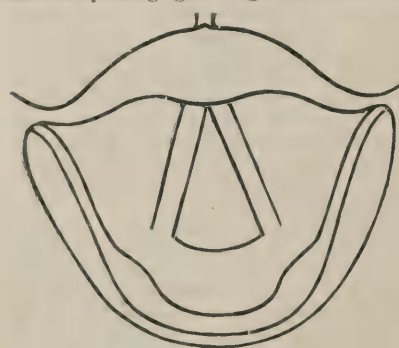
Dr. GLADYS SANDES asked whether the cases of gonorrhœa admitted to the home had had any previous treatment.

Miss IVENS briefly replied. Boracic lotion only was used as a routine measure for the infant's eyes and argyrol in suspicious cases. Cases known to have gonorrhœa were not admitted, therefore most of the admitted cases had not been treated.

New Inventions.

OUTLINE DIAGRAM OF THE LARYNX: RUBBER STAMP.

THE conventional diagram of the larynx has descended to us from the early days when the chief interest of a laryngeal case was "to see the cords" and anything growing thereon. This diagram was



particularly unsatisfactory for displaying the interarytenoid region which, with the neighbouring area above each vocal process, is the most frequent site for the deposit of tubercle. The outline drawing here figured is, of course, semi-diagrammatic

and has been made by Dr. W. H. Smurthwaite in accordance with my design. It is impossible in the larynx to view both the interarytenoid region and the laryngeal surface of the epiglottis at one and the same time. Still, this conventional outline will enable laryngologists to indicate changes in any part of the larynx including the posterior wall, both sides of the ary-epiglottic folds, the sinus pyriformis, and the post-cricoid region—all of which are inadequately represented in the usual diagram of the larynx.

The design, as a rubber stamp, has been put on the market by Messrs. Mayer and Phelps, 58, New Cavendish-street, London, W. 1.

Wimpole-street, W.

STCLAIR THOMSON.

Reviews and Notices of Books.

LEPROSY.

By Sir LEONARD ROGERS, C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S., I.M.S. (ret.), Physician and Lecturer, London School of Tropical Medicine; late Professor of Pathology, Calcutta Medical College; and ERNEST MUIR, M.D., F.R.C.S. Edin., Research Worker in Leprosy at the School of Tropical Medicine and Hygiene, Calcutta. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1925. Pp. 301. 12s. 6d.

THE appearance of this book marks a definite advance in our knowledge of an ancient and loathsome disease. The subject-matter shows evidence of a great amount of research, historical and statistical, the two being woven into one continuous story. The first section deals with the history and distribution of leprosy; it gives the ancient records, and describes the spread throughout Europe, the subsequent decline, and later the invasion of the Pacific islands. The distribution of leprosy is a subject to which Sir Leonard Rogers has devoted much study, so that his recent views on the incidence in relation to rainfall and latitude will receive careful consideration. The second section of the book concerns epidemiology and communicability, many instances being given from the literature in which the source of infection has been definitely ascertained. The third section details the various prophylactic measures adopted in historical and recent times, and will be read with special interest as affording an indication of the value of strict and compulsory segregation in stamping out leprosy.

The clinical section is illustrated with a series of excellent photographs, and constitutes a valuable contribution to the symptomatology of leprosy. But it is to the last section that the majority of readers will turn most eagerly, and here they will find a moderate and maturely considered opinion on the results of treatment already obtained. Research in methods of administering the oils of chaulmoogra has culminated in the injection of the esters of hydnocarpus oil by infiltration of the subcutaneous tissues. Stress is wisely laid upon the importance of selecting suitable cases for treatment, and the desirability of warning the patient from the outset that care must be protracted, and that the chances of final recovery depend upon the energy and persistence with which he carries out his part. Some of the photographs which illustrate the effects of specific treatment are impressive.

This book is the outcome of painstaking labour. The search through the literature necessary to compile a record of 700 cases in which the probable source of infection was traced, as tabulated in Table IX., must have consumed an immense amount of time. The style is clear and the teaching is free from personal bias. It is likely that it will remain the standard work on this subject for many years to come.

SURGERY.

A Manual of Surgery. ("Rose and Carless.") Eleventh edit. By ALBERT CARLESS, C.B.E., M.B., M.S. Lond., F.R.C.S., Emeritus Professor of Surgery, King's College, London; Consulting Surgeon, King's College Hospital. Assisted by CECIL P. G. WAKELEY, F.R.C.S., Assistant Surgeon and Lecturer in Clinical Surgery, King's College Hospital. London: Baillière, Tindall and Cox. 1924. Pp. 1570. With a Radiographic Supplement. 30s.

THAT this old-established manual of surgery continues to fill a definite requirement of practitioners and students is shown by the frequent calls for a new edition. In the latest revision Mr. Carless has been

assisted by Mr. C. P. G. Wakeley. The work seems to have been done as carefully as heretofore, recent changes in surgical opinion and practice being recorded with the same discrimination and balance. By giving just the right amount of information on any particular subject the authors have been able to accomplish the almost impossible task of compressing modern surgical teaching into a single volume of moderate compass. "Rose and Carless" seems to possess the secret of perpetual rejuvenation.

Handbook of Operative Surgery. Fourth edition. By Sir WILLIAM I. DE C. WHEELER, B.A., M.D., F.R.C.S.I., F.A.C.S., Surgeon to Mercer's Hospital and the National Children's Hospital, Dublin. London: Baillière, Tindall and Cox. 1925. Pp. 441. 15s.

In this, the fourth, edition of Sir William Wheeler's well-known handbook a thorough revision has taken place and a number of alterations have been made. Obsolete operations have been omitted and new matter dealt with. The book has attractive features and has a personal note not always seen in small text-books of its kind; a number of useful practical hints are scattered through the descriptions of routine operations. The newer methods of using local anaesthetics are mentioned, but the description of such procedures as sacral anaesthesia is not sufficiently exact for practical application; the same applies to the accounts of brachial plexus and splanchnic anaesthesia. Colonic ether anaesthesia appears to be used extensively in the author's practice. The objections from the surgeon's point of view to the high temperatures at which theatres are kept are emphasised, but one would like to see the necessity for conserving the patient's heat equally stressed. An account of the technique of blood transfusion is included. There is a curious omission of intratracheal anaesthesia as an aid to operations on the neck and mouth. The author still recommends laryngotomy in these cases. The script is worthy of illustrations of a higher order. Some of them are quite devoid of artistic merit, and, indeed, a few of them, as that on p. 117, are crude.

Altogether, this is a useful little volume and it will continue to be valued by students preparing for examinations.

Practical Surgery Illustrated. By VICTOR PAUCHET. Translated by F. R. B. ATKINSON, M.D., C.M. Edin. With an introduction by Sir CHARLES GORDON-WATSON, C.M.G., F.R.C.S., Surgeon and Joint Lecturer in Surgery, St. Bartholomew's Hospital. London: Ernest Benn, Ltd. 1925. Vol. III. Pp. 248. 18s. 6d. Vol. IV. Pp. 255. 15s.

THESE volumes follow the general plan of Parts I. and II. which have already been reviewed in our columns. It would have been more satisfactory if the sections dealing with one particular disease had been collected together. For instance, femoral hernia was treated in one of the earlier volumes and the operation above Poupart's ligament alone described, whereas in Vol. IV. we get a full account of the inguinal operation. Again, the chapters on gastric surgery are scattered through the four volumes. In Vol. III. there is a very good account of radicotomy, by J. A. Sicard and M. Robineau. The treatment of fractures by open operation is considered by Dujarier. This section does not come up to the standard of the rest of the work, as the author only treats of the matter in general and gives no details. The rest of the volume is written by Pauchet. He deals with cancer of the tongue, goitres, gastric and duodenal ulcers, tumours of the large intestine, and adenoma of the prostate. In cancer of the tongue he describes only one operation—the intra-buccal method. He recommends, however, that the

kind of operation performed should depend upon the situation of the growth. He believes that in the future radium will be used much more extensively than at present, but that now preference ought still to be given to surgical treatment without delay. The chapter on goitre is well illustrated. On carcinoma of the colon the author is at his best. The section on suprapubic prostatectomy is not of the same excellence. The fourth volume is a very good series of pictures illustrating operations upon the subjects treated therein. There is described an approach to the shoulder-joint through the axilla with which surgeons in this country may not be familiar. Good accounts are given of gall-bladder surgery and colostomy. In carcinoma of the breast the author removes the breast first and the axillary contents last, contrary to the usual British practice. He advises against very large incisions for exploring the abdomen; we agree that it is better to make one in the epigastrium and a separate one in the lower abdomen if necessary. The fourth volume is ill translated. The translator uses peculiar methods of construction and unusual words, and there are mistakes all through. For example, the following sentence appears on p. 178: "In amoebic dysentery, the mucosa presents a lunar appearance, with ulcerations in the form of a crater, a kind of substance with edges cut perpendicularly and often absent at the base, that two craters may be united by sliding a thread over the two bases of the ulceration." It is a pity that the work of a great surgeon should be thus mutilated.

SYMBOLISM OF THE THREE DEGREES.

By OLIVER DAY STREET. London: George Allen and Unwin. 1924. Pp. 195. 8s. 6d.

THIS is a work primarily written for Freemasons, but it is also of much interest to those who are not members of the Craft, for symbolism enters into daily life, and itself preserves ideas and customs which go back to the dawn of history. The Three Degrees are those of the Entered Apprentice, the Fellow Craft, and the Master Mason. Mr. Street gives a clear account of the meaning of the symbolism underlying these degrees. Masonic symbolism has incorporated and adapted much symbolism originally used with a somewhat different meaning; or, rather, the symbols of Masonry are like the different interpretations of the Scriptures—the literal, the allegorical, the tropological, and the anagogical. For instance, the square and the circle are two very ancient symbols which originally meant the world and the heavens. The ideal building and many early buildings were representations of the visible world and therefore planned square with a hemispherical roof. Owing to structural difficulties this ideal was not realised until the building of Santa Sophia, the first building in which a dome was correctly superimposed upon a square by the invention of pendentives. In Masonry the square represents the lodge, which is again symbolical of the world, and its covering is a "clouded canopy" (pp. 26 and 59). But in another sense the square represents morality or uprightness. Circumambulation again was originally a representation of the sun's apparent daily course. To go the opposite way—i.e., "widdershins"—meant death or something evil. So ecclesiastical processions always go from the east by way of the south aisle, except on penitential occasions, when they go by way of the north aisle, and even he who is least acquainted with symbolism knows that the bottle must be passed with the sun. Finally, we may recall the historic triangular duel between Mr. Biggs, Mr. Easthupp, and Mr. Midshipman Easy, when the gunner, who was consulted on points of procedure, replied with unerring intuition that in his opinion "they should fire with the sun." The science of numbers upon which Mr. Street discourses learnedly has always been of great importance in mystical lore. To give one example, the number of fishes taken in the miraculous draft mentioned in

St. John's Gospel, chap. xxi., was 153. These fishes are explained as the whole congregation of the elect, for ten stands for the Law and seven for the works of the Spirit; $10 + 7 = 17$, i.e., the fulfilment of the Law by the Spirit. Sum the progression $1 + 2 + 3 + 4 \dots + 16 + 17$, and the total is 153. So in Masonry we find the steps of the Winding Stair in sets of 3, 5, 7, all odd numbers adding up to 15, another odd number going back to the 15 steps of Solomon's Temple and the 15 Songs of Degrees.

To the many medical men who are Masons we cordially recommend this book; others who are not Masons will profit by reading it also.

EVOLUTION.

Living Organisms. An Account of their Origin and Evolution. By E. S. GOODRICH. London: Oxford University Press. 1924. Pp. 200. 6s.

AN admirable, and not the commonest, portrait of Darwin forms an appropriate frontispiece to a volume in which the Linacre professor shows how the great truths of Victorian comparative anatomy and evolutionary theory are illuminated, expanded, and confirmed, but never weakened or invalidated, by the newer knowledge. The chapters deal with the nature of life, reproduction and death, Darwinism and heredity, variation and the factors of inheritance, natural selection, isolation and sexual selection, phylogeny, the geological record, and psychological evolution. The treatment is close and in parts careful reading is necessary, but it is really a pleasure to come across an introductory book for adults which makes no pretence that difficult things are easy to understand and does not try to apply a Montessori method. Whether the "general reader" of the preface will be able to follow it all without more technical equipment than he generally has is rather doubtful. The book seems more suitable for students who have done an elementary course of zoology and botany, and we know of no better book to make them think; it will be excellent, too, for those whose formal instruction dates from last century, for medical men, for instance, who are in fact deeply concerned with the modern progress of biology and to whom it is too often represented in miraculous snippets, or as utterly subversive of what they grew up with. It would also, perhaps, be a useful discipline for some of the modern followers of genetics and such like who are apt to think that their new terminology has wiped out the older knowledge. The book is, in short, a sound scholarly attempt to get people to think accurately about evolution and heredity; it should meet with considerable success.

TUBERCULOSIS AND POSTURE.

Evolution de la tuberculose pulmonaire chronique dans ses rapports avec la circulation générale et locale. La cure décline. By Dr. PIERRE COLOMBAN. Preface by Dr. DUMAREST. Paris: Masson et Cie. 1924. Pp. 228. Fr.12.

THIS monograph is a plea for the postural treatment of pulmonary tuberculosis. Since 1919 the author has been systematically treating his patients by devices intended to promote congestion of the apices of the lungs, or at least to render them less anæmic. The couches and beds on which his patients lie are tilted at angles calculated, it would seem, to flush the head and neck as well as the apices of the lungs with blood. Most of the patients found suitable for this treatment were women, the author having discovered that they adapt themselves more readily than men to postures which, however salubrious, are apt soon to become most uncomfortable. It is doubtful if the author has brought forward a single new argument in favour of a system of treatment which was the vogue more than a decade ago in certain institutions. His book is, however, useful as a fairly comprehensive summary of the many arguments

adduced from time to time in favour of the view that man, in changing from the horizontal to the upright posture in the course of his evolution, has paid for this change with anæmic apices to his lungs. The inevitable corollary to this view, according to the author, is that man must, at any rate temporarily, return to the posture of his remote ancestors. It is difficult to picture the "missing link" tacitly submitting to some of the postures shown in the illustrations with which the text of this book is enlivened.

Reports and Analytical Records.

OLD'S ADVOCAT.

(WED. G. OLD AND CO., PURMEREND, HOLLAND. AGENTS FOR THE UNITED KINGDOM: G. IDLE, CHAPMAN AND CO., LTD., 65, LOWER THAMES-STREET, E.C.3.)

THIS is a thick yellow liqueur tonic having a pleasant flavour suggestive of a sweetened mixture of egg and brandy. When analysed the following results were obtained:—

Alcohol	14.4 per cent. by weight (equivalent to 31.1 of proof spirit).
Total solids	37.3 per cent.
Consisting of—	
Sugar	22.1 "
Gums, &c. . . .	2.0 "
Protein	3.3 "
Ether soluble matter (fats, &c.)	2.73 "
Ash	0.16 "

These figures are consistent with a composition of:—

Egg in natural condition	25 per cent.
The equivalent of brandy of 30 U.P. . . .	50 "
Sugar	23 "
Gum, &c. . . .	2 "

Salicylates, benzoates, borates and sulphites were tested for with negative results.

Advocaat, as will be seen from this analysis, is a nutritious preparation of brandy, sugar, and egg in the form of a stable and homogeneous emulsion. The trouble saved by beating eggs and mixing with sugar and brandy, and the absence of preservatives, render Advocaat a useful and palatable food tonic which is available at all times.

MORUETTE COD-LIVER OIL TABLETS.

(MESSRS. ARTHUR H. COX AND CO., MANUFACTURING CHEMISTS, BRIGHTON.)

WE have received a sample of Moruette Cod-liver Oil Extract in tablet form in the convenient little cases in which the preparation is distributed. The value of cod-liver oil as a medicine needs no insistence; if the claims made for it have been too wide in some directions and too high in others, there is no doubt that cod-liver oil is a most valuable substance in the hands of the physician, who has, however, found that the nauseous properties sometimes interfere with the efficacy. Consequently much ingenuity has been employed by chemists to provide palatable forms for the administration of the drug, and these tablets are made from the extractive only. They possess the vitamins and cholesterol content, the susceptibility of these bodies to heat having been provided for in the preparation of the extractive. The extractive is said to enjoy considerable popularity on the continent, but in England it is as yet not often prescribed.

OSYL ANTISEPTIC SHAVING-CREAM.

(LYSOL LIMITED, LONDON, S.W. 20.)

THIS firm has sent us a preparation of shaving-cream put up in a well-made screw-topped collapsible tube. It need hardly be said that a shaving preparation based on lysol, with its qualities as an antiseptic and solvent of grease, has two great things to recommend it; a third recommendation may here be mentioned—application of hot or cold water produces a copious lather almost immediately.

THE LANCET.

LONDON: SATURDAY, MARCH 7, 1925.

THE LONDON INSURANCE COMMITTEE: A SAD IMPASSE.

It must be known to many of our readers that the Medical Service Subcommittee of the London Insurance Committee has withdrawn from the deliberations of the Committee. This means that the important and delicate duty of dealing with the complaints which arise among a million and a half insured persons in the County of London remains in abeyance, and we need hardly say that a position like this, lasting for three months, is acting as a terrible clog upon work. There are, for example, 15 complaints ready now for hearing, while twice that number of cases are in an early stage of preparation, and no meeting at which the merits of the cases may be adjudicated upon can be held unless there are present at least one medical man and one representative of the insured persons. Thus the absence from the meetings of the medical members, who no doubt are abstaining at the instance of, or with the approval of, those who appointed them to their duties, holds up the work of the Subcommittee till further notice.

We have called this position a sad impasse because it has arisen in circumstances from which at first sight no escape seems to be provided; but we refuse to believe that a working solution of the difficulties will not be forthcoming without delay, when the grave responsibility lying on all concerned is recognised, and the danger of the existing inaction is realised. Without going into minutiae, or even details, the position has arisen in the following manner. The medical members of the Subcommittee desired to work under a new chairman, believing that the present occupant of the chair does not, from their point of view, exercise full impartiality. The laymen of the Subcommittee, resenting what they consider an unjust imputation, have refused to be nominated in succession to their present chairman, who therefore remains in his old position, which he has occupied for a considerable period. The medical members of the Subcommittee in their turn resent the appearance of having acted without due motive, and are especially sore at the imputation that the chairman has become personally distasteful to them because he is too alert to prevent them from protecting medical practitioners during the hearing of complaints. So the chairman will not resign, for that would look like a confession of failure, and the medical members will not sit under him, while without their presence complaints cannot be heard. To us it seems clear that the situation ought not to be beyond the aids of statesmanship and courtesy on each side, while both these qualities should be exercised at once on behalf of an enormous insured population. The Ministry of Health must otherwise be called in to adjust matters, while a far pleasanter milieu for the future would be created if the various persons concerned could come to an agreement on their own initiative. The first step to such an agreement must be the withdrawal of recriminations, and where there are categorical instances in which the chairman has appeared to show bias they should be frankly stated and equally frank explanations should be

forthcoming. If this procedure were adopted surely one of two things would occur—either the neutral section of the Subcommittee, in whom the election is vested, would admit the justice of the view of the medical men, and allow one of themselves to be put forward as chairman, or the medical members, listening to the considered explanations of the chairman as to his conduct in particular matters, would consent again to attend the meetings. And if unfortunately none of these things occurred the Ministry of Health could then be asked to intervene. We know that the Ministry has official cognisance of the whole matter, and already some official steps may have been taken.

BISMUTH THERAPY IN SYPHILIS.

The value and limitations of bismuth therapy in syphilis is the subject of a review by Dr. E. T. BURKE in the first number of a new quarterly journal entitled the *British Journal of Venereal Diseases*.¹ Numerous insoluble preparations of bismuth in aqueous or in oily suspension, as well as soluble preparations, have been placed on the market by chemical manufacturers in recent years and their specific value in syphilis has been much discussed. Dr. BURKE summarises in simple words the conclusions which LEVADITI has arrived at after a great deal of work on the pharmacology of the chemical group which includes arsenic, antimony, vanadium, and bismuth. These substances are alike in the fact that, while the parasitocidal power of their salts in simple solution in vitro is zero, when combined with certain tissue extracts they exert a destructive action upon protozoal organisms. Bismuth, whether in metallic form or in the form of salts, is an inert substance which can be changed by some constituent of the tissues, known for convenience as bismogene, into a new compound of unknown constitution called bismoxyl, and in this form is of high therapeutic value. From experimental evidence it would appear that bismuth compounds must be reduced to elemental bismuth before bismogene can act and give rise to bismoxyl; but Dr. BURKE prophesies that in the near future means will be found to administer bismoxyl directly to the patient instead of, as at present, depending on his own tissues for an activating substance. For the moment, however, the choice lies between the soluble and the insoluble forms of bismuth at present available for therapeutic purposes. Dr. BURKE holds that the soluble salts possess certain practical disadvantages; on account of their rapid absorption they are liable to cause toxic effects; and, owing to their equally rapid elimination, their therapeutic value is diminished. Moreover, after their use stomatitis, nephritis, and painful nodosities at the site of injection are apt to occur. Injection of insoluble preparations suspended in oil gives little pain, but the rate of absorption is slow. Metallic bismuth in very fine subdivision is painless when injected, the rate of absorption is satisfactory, and nodosities are as rare as are any untoward effects of a toxic character. Further, since reduced bismuth is necessary for the production of bismoxyl, this is clearly the most scientific form in which to administer the element. The injection of metallic bismuth, rather than one of its compounds, is a stage nearer to the giving of already prepared bismoxyl, and in Dr. BURKE's experience the results are better and are more quickly obtained with metallic bismuth than with any other preparation. Exactly

¹ The *British Journal of Venereal Diseases*. Edited by L. W. Harrison and E. R. T. Clarkson, with 13 sectional editors. London: Constable. Published by the Council of the Medical Society for the Study of Venereal Diseases.

similar conclusions were reached by LEVADITI, who now uses neo-trépol, a suspension of metallic bismuth in isotonic saline.

Dr. BURKE's treatment of a patient caught at the primary stage extends over 24 weeks—eight weeks during which stabilarisan is injected once weekly, followed by four weeks of bismuth therapy in the form of injections of metallic bismuth (bismostab) three times a week. This 12 weeks' course is then repeated without any interval. Reliance is placed chiefly on arsenic for the rapid healing of superficial lesions. Alternate rather than concurrent courses are the rule, since the spirochaetes must not be allowed to acquire such familiarity with either drug as may breed contempt for its lethal powers. The absence of mercury from this programme will be noticed. Dr. BURKE states boldly his opinion that mercury has become obsolete in the treatment of syphilis. He assesses the potency of the three specifics in the order, arsenic, bismuth, mercury, as 10 : 8 : 3. It is clear that in Wassermann-fast cases, or in those which exhibit intolerance to arsenobenzol, bismuth is the drug of election. Dr. BURKE enumerates and classifies the various preparations of bismuth on the market, gives reasons for his preferences, and includes a detailed account of a technique designed to spare the patient the gluteal pain or general discomfort which may follow intramuscular injection in inexperienced hands. This part of Dr. BURKE's survey, which is based on an extensive personal experience of bismuth therapy, will be found valuable. In an article ambitiously labelled "a critical review," however, a more detailed reference to the literature in the appended bibliography would have been welcome. No mention is made of the excellent monograph by LEVADITI and NICOLAU (*Annales de l'Institut Pasteur*, 1924, xxxviii., 179) wherein all the original experiments on bismoxyl are described; those readers who are interested in this fascinating subject from the theoretical standpoint will do well to consult this monograph, as also the summary of the growth of bismuth therapy contributed to our columns by LEVADITI himself two years ago.²

To the same journal, which is rich in articles of direct clinical as well as scientific interest, Dr. SVEND LOMHOLT, from the Finsen Light Institute, Copenhagen, contributes notes on the pharmacology of bismuth with a similar reference. He has less scorn for mercury than is exhibited by Dr. BURKE, admitting that possibly the therapeutic effect of bismuth may be slightly less than that of strong mercurial treatment, but he contends that bismuth is better tolerated and is more convenient to use. In his view the principal objection to its use is that it may give rise to the formation of a typical blue line at the margin of the gums, and, though this causes no discomfort, patients may object to the risk of being thus branded. Prevention of this discolouration is thus of paramount importance. When preparations are used which are absorbed slowly, the bismuth line may develop and increase in strength for some time after the administration of the drug has been stopped. For this and other more important reasons, such as the prevention of toxæmia, Dr. LOMHOLT holds, in contradistinction to Dr. BURKE, that the preparation chosen should be quickly and regularly absorbed and quickly eliminated, while the selection should also be influenced by the degree of pain and discomfort caused after injection. Since the rate and regularity of the elimination of any preparation varies directly with its rate and regularity of absorption, Dr. LOMHOLT conceived the idea of examining the excretions for bismuth in

a number of patients under treatment. He examined various preparations, first in oily and then in watery suspension, and came to the conclusion that watery suspensions or solutions must be preferred for practical use, and that of various compounds examined bismuth hydroxide suspended in water, to which a small amount of glycerine is added for the sake of stability, was the most suitable drug. He adds details of the simple laboratory method of preparing bismuth hydroxide which has given every satisfaction in his hands. Bismuth in metallic form was not among the preparations investigated by LOMHOLT.

The conclusions of different observers of the action of a drug comparatively new in the therapeutics of syphilis are likely enough to vary, inasmuch as each sees this complex medico-sociological problem from a different view-point. The related questions of convenience of administration, of pain after injection, of concealment of the nature of the disease, of the length of the period of treatment are matters which depend on the class and circumstances of the patient as well as on the bias of the practitioner; these and many other factors may have a bearing on the preparation of bismuth or any other drug chosen as a routine. In this connexion it may be emphasised that arsenic still holds the premier place in the treatment of syphilis, and it would appear possible that the most important function of bismuth is to kill off those spirochaetes which have become immune to arsenic. In a sympathetic introduction to this first issue of a new venture in medical journalism Sir HUMPHRY ROLLESTON notes that critical reviews will be a feature of each quarterly number. We suggest that a review of new developments in arsenic therapy, in the light of FOURNIER'S and FOURNEAUX'S discovery of acetyl oxyamino phenyl arsenic acid would be appreciated by many practitioners. This substance, known as 190 or stovarsol, when given by the mouth within five hours of exposure to infection is said to protect against syphilis, and LEVADITI, in an address before a Conference at the Institut Pasteur in April, 1923, said that it possessed "une valeur démonstrative incontestable." Little is heard of this body in England, yet clinical trials abroad would seem to show that it marks a more profound advance in the therapeutics of syphilis than any preparation hitherto produced.

MENTAL DEFECTIVES IN PRISONS.

It is to be hoped that Parliament will some time take steps to amend the Mental Deficiency Act in the manner proposed in the Report of the Prisons Commissioners for the year 1923-24 (1925, Cmd. 2307). The Act of 1913, it will be remembered, begins by separately defining four classes of defectives—namely, idiots, imbeciles, feeble-minded persons, and moral imbeciles. In the case of the first three of these classes the definition requires proof that the mental deficiency has existed "from birth or from an early age"; in the fourth class the permanent mental defect of the moral imbecile must have been displayed "from an early age." The inclusion in the Act of the words which we have quoted has the unfortunate effect that many defectives cannot be certified and admitted into an institution even where the defect is plain. As the medical officer of Holloway Prison points out, for example, it is often impossible to ascertain the early history of the elderly debilitated women who are received at his prison, many of whom have a great number of previous convictions. These unhappy men and women too often find their

² THE LANCET, 1923, i., 639.

way into the population of our prisons to the detriment both of themselves and of the community. The Commissioners state clearly and unanswerably that prison life is the wrong environment. Persons whose mentality is not normal yet who are technically not certifiable are not amenable to full prison discipline and can derive no benefit from prison training; at the same time their presence is an obstacle to the training of the normal prisoner. As a temporary arrangement the Commissioners are assembling persons of this type (where the sentences are of sufficient length to justify transfer) at certain prisons where they will be located together and receive the kind of treatment appropriate to their condition. It is explained, however, that this is merely a palliative measure. Prison resources are not available to deal with the problem properly. Parliament must meet the difficulty. The admirable extracts of the views of medical officers of particular prisons (appended as usual to the Commissioner's annual report) emphasise the fact that the Mental Deficiency Act must be amended. The prison doctors at Holloway, Manchester, Norwich, and Preston speak specifically of the results of this difficulty of certification. The medical officers' commentaries are always interesting and often challenging. We notice in connexion with "moral imbeciles" some robust remarks from the doctor at Wormwood Scrubs, who criticises the belief in the irresponsibility of such offenders—a belief which he attributes to the philosophical doctrine of determinism. The Wandsworth Prison doctor observes that the solution of the problem of what to do with the "criminally mentally unstable and people with a criminal kink" cannot be found "until there is a fundamental change in the present incomprehensible attitude of sympathy for the prisoners and forgetfulness of those who have suffered by their being at large."

From Manchester comes a proper condemnation of the practice of magistrates who sentence a prisoner to a term of imprisonment and then ask that his mental condition be kept under the observation of the medical officer of the prison. It is obvious that, in cases where an accused person's mental state is in question, there should be a remand for the necessary observation and report before conviction and not after. It is satisfactory that the Commissioners can say that there has been less difficulty than in previous periods in finding accommodation in institutions for certified defectives; the certified cases thus have a shorter period to remain in prison before removal. Another commendable feature of the report on a matter of general public health is the concurrence of medical opinion, especially from the prisons of Birmingham, Holloway, Hull, and Leeds, as to the noticeable diminution in venereal disease. There is, as the medical officer at Birmingham truly observes, a vast amount of valuable clinical material in our prisons which is at present wasted for lack of research workers.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The annual general meeting of this association will be held at 1, Wimpole-street, London, W., on Wednesday, March 18th, at 5.15 P.M. At 6 P.M. on the same day a discussion on Post-graduate Teaching in London will be held, when Sir Arbuthnot Lane, President of the Fellowship, will preside. All members of the medical profession are asked to attend and to give their criticisms of the existing Fellowship arrangements and suggestions for their improvement. On Wednesday, March 11th, Mr. Oswald Addison will lecture for the Fellowship on Cleft Palate at 1, Wimpole-street, at 5.30 P.M. Copies of the syllabus of the special courses, together with the Fellowship Bulletin, will be sent on application to the Secretary to the Fellowship, at 1, Wimpole-street.

Annotations.

"No quid nimis."

THE BOARD OF CONTROL.

SOLICITUDE for the insane, when it has not found expression in destructive abuse of an ill-defined "system" of lunacy administration, has in recent times taken the form of a critical observation of the activities, actual and potential, of the Board of Control. The clamorous and contradictory demands that reach us from various quarters for the extension, the curtailment, or the abolition of the powers of the Board suggest that many medical men are unfamiliar with the respective duties and limitations of the various authorities charged with the control of the life and property of persons deemed incapable of taking care of themselves. The Board of Control is generally known and accepted as the central authority for mental disorders, and is thus a convenient target for criticism. The two other Government departments concerned in lunacy matters in England are the office of the Master in Lunacy and that of the Lord Chancellor's Visitors. A third department—the Home Office—is involved in the case of the insane criminal. In order to appreciate this complex arrangement it must be remembered that, apart from the insane criminal, development has taken place along two distinct lines. Authority was at first concerned only with the property of the insane. The care and treatment of patients is a much later development in the historical sense. In feudal times the land held by persons unable to perform their duties by reason of mental defect or disorder no doubt reverted to the feudal lord who found a more suitable tenant. As far back as the reign of Edward I. we find the Crown claiming an interest in the property of idiots and persons of unsound mind. The Royal prerogative became established, and exists to-day in the clearly-defined powers of the Lord Chancellor, and the offices of the Master in Lunacy and the Lord Chancellor's Visitors. The Master now administers the estates of persons of unsound mind, where proper application is made. The Visitors have special duties in visiting, and reporting on the care and comfort of those whose affairs are in the hands of the Master, and the diminishing number of patients found insane by inquisition. These two offices are distinct one from the other, though a united Board meeting is held monthly. Moreover, both are distinct from the Board of Control, a fact which produces confusion in visitation and reports concerning patients. For example, one of the medical Visitors of the Lord Chancellor may arrive to visit a patient on the same day as a Commissioner of the Board of Control; and the Master may ask the medical officer of an institution to report on the mental and physical health of a patient concerning whom a full report has just been transmitted to the Board of Control. Were it possible to amalgamate these offices, so that information concerning patients would be common to all, visitation would be simplified and unnecessary reports abolished. Such amalgamation has been attempted on three occasions, but without result, although the step has received the support of at least one of the Masters in Lunacy, and no doubt would be welcomed by the Board of Control.

The authority for the care and treatment of patients is the Board of Control. Its name is not perhaps well chosen, being reminiscent of liquor control or a railway commission; the term Board of Mental Health has been put forward as a more suitable description. The Board had its origin in 1774, when the Royal College of Physicians of London was appointed to exercise statutory functions in connexion with lunacy. Thus the nucleus of a central authority was formed, and later legislation finally established the Commissioners in Lunacy in 1845 as an autonomous body. The first chairman

was the seventh Earl of Shaftesbury who did so much to promote the proper care of persons suffering from mental illness. This Commission existed until 1913, when the Board of Control was constituted by the Mental Deficiency Act. The Board is a corporate body with a common seal, and consists of not more than 15 Commissioners, of whom not more than 12 are paid. At least four are medical practitioners, and four are lawyers; one of the paid and one of the unpaid Commissioners must be a woman. The legal Commissioners are appointed by the Lord Chancellor, and the others by the Minister of Health, who appoints the chairman. There are also four inspectors, one being a woman, appointed by the Board and approved by the Minister of Health, all being paid, though at a lower rate than the Commissioners. This Board, in addition to its duties concerning mental disorders, has the supervision of mental defectives of all classes, whether housed in institutions or elsewhere. An affiliation with the Ministry of Health took place in 1920 by an Order in Council, whereby the powers and duties of the Home Secretary under the Lunacy and Mental Deficiency Acts were transferred to the Minister of Health who represents the Board in Parliament. The Board publishes annual reports of its work, volumes which contain valuable statistics, and much detailed information of the visitations carried out during the year. These reports might be more widely read with advantage, especially by those who seek to attribute deficiencies in accommodation, staffing, or diet in public mental hospitals to neglect on the part of the Board. Year after year in some counties and boroughs the attention of the local authority is drawn to manifest defects in the hospitals under their care, and recommendations are made which the central authority is not able to enforce. The Board is an advisory and not an executive body in respect to public mental hospitals, and of the many proposals that have been made with the object of strengthening the central authority none is more likely to lead to good results than an extension of its powers in this direction. Until the central authority is in a position to insist on improvements to buildings, and on reforms in other important departments, progress will be slow, and any suggestions from medical superintendents involving a large increase in the expenditure per patient will be ignored.

Certain other criticisms which have been made against the existing organisation appear to be of less fundamental importance. The justification for such a large legal representation on the Board has been questioned. It is true that the care and treatment of the mentally afflicted has legal aspects, but it is mainly the duty of the medical profession to carry out both care and treatment in practice. There is a growing feeling that visitation should not be made by legal Commissioners alone, but that they should be accompanied by one of the medical members of the Board. Some patients doubtless like to see a legal Commissioner, with whom to discuss the question of detention and so forth, but at a time when the treatment of mental disorders is demanding keen medical attention a barrister or solicitor seems out of place as the inspecting visitor of an institution. In years gone by there was a tendency on the part of the Commissioners to remain aloof from the medical work of the day. This cannot be said of the present Board, but it is of the first importance that the medical members should be preponderant thereon, and that they should continue to be of high professional standing and experience. It has been said, also, that the Board has been inclined to insist on certification unnecessarily in some institutional cases, when voluntary treatment might have been carried out with success. Here there has been latterly a definite change in the policy of the Board, and certain cases that can be managed safely on a voluntary footing are now allowed to remain whether certifiable or not. It is to be hoped that the voluntary principle in treatment may be extended, and that rate-aided patients may shortly obtain the privilege of seeking

voluntary treatment, opportunity for which is now confined to the private class. The Board has been blamed in some quarters for neglecting to initiate more prosecutions for breaches of the Lunacy Acts, especially where persons of unsound mind have been detained for payment in places other than recognised institutions. This is a matter which bristles with difficulties. Reliable evidence is often not forthcoming, medical men may differ, and public opinion is often hostile, a sentiment that is readily reflected in the verdict of a jury. The policy of the Board in this matter must be allowed to be largely dependent upon the nature and circumstances of each individual case. There is a general dissatisfaction with that part of Section 315 of the Lunacy Act, 1890, which concerns the misdemeanour of receiving an "alleged lunatic" for payment without certificates in an unlicensed house. Clearly such a person should not be allowed to be detained. But, if harmless to himself and others, why should not such a patient be allowed to remain voluntarily if he wishes? For early cases especially it would be useful to avoid certification, always provided that adequate skill and treatment were available, and notification was made to the Board of Control.

It is well known that informed opinion is divided as to the future of the central authority for mental disorders. One group of critics would endow the body with more authority, another would limit its activities to mental institutions and single certified patients only, and transfer the supervision of the care and treatment of incipient and borderline cases to another authority. The object of this school appears to be to divorce the early case from the machinery that is unhappily labelled "Lunacy." Something has been said of the confusion that already exists as a result of departmental independence. Is further division desirable? Attempts at establishing a separate authority for incipient and borderline mental cases might well prove a retrograde step. Should the work of the Board of Control become greatly increased by the measures foreshadowed in recent Bills framed to amend the Lunacy Law, it might well be that more officials would be required, and the question of decentralisation of some of the duties of the Board might then have to be considered; but any radical alteration in its status or limitation of its responsibilities to the care of advanced cases only would, we believe, be deprecated by all who know the difficulties of dividing established from borderline cases. Mental disorder, incipient or developed, is one large problem. Certifiability is strictly a legal conception, arbitrary, and not altogether satisfactory; indeed, a patient may be certifiable one day and not certifiable the next. The lesson of history teaches that mental disorder has characteristics which require care and treatment to be carried out with special precautions, demanding the guidance of a well-organised and well-informed central authority, having full powers of inspection and visitation to all places where mental disorder is treated, whatever its degree. The authority responsible must be a progressive medical body, sufficiently assisted by legal advisers, and adequately remunerated; and it should be able to care both for the patient and for his property.

INTERNAL FIXATION OF FRACTURES.

ALTHOUGH a good many years have passed since Sir Arbuthnot Lane introduced his method of treating fractures by fixation with metal plates and screws, surgical opinion is still divided as to the general applicability of it, and there is no accepted consensus of opinion as to the class of cases in which the operation should be performed. Much has been said and written as to the alleged bad effect of the metal in causing absorption of bone, but it is not yet proved that this is a necessary or even a very frequent result of plating. In these circumstances an endeavour to sum up experience of the results of various methods of internal fixation in fractures is very welcome. Dr. E. L. Eliason and

Dr. Drury Hinton have attempted this in a paper published in Vol. IV. of the Thirty-fourth Series of International Clinics,¹ and although the experience dealt with by them is practically confined to the United States, the lessons to be learnt are of universal application. The annual casualty list among civilians in the United States would not disgrace a war of moderate or Victorian proportions, and although deplorable it has the grim advantage of affording to American surgeons unrivalled opportunities of studying injuries in peace-time. The authors justly lay stress on the importance of what they call muscle equilibrium as well as extension after plating. By this is meant the placing of the affected limb in such a position that the tonic contraction of the muscles does not tend to distort the fractured bone. For instance, in the case of a fracture of the femur in its upper half, which is being treated in the fully extended position, the action of the ilio-psoas and of some other muscles tends to produce angulation at the site of fracture and displacement of the plate. This circumstance accounts for some bad results after plating, which can be avoided by using the semi-flexed position combined with extension in the line of the thigh. This paper is illustrated with a number of radiographs, many of which show Lane plates embedded in bone 10 to 14 years after their application. The authors sum up their experience in 13 conclusions. They recommend internal fixation, when repeated attempts at correction have failed, when reduction cannot be maintained, and in certain compound fractures. They prefer plates to bone-grafts except for cases of non-union, but would totally exclude their use in fractures of the forearm. There is no doubt that Lane's method, like many other procedures, has been discredited because enough discrimination in selection of cases has not been used, and less often perhaps because of faulty technique and want of experience and skill. Good judgment and training and a proper appreciation of simple mechanical principles should be possessed by all operating surgeons, but above all, by those who would obtain the best functional results in the cure of broken bones.

TUBERCULOSIS OF THE MAMMARY GLAND.

ACCORDING to Dr. James A. Cahill, jun.,² surgeon to the Providence Hospital, Washington, who records an illustrative case, tuberculosis of the mammary gland, which was first described by Sir Astley Cooper in 1829 under the name of "scrofulous swelling of the breast," is an extreme rarity. Lancereaux, in 1860, was the first to make a diagnosis from histological examination. DuBarr, in 1881, distinguished two types, the nodular or discrete and the confluent. Deaver, in 1914, collected 74 cases from the literature between 1904 and 1914, five of which had occurred in his own practice. According to Dr. Cahill, tuberculosis of the breast, which is almost invariably limited to one side, may be described under three distinct types—viz., the disseminating, the confluent, and the sclerosing. Infection of the breast, like that of other glands, takes place by the lymph, blood, or direct extension, as well as through the skin itself by means of a cracked nipple. In the nodular or discrete form a small lump is found in the breast, usually in the upper and outer quadrant. In the early stage the gland is movable, the overlying skin is glossy, and later becomes red and inflamed. The nipple may become retracted early or late. Enlargement of the axillary glands is present in about half the cases in the early stage. The growth is usually slow and is not painful until necrosis has occurred and the whole breast has broken down. In the later stage the axillary glands become involved in about 70–80 per cent. and necrosis occurs. In the disseminating type the nodules remain distinct

and there are numerous large areas of necrosis. The sclerosing type is characterised by a diffuse hardening which overlies deep abscesses or, less frequently, by the whole lesion being entirely fibrous. Tuberculosis of the mammary gland is essentially a disease of the female sex, only 11 cases having been reported in males; 70 per cent. of Deaver's cases occurred between the ages of 20 and 50. Trauma is an important factor. The condition may be primary, involving the mammary gland itself, or secondary to some focus elsewhere in the body. The following conditions must be excluded from the diagnosis: Carcinoma, fibroadenoma, interstitial mastitis, actinomycosis, gumma, chronic and pyogenic infections. The prognosis is good in the primary type if complete amputation of the breast is carried out. In the second type the outlook depends on the primary factor or the pulmonary condition plus removal of the breast. Treatment consists in complete removal of the breast, dissection of the axillary glands, and removal of the pectoral muscles if the glands are involved. Dr. Cahill's case is remarkable as having occurred in a girl aged 13, the symptoms appearing within a month of a blow on the left breast. Complete recovery followed removal of the organ.

SANOCRYSYN: AMERICAN CRITICISM.

IT is interesting to note that the comments in the *Journal of the American Medical Association* (Jan. 24th and Feb. 14th) on the evidence hitherto advanced in favour of sanocrysin as a chemo-therapeutical remedy for tuberculosis coincide closely with those put forward in a recent issue of THE LANCET.¹ It is, moreover, suggested that in connexion with sanocrysin it is only the name that is new. The toxic properties of the salt are emphasised, and it is pointed out that all the therapeutic effects were produced by a combination of the salt and serum. Attention is also called to the dangers of using only one control animal in each batch of experiments, since it is well known that the individual susceptibility of animals to tubercle cultures varies widely. Again, the virulence of the cultures used in the experiments with calves is called into question and the experiments with tuberculous monkeys are considered to be of little value, since the evidence upon which the diagnosis of infection was made was insufficient. The possibility that the post-mortem findings upon infected animals killed with sanocrysin were not due to tuberculin shock but to metallic poisoning is put forward with some force. The crucial therapeutic experiments are being repeated in the United States Public Health Service Laboratories before the remedy will be allowed upon the market in that country, and the wise advice given to the public is of general application—"to await patiently the knowledge that will come from carefully planned experiments now under way."

AUSCULTATION OF JOINTS.

IN *Wiener Klinische Wochenschrift* of Feb. 5th Dr. Edmund Maliwa, Baden, contributes an interesting article on the subject of auscultation of joints. The large group of the chronic arthritides is notoriously the stepchild of internal medicine, not only as concerns the teaching of students, but also with regard to the scientific interest of the research worker. Treatment is therefore ineffective and prognosis unsatisfactory. One of the most important parts in the physical examination of the joints in cases of chronic arthritis is palpation of the affected part. But palpation and examination by radiograms sometimes fail in joints in which the affection soon afterwards appears. Naturally the idea comes up whether there are not crepitations outside the limits of palpation which are only perceptible acoustically. The best analogy is found in a perisplenitis which is audible but cannot be felt. The crepitation may be too deep-seated or the fineness may be below per-

¹ International Clinics. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, U.S.A., with collaboration. Vol. IV. Thirty-fourth Series, 1924. London: J. B. Lippincott Company, 1924. Pp. 308.

² Surgery, Gynecology, and Obstetrics, February, 1923.

¹ THE LANCET, Jan. 31st, p. 239.

ceptibility and therefore below the stimulus-threshold of palpation. Auscultation must be properly carried out. It is implicitly recommended that a binaural stethoscope be used with a small sound disc—the latter must be placed firmly on the skin. In choosing the position of auscultation, in order to avoid artificial noises, it is important to select one which remains undisturbed while the movement is carried out. Further, the positions of auscultation should be as near as possible to the joint. Perception of crepitations at an early stage is extraordinarily helpful in confirming a diagnosis. In this connexion it is pointed out that the conditions for the transmission of sounds in general in the joints are very favourable. With practice it is possible to acquire a conception of the rougher and finer structure of the source producing the crepitation and also whether it is diffuse and concerns the whole joint, or is localised. Affections of the para-articular tissue, without affection of the joint in the narrower sense, are more easily defined diagnostically. The diagnostic advantages are so satisfactory, the judging of certain cases is made so much easier that it is rightly and urgently recommended that this method of diagnosis should be introduced in the normal course of the physical examination of joints. In the study of the literature pertaining to the subject published during the last 30 years, which includes about 600 papers, only one reference, by Garrod in the Royal Society of Medicine, January, 1911, is to be found. It is indeed curious that the auscultation of joints up till now has scarcely been used.

HEALTH ADMINISTRATION UNDER RURAL DISTRICT COUNCILS.

IN the past it was almost the invariable custom for one of the local practitioners, who might or might not be interested in administrative health problems, to be charged with the duties of a medical officer of health of a minor local authority, such as a rural district council. Theoretically this part-time system, which is still largely adopted, is well adapted, on the one hand, to bring practitioners into touch with questions of public health, and, on the other, to ensure that the medical officer of health has sympathetic understanding of the difficulties with which his colleagues in private practice have to contend. In practice, however, it is often found that those who are zealous practitioners care little for administrative work, and that the combination of two or more districts to appoint a whole-time medical officer of health proves to be the more satisfactory arrangement. Especially is this so when the medical officer is permitted to enlarge his experience by accepting part-time duties as tuberculosis officer or school medical officer under the county council. The remuneration which should be paid to such a medical officer has recently been under consideration by the British Medical Association in conjunction with the Society of Medical Officers of Health; the conclusion arrived at is that the combined remuneration for all work undertaken should be not less than the minimum commencing salary of a whole-time medical officer of health, as indicated by the population of the combined areas. An alternative way of securing public health administration of rural districts too small to justify the appointment of a full-time medical officer is to permit an assistant medical officer under a county council to become a district medical officer for a definite proportion of his time—say, a half-day per week. Such an assistant medical officer should, in the opinion of the two organisations who have been considering these questions, be paid at the rate of £80 per annum for each half-day per week spent in the service of the rural district, and his salary from the county council should be reduced by one-eleventh for the same period. For example, if he were being paid at the rate of £600 a year he would stand to gain £26 a year, as well as valuable experience by undertaking the duties of district medical officer of health for one half-day a

week. The opportunity of doing work of a more or of a less specialised nature than that which occupies him as a rule should make an appeal to an enthusiastic officer in the public health service. Both suggestions are likely to be appreciated by those who wish to be conversant with every branch of their speciality.

AN EPIDEMIC OF SPIROCHÆTAL JAUNDICE.

THE danger of infective jaundice becoming a disease of practical importance to medical officers of health in these islands is emphasised by an interesting article in our present issue. Prof. D. Murray Lyon and Dr. G. Buchanan describe a minor epidemic affecting two families in Edinburgh in the late summer of last year. In the first family four of nine persons were affected, and in the second three other children, playmates of the first family, suffered later from the same disease. In all cases the most prominent features of spirochætosis icterohæmorrhagica were observed—fever with malaise, headache, and joint pains being followed by jaundice with marked gastrointestinal disturbances, whilst a tendency to hæmorrhage, epistaxis, hæmaturia, hæmatemesis, and extravasations of blood under the skin was a common feature. The nature of the infection was confirmed by laboratory tests; blood from early cases, and centrifuged urine from later ones, was inoculated into animals, guinea-pigs, and mice, and in six cases lung hæmorrhages were produced. But the difficulty of obtaining full confirmation of the clinical diagnosis in these cases is shown by the fact that in only one of 44 laboratory animals inoculated were spirochætes demonstrable in the lung lesions after death. In spite of very careful search and examination of rats, mice, and domestic animals in the district where the epidemic occurred no spirochætal infection of this nature was discovered which might account for the human cases, and the origin was probably due to direct infection from a child visitor who had recently arrived from the Malay Peninsula and who had had an attack of febrile jaundice. In view of the frequency with which mild cases of spirochætosis icterohæmorrhagica have occurred without jaundice it is remarkable that this symptom was noted in every one of the present cases. The Edinburgh authorities are to be congratulated on the thorough way in which they have investigated a difficult problem. Since the war minor epidemics of spirochætal jaundice have been reported in France, in Sweden,¹ and in other European countries. There was an epidemic of obscure hæmorrhagic jaundice in New York in 1922,² and in 1924 Prof. Lovell Gulland and Dr. G. Buchanan reported³ an epidemic, proved to be spirochætal, amongst miners in East Lothian.

WE regret to record the death of Dr. J. J. Graham Brown, consulting physician to the Royal Infirmary, Edinburgh, on Tuesday, March 3rd, at the age of 71.

AT the election on Tuesday last for a representative of the Faculty of Medicine on the Senate of the University of London Sir Holburt Waring retained his seat with 67 votes, as against 57 given for Sir G. Lenthal Cheate.

THE King has appointed Dr. John Cowan to be one of the honorary physicians to His Majesty in Scotland in the room of the late Sir James Mackenzie. Dr. Cowan is professor of medicine in the Anderson College of Medicine, Glasgow.

THE next Social Evening of the Royal Society of Medicine will be held at 1, Wimpole-street, London, W., on Monday, March 16th, when the President, Sir StClair Thomson, will receive the guests at 8.30 P.M. Dr. H. Charles Cameron will give an address in the Robert Barnes Hall at 9.30 P.M. on "John Locke, the Philosopher (1690), on the Upbringing of Children."

¹ Hygiea, Stockholm, 1923, lxxxv., 40.

² Jour. Amer. Med. Assoc., 1922, lxxix., 1498.

³ Brit. Med. Jour., 1924, i., 313.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXII.—THE TREATMENT OF ANOREXIA IN CHILDREN.

THE treatment of a child who has lost inclination for food will always be one of the commonest problems which the practitioner is called upon to deal with, but it will not always be one of the easiest. One reason for this is that the trouble appears at the onset to be so trivial, so likely to right itself spontaneously, that the medical adviser usually does not see the child until a series of domestic remedies have been employed and have failed. At this stage of affairs the causal factors of the original anorexia may have been obscured by its results, rendering the exact nature of the trouble extremely difficult to determine.

Owing to the multiplicity of causes it is quite impossible to propound any line of treatment which will be applicable to every case of anorexia, and the administration of a "pick-me-up" without thorough investigation of the underlying cause is strongly to be deprecated. In every case a physical examination of the child should be carried out, careful inquiry should be made into the diet and the daily routine, and some idea of the child's temperament and mental attitude should be gained by observation of his behaviour. One must admit that in a certain number of children no precise cause of the anorexia can be discovered, but it is usually possible to place the case into one of three classes: (1) Cases in which the loss of appetite is due to the presence of some definite disease. (2) Cases where no sign of gross disease is found, in which anorexia is due to a temporary disturbance of the alimentary tract occasioned by errors of diet. (3) Cases in which refusal of food is a manifestation of neurosis.

Anorexia Resulting from Definite Disease.

It will be found that this class comprises a very small minority of the children who are brought for advice for this symptom. Nevertheless, cases are met with in whom the mother has noticed no other abnormality, but who show signs of disease at the time or shortly after. In these children there is usually obvious cachexia, which is not the case in the other classes which will be described. Scurvy, though not a common cause, may produce marked anorexia before any of the more typical symptoms have developed. In children of 3 years or more, tuberculosis, usually of thoracic or abdominal glands, is more likely to be found than any other disease. These children generally lose weight, but do not show any definite evidence of disease of the alimentary tract, and the tongue is usually clean. The treatment in this class of case must be directed against the underlying disease rather than against the symptom. Tuberculous children usually recover their appetite after they have been sent away to the country or on the balcony of a hospital ward. Cod-liver oil and malt are generally well taken, and serve to maintain nutrition until the desire for food is normal.

Anorexia due to Temporary Disturbances.

Anorexia due to temporary disturbance of the alimentary tract is occasioned by errors of diet in by far the largest number of cases; the great majority of the cases occurring between the ages of 2 and 6 are attributable to this cause. Some dyspepsia may be present, but it is usually not severe, and has often passed off, perhaps as a result of the abstinence from food, before the child is brought up for advice. The mother states that the child "picks at" his food, and refuses to continue his meal after a few mouthfuls have been eaten. The child is usually fairly well nourished, but looks out of sorts and is fretful and irritable. The tongue is pale, with slight furring

of the posterior part, but is not usually decidedly "dirty" unless constipation is present as well. There may be some vague discomfort on pressure in the abdomen, otherwise examination reveals no abnormality.

Careful inquiry into the diet of these children nearly always brings to light some unsatisfactory element in the composition of the diet or the arrangement of the meals. A certain number of them have been frankly overfed, and in them the anorexia is merely an expression of the need for alimentary rest. They should not be pressed to eat, but should have a small allowance of concentrated forms of food, and should not have more than half to three-quarters of a pint of milk in the day; they usually make a good recovery in two or three weeks. In a number of others the trouble will be found to have arisen from habitual irregularity, hurried meals at odd hours, supplemented by pickings from the parents' table, and biscuits or sweets at all times of the day. Correction of such obvious errors as these generally brings about a gradual return of the appetite. But in the majority of cases the dietetic error is qualitative, and this is especially so in the most severe and obstinate ones. It may take almost any form, but the first place can certainly be given to a sloppy diet containing excess of carbohydrate: a dinner of which the most frequent item is a mash of gravy and potato, probably followed by a milk pudding almost every day, and a breakfast or supper consisting largely of hot bread-and-milk. A diet such as this, relatively poor in protein and definitely deficient in fat, consumed readily with little need for mastication, is an extraordinarily constant feature of the histories given by the parents of this type of patient. It is in most cases well tolerated for a considerable time, and gives rise to no signs of malnutrition, but eventually the child begins to lose appetite, and perhaps to complain of vague dyspeptic pains. At this stage some Parrish's food or other iron tonic is obtained, and this never fails to aggravate the trouble. Finally, it is found that the child is losing weight, and advice is sought.

Cases of this type respond to treatment more readily than those of the two other classes; if the intelligent coöperation of the mother is obtained, one may be fairly confident of restoring the appetite in all but a few of them in a few weeks. The treatment demands a certain amount of attention to detail, and may be considered under the headings of management, diet, and drugs.

Management.—It is most important that a child's meals should be unaccompanied by anxiety, the effect of which upon the appetite is well known to most people by personal experience, and may be attributed to inhibition of gastric secretion by increased outflow of adrenalin. An unpunctual breakfast, eaten hurriedly and in apprehension of penalties for late arrival at school, is a situation which must never be permitted. The initiative in discovering this situation will rest with the medical adviser, for the information is not likely to be volunteered. Regular meal-times must be observed, and no food allowed at other times. It is well to make sure that the child is getting an adequate amount of exercise in the open air. Constipation is common, though by no means constant, and should of course be corrected when present.

Diet.—The diet must be regulated according to the age of the child. Slops, such as bread soaked in milk, or gravy and potato, should be forbidden altogether, and it is best to withhold potato in any form until the appetite has returned. Milk puddings should be restricted to two or three in the week, and replaced by baked apple, stewed fruit, and an occasional steamed pudding. Benefit often follows reduction of the daily allowance of milk to 1 or 1½ pints. The principal constituents of the diet should be eggs, in any form; fish, meat, fat bacon, with beans, peas, lentils, or green vegetables.

Porridge is a useful alternative for breakfast unless the child strongly objects to it: in hospital practice it is best to secure a good trial for it because of its

cheapness. Bread-and-butter may be taken, but in moderation, and *after* the more essential constituents of the meal.

Drugs.—In this type of case drugs are usually of considerable benefit, but harm is often done by unsuitable ones. Iron tonics are contra-indicated in all cases while the anorexia persists; they may be used later if the tongue is of normal appearance, but are not really needed even then. Cod-liver oil may do good to some children, but it certainly upsets others, and should be reserved for the few cases in which nutrition has suffered severely. An alkaline mixture containing sod. bicarb., gr. v.–viii., with infusion of gentian, rhubarb, and ginger roots, made up in peppermint water, is almost always of value at the onset. To this may be added tinc. aloes, ℥ v.–x., if required. The mixture should be taken 15 minutes before meals. Patent foods and medicines, particularly those containing malt, should be stopped.

Anorexia as a Manifestation of Neurosis.

Refusal of food as a manifestation of neurosis is found more often among the children of well-to-do parents, and the features which it presents vary to some extent with the age of the child. As a general rule, the older the child the more definitely psychopathic are the characteristics of his behaviour. In quite small children anorexia occurs as a form of mere "naughtiness" or negativism, often produced, and generally aggravated, by unwise management. The child usually shows signs of nervous excitability or spasmophilia, but under suitable conditions may develop into a perfectly normal child. The majority of these cases occur at a rather later age, between 5 and 10, and the neurosis has many points in common with other neurotic symptoms, particularly enuresis; in both cases it serves as a means of obtaining attention and exerting power for a child who has failed to do so in other ways. Anorexia and enuresis are not found to occur in the same child, but in dissimilar types, probably determined by the endocrine pattern. The child is usually fairly well nourished, but does not look robust, and the tongue is clean. The mother states that the child scarcely takes any food, usually refusing solid food from the very beginning of a meal, sometimes taking milk or tea fairly readily. If the child is forced to eat, the food may be vomited almost immediately afterwards. There is some loss of weight, but generally surprisingly little. It is nearly always found that as a means of exerting power this symptom has been entirely successful: the mother has devoted a large part of her time to coaxing and entreating, or to equally futile punishment.

Drugs have no place in the treatment of this type of case. The trouble will persist as long as his object is being achieved, and the essential part of the treatment is the removal of all signs of anxiety on the part of the parents. The medical attendant should be careful not to discuss the subject in the child's presence. The mother and nurse must be persuaded to stop coaxing and to make no comment on the appetite. If this is really carried out, a certain number of the patients will regain their appetite in a short time. But success on these lines is not obtained in every case. A large proportion of the parents are of an emotional type, and do not succeed in concealing their anxiety; moreover, a child who has borne the pageant of an empty stomach successfully from home to the seaside and to relations in the country will not always accept a sudden change of attitude. In many cases it is necessary to remove the child from home to the care of someone who will adopt the desired attitude from the start. If there is serious loss of weight hypnotic suggestion may be employed, and is usually successful, but relapse is likely unless the environmental conditions are dealt with at the same time.

NEILL HOBHOUSE, M.B. Ox., M.R.C.P. Lond.,
Physician to Out-patients, Hampstead General
Hospital and Victoria Hospital for Children.

Special Articles.

SPIROCHÆTAL JAUNDICE.

REPORT OF A SMALL EPIDEMIC.

By D. M. LYON, M.D., D.Sc. EDIN.,

PROFESSOR OF THERAPEUTICS AND CLINICAL MEDICINE,
UNIVERSITY OF EDINBURGH; PHYSICIAN, ROYAL
INFIRMARY, EDINBURGH.

With Microscopical and Experimental Observations by

G. BUCHANAN, M.B., D.P.H. EDIN.,

ASSISTANT CLINICAL PATHOLOGIST, ROYAL INFIRMARY,
EDINBURGH.

DURING the months of July, August, and September last there occurred in Edinburgh a small outbreak of infective jaundice which has certain points worthy of being recorded. The household primarily involved consisted of nine persons, of whom four became affected. The first to fall ill was the youngest (Case B, aged 7). The second victim (Case C, aged 13) began to complain about three weeks later. Case D, aged 17, took to bed four days after this, and Case E, aged 19, after a further interval of four days. One boy, aged 15, was unaffected, as also were the parents and the two maids. Three children in a second household also suffered, the earliest sign of the disease being noticed in Case F (aged 3, a playmate of Case B), about the same day as Case C took ill (August 8th). Cases G, aged 6, and H, aged 10, were noticed to be infected respectively 31 and 27 days after Case F.

On the appearance of jaundice in a second member of the first family the nature of the condition was suspected. The presence of spirochaetes in the urine was confirmed and a possible source of infection was looked for. These investigations proved negative. It was then recalled that a short time previous to the outbreak of the epidemic a small child (Case A) from the tropics (Tumpat, Kelantan, Malay Peninsula) had lived in the house for a week and had played a great deal with Case B. This subject is believed to have been the source of infection.

Details of Cases.

CASE A.—Female, aged 5, recently returned from the tropics, had apparently been ailing a good deal during the voyage. During the time she stayed in the house she seemed to be out of sorts, and was said to show slight jaundice even though she had a rather tanned skin. An evening temperature of 100° to 102° F. was recorded on several occasions. This child left Edinburgh for Wales a short time before the epidemic started. When spirochaetosis was suspected, the local public health authorities were communicated with and a sample of urine was obtained from the patient. This contained undoubted spirochaetes.

CASE B, a well-conditioned boy of 7, became ill on July 10th about a week after the departure of Case A. The patient became sick and had some diarrhoea, and his temperature reached 102° F. By Saturday, July 14th, he had sufficiently recovered to attend a Sunday school party, but on Monday, 16th, sickness and diarrhoea began again and he vomited all his food. No jaundice was noticed at this time. After about three days the child improved greatly, and appeared well for about a week, when a relapse took place. He was seen by Dr. John Thomson on July 24th. Pain was complained of about an hour after every meal, and the patient vomited even milk, although he complained of being hungry. The abdomen was normal, and there was no increased tension in the recti. A heavy blanket over the upper abdomen or pressure in this region elicited tenderness. The tongue was red and furred, and constipation was marked. The temperature was normal, but had been 99° on the evening of the 23rd; pulse 68, with respiratory irregularity. The presence of jaundice could not be definitely determined. On July 26th his general condition seemed to have greatly improved, but he vomited again. After three days' further illness, jaundice appeared suddenly and developed rapidly during 24 hours. The pigmentation varied from day to day, and traces were still present on August 13th. Spirochaetes were found in the urine when the patient was first seen—that is, on the thirty-fourth day of his illness. The condition in this subject proved to be mild, and convalescence was uneventful.

CASE C was a boy of 13. This patient began to complain greatly of headache on August 7th. Nausea and vomiting appeared on the same day, and there were also severe pains in the legs. Jaundice developed first on the 11th, and at this time the temperature was 102° F. When seen on the 13th the patient was lying listlessly in bed greatly prostrated. The skin had now a deep yellow colour. No spots were present and there was no itching. Both spleen and liver were slightly enlarged, the spleen reaching half an inch in front of the anterior axillary line, while the liver edge extended an inch and a half below the costal margin in the mid-clavicular line. There was slight tenderness of the liver. The abdomen appeared scaphoid. Constipation was marked, and the urine had a dark brownish colour from the presence of bile. On the 14th the patient seemed to be somewhat better. The blood was examined for spirochaetes, but none were found. Jaundice gradually increased for several days, then fluctuated from day to day. A few shotty glands appeared in the groin. On the 16th numerous pin-point hæmorrhages were noticed over the skin of the arms and the abdomen, and the soft palate showed a crop of rather larger hæmorrhagic effusions, the average size being about a quarter of an inch in diameter. Ten cubic centimetres of anti-spirochætal serum (B., W., and Co.) were given on the 16th and a similar dose on the 17th. No noticeable reaction occurred. The patient's condition improved rapidly. The lethargy present during the earlier phases of the disease passed off, the patient's appetite became ravenous after the 17th, and he got out of bed several times without permission. Further progress was uninterrupted.

CASE D was of more severe type. The patient, a girl of 17, was quite well until the evening of August 11th, when she felt out of sorts. Next morning there was considerable headache, accompanied by sickness and vomiting and also by generalised pains most severe over the lumbo-sacral region and the lower abdomen. (The sensations resembled the onset of menstruation.) During the 12th, 13th, and 14th the temperature ranged from 100° to 102° F., and the pulse ran about 96. The patient was bright and cheerful. There was no jaundice, and no hepatic tenderness could be made out. Albuminose appeared in the urine, but the only evidence of bile was a positive response to Hay's surface-tension test for bile acids (sulphur granules). On the 15th the patient became very prostrate, the abdominal pains were still severe, and there was no sign of menstruation. A faintish yellow tinge now appeared on the nose and the conjunctivæ. The liver edge could now be made out half an inch below the costal margin in the mid-clavicular line. The patient appeared to be distinctly worse on the 16th. She slept badly. Sickness developed and the patient vomited all food taken. Streaks of blood were present in the material returned from the stomach. The upper part of the abdomen was tender as well as the lower region. Numerous small petechiæ appeared on the arms. Ten cubic centimetres of anti-spirochætal serum were given intravenously. The temperature, which had been high before the injection, now fell to 97.8° and remained normal until the 24th. During the 17th the anorexia and vomiting continued. The patient became very restless and irritable, and she scarcely slept. Various measures directed to relieving the vomiting failed. It was impossible to feed by mouth as the vomiting was so frequent. A second dose of serum was given on the 17th. The condition remained much the same during the 18th. On the evening of that day quite a large hæmatemesis took place, and as the patient was still very restless and distressed and had not slept, morphia was administered. The patient passed a quieter night, being less restless and sleeping in snatches. No feeding was attempted by the mouth though the persistent retching had now stopped; nutrients and salines were given by rectum. During the day (19th) the patient remained semi-conscious, but rubbed her face a great deal. In the evening a definite gumboil developed on the right side of the lower jaw. The patient, though semi-conscious, became restless, angry, and distressed. The jaw swelling was lanced deeply without pus being reached. The mass apparently contained blood only. During the 20th, 21st, and 22nd the patient remained unconscious, showing a great deal of restlessness and irritability, from time to time calling out in delirious fashion. The legs and lower part of the body were frequently thrown about as if some pelvic irritation were present. Nutrients were well retained, and there was no sign of rectal trouble. Catheter specimens of urine showed the presence of blood, often in considerable amount. Menstruation became established on the 21st.

On the 22nd the swelling over the jaw became larger and softer, and was again incised, but no pus appeared even when the offending carious tooth was extracted. A considerable amount of oozing of blood followed the free incision of the swelling, and for several days very foetid blood-clot and necrotic material were evacuated from the area. A daily elevation of temperature from August 24th to

Sept. 3rd was attributed to absorption of toxic material from the mouth. Complete consciousness returned on the 23rd, a few hours after the second lancing of the gumboil. The jaundice continued to advance until about the 25th and thereafter slowly declined, being practically cleared up by Sept. 8th. By the 26th the patient had greatly improved, and her appetite was extremely good. In spite of the toxæmia the patient's general condition made rapid progress, and she was able to go on holiday on Sept. 8th.

CASE E, a girl of 19, felt rather out of sorts on August 13th. Next morning she did not complain, but by the evening her temperature was 101.8° F. Fever persisted during the 15th and 16th, but the patient felt better, took her food well, and had no pains. Traces of bile appeared in the urine on the 16th, and the patient was given 10 c.cm. of anti-spirochætal serum intravenously. A further dose was given next day and no immediate reaction took place. The temperature fell to normal after the second dose of serum, and remained about normal thereafter. A few urticarial spots were present on the arms from the 24th to the 27th. Anorexia, sickness, and vomiting began on the afternoon of the 18th, and for four days rectal feeding was required. The appetite returned on the 22nd. The advance and decline of the jaundice paralleled Case D. Further progress was uneventful.

Cases F, G, and H occurred in another family.

CASE F, a girl of 3, was a playmate of Case B. She had only a mild attack and was in bed for two days, August 8th and 9th, when she felt a little off colour. Thereafter she was quite cheerful and bright, although vomiting occasionally took place. Jaundice appeared on August 15th, and spirochaetes were demonstrated in the urine on the 16th. Her nose bled a few times, and a crop of hæmorrhagic spots appeared on the palate. No blood was seen in the urine or the vomited matter.

CASE G, brother of F, was aged 6. He first became unwell on Sept. 8th, but was never very ill. Sickness, though troublesome, was never serious. Jaundice appeared on Sept. 12th and some epistaxis occurred.

CASE H, a girl of 10, fell ill on Sept. 4th. This subject had a much more severe attack than either F or G, the main feature being excessive vomiting. Epistaxis was also present in this case, but no gross bleeding occurred elsewhere. This patient was confined to bed for about a fortnight.

Cases F, G, and H recovered fairly quickly in direct ratio to the severity of the disease, which, it will be noticed, was proportionate to the age of the patient.

The cases outlined above answer the usual description of spirochætal jaundice. Considerable difference in severity was noticed as is common in such epidemics. In nearly all the victims the illness commenced suddenly, like the onset of an infectious fever, the initial pyrexia being accompanied by malaise, headache, and various pains. The most pronounced symptoms were gastro-intestinal disturbances, jaundice, and hæmorrhages. Nausea, anorexia, sickness, and vomiting were present in all subjects. The combination of distaste for food and the tendency to vomit everything eaten made feeding difficult in the more severe cases. Acidosis occurs readily in children, and acetonuria has been noted as a common symptom in this disease, so in order to avoid this risk a special endeavour was made in Cases D and E to maintain nourishment by nutrient enemata containing large quantities of glucose (as advocated by Ryle). By this means it was possible to prevent the appearance of more than the merest trace of acetonuria on one or two days. Constipation was troublesome and required constant attention. The rapid return of appetite when convalescence became established was a striking feature in several of the subjects. Jaundice occurred in every case, being marked in all except the mildest. As has been pointed out, it does not come on until the fever has been present for about four or five days. It may then develop very rapidly during a few hours, increasing in intensity for several days and then disappearing slowly. In cases seen early, bile could be detected in the urine before it was apparent even in the conjunctivæ. Irritation of the skin was scarcely complained of. The pulse-rate was usually elevated during the febrile phase, and later a certain amount of slowing occurred in some of the cases. The hæmorrhagic character of the disease was prominent

in this epidemic. Petechiæ and larger skin effusions were frequently noted, and blotchy patches were found on the palate in two cases. Epistaxis was common. In three of the subjects red blood corpuscles were found in the urine, while in one of these cases considerable hæmorrhage occurred from the urinary tract. The vomitus brought up after distressing retching often contained streaks of blood. Case D had a rather severe hæmatemesis. Muscular pains and abdominal tenderness were present in the more severe cases, and in these there were also some temporary enlargement and tenderness of the liver. The urines throughout were strongly acid, bile was present in large quantity, traces of albumin were found in several during the febrile period, while the urines of C, D, and E showed for a time considerable albumose.

The anti-spirochætal serum employed was prepared from a strain of organisms isolated from rats caught in East Lothian. Two doses of 10 c.cm. each were given on successive days to Cases C, D, and E. In each subject the temperature fell to normal and remained there. No other immediate effect was noticeable. It is hardly likely that the sickness could be attributed to the serum. About ten days after the intravenous administration of the serum an urticarial rash appeared on the forearm in the neighbourhood of the site of injection in two cases.

The mental symptoms of Case D were difficult to account for. Breathlessness, mental confusion, and unconsciousness are usually recognised as prognostic signs of very grave import, and at one time this subject was so low that her life was despaired of.

MICROSCOPICAL AND EXPERIMENTAL OBSERVATIONS. BY DR. BUCHANAN.

As such an outbreak of this disease in two families in a town has not been reported in this country before, every effort was made to confirm the clinical diagnosis and to investigate all possible sources of infection. There was no difficulty in arriving at the diagnosis of infectious jaundice on clinical grounds, but confirmation of this by laboratory means was not so readily attained. The confirmatory methods adopted consisted in the examination of the blood and urine. As the blood is considered to be infective up to the seventh day of illness, specimens were taken only from those patients seen during the first week of the disease. Several films of the blood were examined by dark-ground illumination, and about 4 c.cm. were inoculated intraperitoneally into guinea-pigs. Although spirochætes are not eliminated in the urine until about the eleventh day, for statistical reasons, specimens were examined throughout the illness when circumstances permitted. Films of the centrifugised deposit were examined by dark-ground illumination, stained films were prepared, and about 4 c.cm. of urine with deposit were inoculated intraperitoneally into guinea-pigs and occasionally mice. It so happened that only three of the patients were seen within the period when blood examination and animal inoculation might have proved successful; the findings, however, were negative.

The results of the microscopic examination of the urines after the febrile period, though positive, were not unequivocal. Although spirochætes were found in the urine of all the patients at one time or another they appeared to be devitalised and degenerated. An explanation of this may be found in the acid reaction of the urine and the presence of bile in it, for experiments showed that these properties were not only inimical to the vitality of the leptospira but also destructive to its characteristic morphology. Hence a difficulty arose in establishing a diagnosis on microscopic examination of the urine alone. In two of the patients—viz., D and E—seen from the onset of illness, specimens of urine were frequently examined to ascertain the day on which spirochætes first appeared in the urine. Definite, though few, spirochætes were first found on the fourteenth day in Case D, and on the twelfth day in Case E. In the other cases circumstances only permitted of obtaining the first specimen of urine at varying dates after the acute stage.

Spirochætes were noticed in each case from the eighteenth up to the twenty-third day of illness. With the exception of Case E, spirochætes were not observed in the urine after the thirty-seventh day. In each instance spirochætes were detected as a rule with difficulty; exceptionally three or four might be encountered in one microscopic field and none on further examination of the slide. By dark-ground illumination the fine spirals were not recognised, but they seem to be indicated by a slight granular appearance, which was more pronounced in the stained films. The forms seen could only be regarded with suspicion as of the leptospiral type, so that it remained to rely on the results of animal inoculation for confirmation. Repeated failure to produce by this means any signs or symptoms of the disease in animals prevailed over a long period and necessitated the use of a large number of animals. The devitalising effect on the leptospira of the acid and bile in the urine was held partly responsible for the failure to infect. Although bile ceased to be excreted in the urine after a time the reaction remained strongly acid. Forty-four animals, including four mice, were employed before absolute confirmation of the clinical diagnosis was obtained. Thirty-one of these animals remained alive and well and 13 died; the latter number comprised 11 guinea-pigs and 2 mice. The results of the animal inoculations with the urines obtained at different periods during the course of the illness may be tabulated as follows:—

Table Showing Results of Animal Inoculations,
with Urine of Patients.

Case.	Animals inoculated.	Result.		Post-mortem findings.
		Survived.	Died.	
A	2	2	0	—
B	5	5	0	—
C	6	5	1	Lungs showed spotted hæmorrhages; no jaundice; no spirochætes found. Sub-inoculation negative.
D	11	9	2	<i>B. coli</i> infection arising from urine inoculated.
E	11	6	5	One showed typical spirochætal jaundice with leptospiras present in the organs. Sub-inoculations positive in 7-9 days. One guinea-pig and one mouse showed spotted lung hæmorrhages, but no leptospiras found. Subinoculations negative. Two showed no obvious lesions.
F	2	1	1	Lungs showed spotted hæmorrhages; no leptospiras found.
G	4	1	3	Two showed lung hæmorrhages, one typically spotted, the other more diffuse. No leptospiras found. One mouse showed no lesions or leptospiras.
H	3	2	1	One lung showed a prominent hæmorrhagic spot on anterior aspect. No leptospiras found.

The outstanding feature in the table is the record of only one definitely positive result out of 44 animal experiments. Seven animals no doubt showed localised lung hæmorrhages peculiar to leptospiral infection, but as the organism was not recovered a definite diagnosis could not be made.

Noteworthy observations are associated with the urine obtained from Case E, and with the infected animal. Spirochætes were found in the urine of this patient on six different occasions and up to the sixty-sixth day from the onset of illness. Examination of the urine on the sixty-sixth day revealed the presence of only a few spirochætes, and the animal inoculated with this specimen succumbed in 30 days with signs of typical spirochætosis. The fatal issue was singularly postponed, but the paucity of the spirochætes in the urine, amongst other factors, may be a cause of this; inoculation of infinitesimal doses of culture may not prove fatal until about the twenty-ninth day. Sub-inoculations into other guinea-pigs from the originally infected animal have given very irregular results, pointing either to variability in the selective action of

this strain of leptospira, or to individual idiosyncrasies in the animals inoculated. In the third animal passage both jaundice and skin hæmorrhages were absent, but the lungs were typically mottled; spirochætes were found with difficulty in the liver. In the fourth animal passage the only macroscopic lesion was confined to the uterus, the whole of which presented the appearance of a bicornuate blood-clot. But for this lesion the animal showed no naked-eye evidence of infection. Here again spirochætes were extremely few in the liver or other organs, and none were found in the uterine blood. These facts are mentioned merely to indicate the peculiar behaviour in animals of this human strain. So far the passage of local rat strains through guinea-pigs has given, as a rule, more uniform results.

The investigation of a possible source of infection included the examination of rats and mice, the house cat, cistern and tap water, and finally a specimen of urine from Case A. No rats or mice had ever been seen in the house in question and the efforts of an expert rat-catcher failed to trap any in the house or garden. Three rats and two mice caught at some distance from the infected house showed no evidence of leptospiral infection, and animal inoculation of kidney emulsion and urine proved negative in each instance. The house cat fell under suspicion on account of illness, but as a carrier it was definitely excluded. Water from the cistern and from the taps in the house and garden was examined. Nothing of a suspicious character was found, and animal inoculations with several samples from these sources were negative. At a later visit to the house mention was made of a child visitor, Case A, from the Malay Peninsula, in July. It was recalled that Case B fell ill about a week after the departure of the visitor to Wales, and it was mentioned that the visitor had not only been ill during the voyage, but also slightly indisposed on the visit. Hence it was thought advisable to try to get a specimen of blood for serological tests and a sample of urine if possible. Dr. W. T. Benson, assistant medical officer of health, was advised and he communicated with the local public health authorities in Wales. A specimen of urine only was received early in August. Dark-ground examination revealed a few non-motile spirochætal forms presenting a granular appearance. Stained films confirmed the presence of undoubted spirochætes, but here again we could only say that they were suspiciously like leptospiral organisms. The urine gave no bile reaction but was distinctly acid. Two animals were inoculated; both remained alive and well. The results of this part of the investigation throw suspicion only on Case A. Since this outbreak the rat question locally has been most extensively studied, and the findings indicate that this agency cannot entirely be ignored. No rats, however, have so far been caught in this residential district, and the existing conditions make this source highly improbable. We are therefore of the opinion that the more likely source of infection in this outbreak was the visitor from a part of the tropics where the occurrence of leptospiral infections has already been recorded.

COMMENTS ON THE FINDINGS.

The investigation has disclosed certain notable features. Although blood was obtained from two cases on the fourth day and from another on the seventh day of illness, both direct examination and animal inoculations of the blood were negative. The failure to infect guinea-pigs inoculated at this stage is not in accordance with the results of other observers; personal experience has proved, however, that some guinea-pigs are insusceptible. Diagnosis by direct blood examination has not succeeded in any case so far. Inada found that spirochætes were usually few and difficult to detect in the blood and reported their presence in only two out of a hundred cases.

A definite diagnosis by urinary examination and animal inoculation in these as well as other cases has constantly presented difficulties, attributed partly to the reasons already mentioned. These reasons

may account for the difficulty in infecting animals, but apparently did not apply to human infection in this outbreak. The infectivity of the spirochætes may depend on the period of time they remain influenced by the destructive action of acid and bile in the urine before experiments are performed. Previous investigators have observed that two-thirds of positive urines, some with many spirochætes, failed to infect guinea-pigs. One particular urine from a case in the writer's own experience contained degenerated and granular spirochætes in masses, but inoculation failed to infect in six animals; this urine was very acid and gave a marked bile reaction.

Another notable finding was the presence of spirochætes in the urine of Case E up to the sixty-sixth day. This is unusual, as the Japanese workers observed that the spirochætes invariably disappear completely from the urine after the fortieth day. In one instance, however, they reported the presence of spirochætes up to the sixty-third day. In view of these exceptions, therefore, the visitor from abroad may be considered another instance in which the elimination of spirochætes was singularly prolonged. Subsequent events point to Case B as the probable infective agent in four of the patients—viz., C, D, E, and F. This probability is based on the possible infectivity of the urine over a certain interval. Three members of one family and one child of the other became ill on different days in the same week, and from 27 to 31 days after Case B fell ill. As the incubation period appears to be between six to eight days the period of invasion would thus coincide with the interval between the nineteenth and twenty-third day of illness in Case B. Although the urine of this patient was not examined then, it is highly probable that spirochætes were present, as they were found on the thirty-fourth day of illness. The two families affected lived not far distant from each other, which allowed the two youngest members of each family to play frequently together. It is a remarkable fact that in this second household an interval of 27 to 30 days again elapsed before the older brother and sister of Case F became ill. Spirochætes were found in the urine of Case F on the eighteenth day. Such a course of events suggests infection by contact with human cases and the agency of spread points to the urine. The path of invasion was not manifest, although distinct palatal hæmorrhages in one case may have some significance in this respect. The spread of spirochætal jaundice by contact with human cases is considered most unusual; the urinary findings indicate a possible reason for this, but the history of this outbreak tends to indicate that such a mode of spread is liable to occur. In Japan cases have been noted in several members of a family, but those affected became ill at the same time or at an interval of one to two days. The source and mode of infection in such cases was not known.

We desire to thank the Committee of the Royal College of Physicians' (Edinburgh) Laboratory for the facilities afforded in carrying out this investigation, and the Medical Research Council for pecuniary assistance.

NEW CHILDREN'S WARDS AT NORWICH.—H.R.H.

Prince Henry has laid the foundation-stone of a new children's block at the Norfolk and Norwich Hospital. There will be five wards containing a total of 30 beds, and plate-glass partitions will enable any one of the divisions to be immediately isolated. The whole of the south side of the wards will be made to open, to facilitate open-air treatment. The block is being paid for with a donation of £10,000 from Mr. Lane, of Swaffham, and Mr. Simpson, of Sheringham.

FREEMASONS' HOSPITAL.—The £120,000 needed for the endowment fund have now been secured, but during the past year expenditure exceeded income by £2579. More beds have been provided and an extension will shortly be necessary—the waiting list is always considerable, and the hospital is at present practically confined to surgical cases. In the last 12 months 171 additions have been made to the list of Founding Lodges, but Dec. 31st next is to be the latest date at which a lodge can become a Founding Lodge.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 457.)

BEFORE coming to the evidence of the Controller of Insurance in regard to the Approved Societies and the evidence of the societies themselves, we give hereunder a short summary of the official evidence given by the representatives of the Ministry of Health in regard to Medical Certification and the duties of the Regional Medical Staff, both of which subjects bring the insurance practitioners into indirect relationship with the Approved Societies.

Medical Certification.

(Q. 1208-13 and App. C. 50-70.) The provision of medical certificates, to enable the insured person to claim during illness payments which are known as sickness and disablement benefits, is part of the contract with the doctor covered by the general capitation fee. He is required under the rules to certify that a patient is incapable of work by reason of some specific disease or mental or bodily disablement. The cause of incapacity is to be stated as precisely as his knowledge of the patient permits. There are separate forms for first, intermediate, and final certificates, and for those to be given in cases of chronic illness and of convalescence, and in other special circumstances. Where practicable, the certificate must be given to the patient at the time of examination, and in other cases the certificate must be sent or given to the patient within 24 hours of the time of examination.

Asked whether the arrangements are working satisfactorily Dr. Smith Whitaker said:—

(Q. 1210.) I think, so far as the Department are concerned, they are working as satisfactorily as you could expect any system to work, having regard to the difficulties of the conditions we have to deal with. So far as the doctors or the societies are concerned, I do not think one could say that they are entirely satisfied with the arrangements. The doctors complain that they have found the arrangements irksome, but I think that both with them and with the societies the difficulty arises from the fact that they have not appreciated the necessity for the restrictions; and in some cases society officials who have not appreciated the importance of carrying the system out thoroughly have, through their insured members, pressed the doctors to give certificates in a way that is irregular.

In the proceedings before the Court of Inquiry into medical remuneration last year, there were complaints by societies in general terms that doctors gave certificates too readily, but otherwise there are not many such complaints, because a society that is dissatisfied with a doctor's certificate refers the case to one of the regional officers to get the question of incapacity tested. There is a certain amount of vagueness observed on occasions in the description of the cause of incapacity, but there are not many complaints received from societies on the ground of inadequate description. Complaints from an insured person that he has been refused a certificate are rare. Certificates from a non-panel doctor will be accepted by societies.

(Q. 1260.) One of the commonest causes of trouble with the doctors arises from the fact that an insured person does not ask for a certificate at the proper time and is faced with a difficulty later on when he realises that he has a claim to make against his society for sickness benefit. A doctor's certificate must relate to an examination made at the time of giving the certificate and not to some previous occasion. The difficulty may be met by the doctor

giving a "voluntary" certificate and forms for this purpose are provided.

(Q. 261-3.) The function of the certificate from the point of view of the society is to enable them to be satisfied that the insured person is incapable of work. The decision is the society's and not the doctor's.

Meaning of "Incapable of Work."

(Q. 295.) The Controller, in his earlier evidence, was asked how the phrase "incapable of work" is, in fact, interpreted under the guidance of the Ministry by the Approved Societies. He said that the rule now generally recognised is that in the earlier stages of an illness the insured person should be totally incapable of following his own occupation. If after a certain time it appears to the society that a member will never be able to resume his own occupation, the society must then apply its mind to the question whether the person is incapable of any other kind of work, and whether that work is available for that person.

(Q. 296.) Could it be put like this . . . that in practice . . . "incapable of work" means physically incapable of doing work which in the circumstances at the moment could be regarded as reasonably open to the insured person?—That is a fair definition.

(Q. 297.) It comes very close to that?—Yes; but I think in the earlier stages it is limited and the society only looks at his normal occupation.

Twenty Million Weeks of Incapacity.

(Q. 273.) Elsewhere with regard to the working of the certification system, Sir Walter Kinnear said:—

I think with regard to the question of medical certification, speaking quite generally, and bearing in mind the fact that in England cash benefit is paid each year in respect of about 20,000,000 weeks, the medical certification system is working well.

The Regional Medical Staff.

(App. C. 170-175.) The Regional Medical Staff was appointed, primarily, to meet the need—which since the inception of medical benefit in January, 1913, had been repeatedly expressed by Approved Societies and by doctors—for a body of medical referees, who would advise in cases of doubtful incapacity for work, and also in cases of admitted incapacity in which it appeared that a second medical opinion might contribute to the restoration of the patient's working capacity. A whole-time staff of 33 Regional Medical Officers was established in 1920 for England and Wales, with 5 Divisional Medical Officers having supervisory functions. There are also certain part-time referees employed as occasion requires.

The duties of the Regional Medical Staff, in their capacity of referees, fall under the two heads of (a) advising in cases of doubt as to incapacity for work, and (b) advising on questions of diagnosis and treatment. References under either head may be made either by Approved Societies in respect of their members or by insurance practitioners in respect of insured persons under their care. The whole-time officers have other duties—e.g., the inspection of medical records and duties in connexion with excessive prescribing.

Number of Cases Referred.

The number of cases of doubtful incapacity referred in 1923 in England and Wales was 146,000. Of this number, in 60,000 the insured person failed to attend for examination, and, of the remainder, in 64,000 the patients were found to be incapable of work and in 22,000 not incapable.

(Q. 1298.) The numbers give the impression that quite a large proportion of the patients on being told to go to the referee at once declare off rather than face an ordeal in which they have reason to think they will be found out. It was suggested to the witnesses that there might be some explanation in the way of delay by the societies in referring the cases. As to this, the witnesses said:—

In a batch of cases in which inquiry was made . . . we found that out of 2600 cases in a 12-month period about

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8); The Provision of Medical Benefit (Feb. 7th, pp. 301-3; Feb. 14th, pp. 355-6; Feb. 21st, pp. 403-5); Financial Provisions of the Act (Feb. 28th, pp. 454-7). References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

17 per cent. had declared off before they received our notice that they had been referred, and about 7 or 8 per cent. were unfit to attend. The total number of those who did not attend for examination was 46 per cent. That leaves 21 per cent. [i.e., 46-25] not accounted for by those two facts. Of the 21 per cent. a considerable proportion . . . were people who were on the point of declaring off or were nearly well and went back to work rather than have the trouble of facing an examination, or because they felt quite sure what the result of the examination must be.

There are also undoubtedly some cases where persons will forfeit their benefit rather than face an examination by referees.

(Q. 1472.) As to the cost of the system, the Approved Societies make a direct contribution of a fee of 1s. 8d. for each examination and also bear the cost of the part-time referees and other expenses which are specially attributable to the reference side of the work. That includes the cost of travelling expenses of insured persons, the cost of fees of nurses, and the rent of premises used exclusively for examination.

Referee Work and Certification in Scotland.

(App. II. C. 43.) In Scotland five District Medical Officers—corresponding with Regional Medical Officers in England—were appointed in 1921. Arrangements were also made for medical inspection rooms at two local centres in hospitals, infirmaries, &c., situated in other parts of the country. The extreme north of Scotland and other remote areas were excluded from the scheme owing to their insured population being so widely scattered. Examination of cases is sometimes undertaken in these excluded areas by a member of the Board's headquarters staff in conjunction with other business, special journeys and expenses being thus avoided.

(Q. 2017-8.) As to certification generally in Scotland, Sir James Leishman said that the system is working fairly satisfactorily, but there is an underlying current of dissatisfaction with regard to certificates. The number of formal complaints from societies is small. When there is complaining in general terms about lax certification the Board direct the attention of societies to the fact that they have a three-fifths representation on Insurance Committees and that those are the proper authorities before whom complaints should be laid for formal investigation.

(To be continued.)

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 405.)

THE sittings of the Commission were resumed on Feb. 24th, the chair being occupied by Mr. N. Micklem, K.C.

Before hearing evidence, a man who said he was a member of the Bar and sent up his name, asked for permission to give evidence, at a time convenient to the Commission, as to what took place behind the scenes. Mr. Micklem promised that after discussing the matter with Mr. Macmillan, the Chairman of the Commission, he would communicate with the applicant.

Evidence from the National Asylum Workers' Union.

Mr. Gibson, secretary of the National Asylum Workers' Union, with a membership of 11,000, tendered information on the Union's objects and the conditions of employment of those engaged in institutions for mental care. The Union's suggestions included the following: (1) The administration of the Lunacy laws, the care of the insane, and the coördination of research into the diseases which should be directed from a centre. Failing the complete nationalisation of mental hospitals, the Government

grant should be increased to 50 per cent. of the maintenance cost, conditional on the approval of the Board of Control. (2) Mental health authorities should have powers to inquire into the incidence of insanity in their own areas and to provide outdoor clinics in all mental hospitals under their control; also to organise such clinics in association with general hospitals. A lunacy rate should be leviable, and there should be power to commit patients for a time for treatment without their being certified. (3) There should be an end of mental hospitals run as profit-making institutions, as there were risks of grave abuse. (4) In many curable cases the certification as paupers had a detrimental effect on the patients. (5) The attention of medical men in institutions should be confined to medical affairs, though they might remain the acting disciplinary authority, and they should have the power of suspension only. (6) There should be a legal minimum proportion of medical officers and nurses, and 50 per cent. of the total nurses should be qualified mental nurses. He thought local authorities should be empowered to deal with incipient insanity, and to collaborate with the Board of Control in its work. Private mental hospitals, he said, were frequently changing their staffs, and but little effort was made to engage and retain qualified mental nurses, and the great safeguard of personal liberty, visitation by a publicly-elected committee, was not operative in them. In some mental hospitals the training given to the nurses was very casual. This was largely because the medical staff was too small to even attend adequately to the patients. In one institution with 600 patients there was only one assistant to the medical superintendent.

Answering Mr. Micklem, Mr. Gibson said that, speaking generally, the conditions were more satisfactory on the male nurse side than on the female side, and that few matrons were really satisfactory. On that side, too, there was a tendency to retain on duty officers who were too old for the work. In many mental institutions the patients were, in the witness's view, put to bed far too early—i.e., 7 to 7.30. If they were allowed to stay up longer he thought there would be less need for hypnotics.

Mr. Micklem questioned this witness and Miss Maud Wiese, a chief charge nurse at Claybury, on the subject of the employment of female nurses on the male side in mental institutions, and Mr. Gibson replied that he had yet to meet the medical superintendent who would allow his own wife or daughter to nurse in a male mental ward. Generally speaking, asylum workers regarded the practice as objectionable, especially as 10 per cent. of all male cases of insanity were of syphilitic origin, and an even larger proportion were sexually abnormal. Female nursing in male mental wards was commoner in Scotland than in this country, and there, he contended, the effect upon the patients was disastrous. Miss Wiese declared that this work on the male side was very degrading and repulsive to women, and that they should not be required to do it. Generally, Mr. Gibson said, the relations between nurses and patients were, so far as he had seen, friendly.

Mr. Micklem asked Mr. Walter Blood, the President of the N.A.W.U., whether it was true, as had been alleged, that if patients incurred the displeasure of attendants, when the time came for the question of their discharge to be considered, the attendants concerned kept them back so that they were not seen by the visiting committees or doctors. Mr. Blood replied that he did not think that was possible; it certainly had never happened in his experience. Nurses were not consulted at all about the discharges. As soon as a patient showed reasonable improvement he was placed in the convalescent ward. Mr. Blood, in answer to a further question, said he had never known croton oil used. Occasionally a sleeping draught was given, but only in the night. Mr. Gibson said nowadays every dose of medicine, even an aperient, was prescribed and sent from the dispensary

labelled with the patient's name. If not used, it was returned to the store. It was possible for two patients to keep a whole ward awake, and sedatives were then required.

Questions of Cruel Treatment.

Mr. Gibson said that the mental nurse had to endure abuse and assault daily, and occasionally the tendency to retaliate overcame the will-power. This was not by any means common. The qualities required of the mental nurse were of the highest; tact, forbearance in the face of vile abuse, kindness even after savage assault, firmness and endurance. The hours at present operative were, he said, too long, and the wages too low. He compared the training and conditions of the general nurse with those of the mental nurse. He strongly urged the adoption of the three-shift system in mental hospitals, to ensure the fullest justice to the patients. Among other recommendations made by the body he represented were an improved dietary, and especially the provision of supper of a light character about 8 P.M.; better clothing and more outdoor recreation, such as bowls and tennis; also that the nurses' homes should be apart from the institution. There should be, in addition, it was suggested, an extension of the principle of single care.

In reply to questions Mr. Gibson said he thought the Board of Control should be strengthened; at present it had no directing authority over other bodies. If an institution did not satisfy the Board, the latter should have the power to withhold the grant. He did not think there should be an opportunity of profit-making out of a disease affecting the mind. He believed that frequently patients' friends paid at these institutions for services which were not rendered—e.g., though payment was made for a special nurse, it was easy to put the patient concerned into a general ward. The friends who made complaints usually did not desire to be personally implicated in an inquiry which might follow. A frequent cause of changes in staff was that the nurses got to know too much about the administration. He said he knew that some able medical men were very indifferent administrators.

In answer to Sir Humphry Rolleston, Mr. Gibson said the desire was that the outdoor clinics should be associated with both general and mental hospitals.

The Commission resumed its sittings on Wednesday, Feb. 25th, when Mr. H. P. Macmillan, the Chairman of the Commission, presided.

A Question of Procedure.

The Chairman intimated that in consequence of the experience already gone through in the case of the first of the six witnesses which the National Society for Lunacy Reform named it had become necessary to re-consider the Commission's procedure. Three days were devoted to Mr. Holman's case, on only one of which the witness attended, and complaint was made of the inconvenience he had experienced owing to his case having been gone into publicly, and the indisposition following his appearance and cross-examination compelled him to give up the fight. Moreover, it had been found that the procedure adopted created an atmosphere of controversy and recrimination which the Commission could not allow to recur, and they would not take the responsibility of permitting ex-patients to be exposed to the ordeal of public examination. Therefore in the remaining cases the Commissioners would themselves examine the witnesses in private, though the Chairman and counsel for the National Society tendering the witnesses would not be excluded from the inquiry.

Evidence of Dr. Montagu Lomax.

The Commission then proceeded to take evidence from Dr. Montagu Lomax, author of "The Experiences of an Asylum Doctor," a book which was published in 1922. He said his experiences had led him to the view that the present system stood in need of reform,

and if the kind of reform he hoped for were brought about the office of superintendent would be separated from that of the executive chief, as the latter interfered with his special medical activities. He agreed that some of his objections to the combination of medical and executive functions would disappear if large county mental hospitals were replaced by the modern villa asylum, with a limited number of inmates. He said he strongly recommended that cases sent into hospital by a medical man for treatment in the incipient stage should remain under his care while they were in the hospital, so that he might study them there and follow them up. He thought the inspections of visiting committees should be less formal than was at present the case, and, wherever that was possible, the visitors should be unaccompanied by members of the staff. His experience was that visiting committees hurried through the wards with an attendant, and said a few words to any who chose to speak to them, but were glad to get away again. It was little short of a farce. The matter was different when the visitor showed himself kindly disposed towards the patients, who were quick to discern it. Pressed by the Chairman for suggestions for bringing about improvement, Dr. Lomax said that special attention could be given to border-line cases, and visiting committees should set aside certain times for hearing complaints of patients; a kind of small appeal court. A classification of cases could be made beforehand, so that there need be no loss of time. He believed very few complaints of ill-treatment were made to the doctor. He would abolish the formal dinner to the visiting committee, a function which occupied a good deal of time, and militated against the serious purpose of the visit.

Lord Russell said that on his own visiting committee that was not so; the meal was not prolonged, and the time was occupied largely in a talk about the cases.

Dr. Lomax thought that all mental hospitals ought to be under the control of the Ministry of Health. Asked by Lord Russell whether he thought more frequent visits, such as fortnightly, would be a help, the witness said he did not think it would work, as the members of visiting committees had their own work to do. He strongly favoured the coöption of women on these committees. One woman visitor, at Hull, paid a visit to the asylum at 7 o'clock in the morning. She was kept waiting in a side room 25 to 30 minutes while preparations were hurriedly made for an inspection. He agreed with Mr. Gibson (who was examined shortly before) as to the need of a 48-hour week, but he had not the same view as to the value or adequacy of the nursing certificates to stamp nurses as efficient. Many of the subjects required in the schedule it was not necessary for nurses to know. He would have general hospital nurses with a special training in mental nursing. The possession of a certificate often made a nurse feel she was a very important person, and this detracted from her efficiency. The possession of some of the milk of human kindness was worth all the badges in the world.

The Chairman pointed out that it had long been urged that nurses should reach a certain standard of efficiency, and accordingly an Act was passed, and then it was said this was not a test for ascertaining whether a person had the real nursing vocation.

Dr. Lomax replied that experience showed it was not the nurses holding certificates who made the best nurses from the patients' point of view. And the examination itself deterred many people from entering the nursing profession. He would have entrants sign a contract to stay for at least a year or two. Much more supervision should be exercised so as to ascertain the characters of would-be nurses. Sometimes advertisements were seen for nurses who were not required to have had any previous experience. He would secure the right type of people by making the service more attractive, giving better pay, and shortening the working hours. Until recently the nurses had been

almost as much neglected as the patients. It was one of the hardest services in the world, and those engaged in it deserved the thanks of the community. They ought not, he thought, to be taught so much psychiatry, certainly not until the doctors themselves were more agreed about it. In some cases lectures to nurses were given by an attendant.

Alleged Ill-treatment of Patients.

The Chairman asked the witness whether, when he was an official in an asylum, he saw any cases of ill-treatment, under his own eyes, by an attendant, and the witness replied that he did not see any cases, and that a doctor never did—indeed, he was the last person in the world who would. He suspected ill-treatment in a few instances. He feared that in most instances of ill-treatment the patient was too cowed to make a complaint to the doctor or the superintendent, fearing what would happen to him at the hands of the attendant afterwards. Asked by the Chairman whether instances of ill-treatment while he was a doctor in an asylum would not be of more value than hearsay evidence of alleged cases years after leaving asylum service, the witness said he saw the Chairman's point, but while engaged in the work he did not suspect what he now believed went on in that way.

The Chairman said it was a serious allegation that attendants were cruel to patients.

Dr. Lomax said he was only giving experiences which had been related to him. He could not possibly prove these things; but he had patients to produce who would, if allowed, give first-hand evidence of the ill-treatment to which they had been subjected and which they had seen.

The Chairman said the Commission was satisfied that cases of cruelty, possibly of gross cruelty, did occur; they must inevitably happen, just as accidents might happen on the best administered railways in the world. The great point was as to how ill-treatment could be stopped, or at least diminished.

Answering Lord Russell as to what value the witness attached to statements of patients on this question, he said he attached the greatest value to them; it took him two years to convince himself that this cruelty went on. He thought that in every case the patients were telling the truth. They had, since leaving the mental institutions, lived sane lives.

In reply to Mr. Snell, he said his allegations as to cruelty must certainly be taken to include the female side. He asked that the Commission would hear not only ex-patients, but also ex-attendants. The remedy would not be found in the Commission's report, but by an aroused public opinion which would be expressed on a note of indignation, even horror, that these things could happen.

Ex-attendants to be Heard.

After the luncheon interval the Chairman said that his colleagues were impressed by the suggestion that one or two ex-patients and one or two ex-attendants should be examined, and invited Dr. Lomax to furnish names and addresses of such and they would be officially requested to attend.

Continuing his evidence, Dr. Lomax said there were hundreds, even thousands, of cases of cruelty in mental institutions, and the Chairman remarked that the making public of such a statement would have a most unhappy effect in many homes, probably deterring people from sending relatives to these institutions when they needed treatment. Dr. Lomax said he did not wish to convey that impression. Continuing, the witness said that in cases of ill-treatment it should not be optional on the asylums committees to ask for a prosecution; when there was evidence of such conduct there should be an obligation to place the case in the hands of the police.

Lord Russell asked whether the witness would have a prosecution undertaken when it was practically certain there would be no conviction, and the witness replied that the onus should be on the judicial

authority. He would be satisfied if, in a case deemed suitable for prosecution, all the papers were laid before the Public Prosecutor, leaving further decision and procedure in his hands.

Considerable argument followed on the question of alleged wrongful detention, the Chairman setting out the conditions of the harmless but certifiable person, and the witness said he favoured the boarding-out system as operative in Belgium, the patients being detained in such places as uncertified, so avoiding the stigma. He would have these patients remunerated for what they did.—Lord Russell said that in that case the trade-unions would have a word to say.—Dr. Lomax went on to say that when he was a doctor in Prestwich Asylum there were two or three inmates whom he considered sane, and he recommended their discharge, but no notice was taken of his recommendation. As soon as his book was published, however, two of them were discharged. He did not write about them to the Board of Control when he was in the asylum, and after he had left it was not his job.

The Chairman quoted from Dr. Lomax's book a passage in which the author spoke of a patient who had been in the asylum for a year and whom he considered sane, but as he deceived him, the doctor, he kept him back from discharge another two months as a punishment. The witness said it was a case of malingering, the man having obtained admission into the asylum to escape the clutches of the law. He was closely questioned as to this. Dr. Lomax further said he considered that under the present law people could be far too easily put away in asylums and kept there, and the medical superintendent's powers were too autocratic. He proposed that there should be at first a single medical certificate, called a preliminary detention certificate, to be required in the case of any person with suspected mental disorder before he could be admitted into a mental institution, and it should give the medical officer in charge of the institution power of detention for three days. This certificate should be signed by the usual medical attendant, and it could be supplemented, if desired, by a second certificate. He thought it was absurd to suggest that two doctors should not consult before issuing a certificate; the objection was not made in the case of bodily illness. A second certificate should be required after 28 days, if the patient had not meantime been discharged, and this should be signed, where possible, by a diplomat in psychological medicine, and counter-signed by a magistrate. He did not think it was desirable that a patient should know all that was on the medical certificate, but he could be told the general reasons why he was being detained. He, the witness, believed that people would sooner have their liberty safeguarded than feel they were tending towards cure, although he realised cure would bring liberty. His great point, he said, was that every mental patient should have 28 days in a sort of half-way house for observation and preliminary treatment. Such places should be separate institutions, but he realised the practical constructional difficulties. The fresh air of mental institutions would be preferable to the surroundings of large general hospitals in cities. Voluntary boarders entering these observation buildings should sign a document conferring the right of detention for 28 days, so as to safeguard from a sudden attack of insanity of an impulsive character.

The Chairman said he had been very favourably impressed with the graduated system adopted in the case of recovering patients at Ewell, where there were a series of villas.

Dr. Lomax cordially agreed with the suggestion that there should be district commissioners of the Board of Control, vested with powers of supervision, and subject to the central board. It would add greatly to visiting efficiency. Speaking of private asylums, he said he had been to see patients in private asylums, and all those he had seen were quite well conducted. He believed that the private asylums of

England were conducted as well as were those in any part of the world. His objection to private asylums was the presence of the financial motive. He agreed, however, that a good recovery-rate, which was universally sought after, did not support an allegation of a financial motive for keeping patients after they had recovered.

The Chairman questioned the witness on his statement that owing to the absence of safeguards doctors were refusing to certify to insanity at all, and Dr. Lomax replied that the system he suggested, of first having the patient under observation, would only require that the doctor should certify a case as detainable for a time. The Chairman rejoined that this would still fail to prevent the doctor being shot at, and the witness agreed.

The next meetings will be held on March 10th and 11th, at 5, Old Palace Yard, Westminster, at 10 A.M. each day.

MEDICINE AND THE LAW.

MEYRICK v. DYSON.

BEFORE the Lord Chief Justice and a special jury, Dr. F. R. H. Meyrick sued Mr. F. C. Dyson, a provision merchant, of Stoke Newington, for £125 10s. 5d., as a balance due for medical attendance, board, and lodging for the defendant's son, Herbert Dyson, and for money paid on his behalf. Dr. Meyrick treated Herbert Dyson, who had been certified, from July 25th to Oct. 2nd, 1923, at his house in Ennismore-gardens, which was mainly used as a home for the treatment of nervous disorders, but in which he was permitted by the Lunacy Commissioners to receive one certified patient. The defence and counterclaim of the defendant alleged that the patient was to occupy a certain bedroom and be treated at 12 guineas a week under a verbal agreement, and that there had been breaches of the agreement and negligent and unskilful treatment in the following respects: that the patient had been moved to a small bedroom in an attic and given a bed too short for him; that the plaintiff had improperly administered hyoscine and morphia; that he had placed him unlawfully under mechanical restraint, and had kept him locked in his room, and alone; that he had not provided proper medical attention or food, and that the staff of nurses and servants was inadequate; that he was not taken out of doors and given sufficient exercise; that the plaintiff was frequently under the influence of drink and was unfit to be entrusted with the care of a person of unsound mind; that he kept the patient under drugs in order to save himself trouble and expense. The counterclaim was for damages for deterioration of the health of the patient in consequence of the above.

After a trial lasting nine days certain questions were left to the jury, whose replies are given below. The Lord Chief Justice, it will be seen, reserved judgment.

The Case for Dr. Meyrick.

In opening the case for Dr. Meyrick, Mr. J. A. Hawke, K.C., gave an outline of the story of the patient's detention in the plaintiff's house and of the evidence to rebut the charges made by the defendant. He pointed out that the more serious of these related to the alleged drunkenness of the plaintiff, and to the improper use of drugs in treating the case.

Dr. Meyrick, giving evidence, described his qualifications and the nature of his house, and stated that his cases came from all the leading specialists of Wimpole-street and Harley-street, and that Mr. Dyson had said that he had been recommended to come by Sir Maurice Abbot Anderson. He had originally agreed to take the patient for 12 guineas a week, but it had been verbally arranged at an interview on August 9th that this should be raised to 15 guineas. He, Dr. Meyrick, had been told the case was a mild one. He had no padded cell, had only used

wristlets and anklets on one patient, and had never used them on Herbert Dyson. The patient, who was 22 years of age, 6 ft. 2 or 3 in. tall, and weighed more than 12 st., had put on 5 lb. under his care; he was not fit to be sent out walking owing to his behaviour. To the witness's knowledge he was never locked in his room. A list showed that morphia and hyoscine had been injected on eight occasions, and on 17 hyoscine alone in mild doses. On Oct. 2nd, when the patient was removed, his parents were present and allowed themselves to be seen, which made the patient very violent, and at the father's request the witness administered an injection. There were four women nurses. Asked whether he was ever under the influence of drink, the witness answered "Never."

Cross-examined by Mr. J. D. Cassels, K.C., Dr. Meyrick said that chairs were used temporarily to lengthen the bed in the upper room to which the patient was removed when the other room proved unsuitable. Entries of "hypo-injection" in the report book for "hyoscine" were an omission by the nurse not intended as concealment. He did not know that hyoscine was not used at asylums such as Hanwell. Mr. Cassels stated that the report book showed 48 injections in 28 days and asked "would you accept it from me that such an amount and frequency of hyoscine and morphia treatment is unusual in a case of dementia præcox?" The witness answered, "No, I would not."

In answer to further cross-examination, Dr. Meyrick denied that wristlets or anklets had ever been used on Herbert Dyson, or that he had helped to put them on. He believed that a similar allegation was being made against him in another action by a woman patient. He said that if such restraint was used it had to be entered in a book in the case of uncertified patients, and denied that all such use was forbidden. The witness was cross-examined at length on the diet supplied, and of the recurrence of "cow's head" or bullock's head in the dietary. He stated that a nurse named Podd had been dismissed as not capable of looking after Herbert Dyson. He denied having ever returned home intoxicated, and put his arms round nurse Podd or kissed her. He never swore at the servants and never was drunk in his life. He admitted a conviction followed by a fine and suspension of his driving licence for being drunk when in charge of a motor-car, but denied that he was in fact drunk on that occasion. For his present action he had gone to the Medical Defence Union and retained Messrs. Hempsons to act for him, but had since changed his solicitors.

Dr. J. S. Risien Russell said that he had known the plaintiff for 20 years and had placed patients in his care, one being with him now. He had never seen anything wrong with the conduct of the plaintiff's home or heard patients complain. He believed Dr. Meyrick to be competent and had never seen him under the influence of drink. He had seen the patient Dyson before August, 1923, on three occasions. He then suffered from neurasthenia with symptoms of further trouble to come. Dr. Russell said that the use of sedatives depended on the state of the patient. In his opinion it was better to use them than to let the patient be terrorised by hallucinations day after day. It was far better in that class of case to employ sedatives than physical restraint. In his opinion, assuming his state to have been as alleged, the treatment of Herbert Dyson had been quite proper. Cross-examined, Dr. Risien Russell said that he considered hyoscine one of the most important remedies, most valuable at proper times in proper cases and proportions. He admitted a considerable difference of opinion among medical men as to its use, and regretted efforts, of which he had read, to do away with the use of it in asylums. It was preposterous to rob medical men of one of their most merciful and useful medicines, there being no alternative to hyoscine and morphia but physical restraint in violent mental cases. The alternative

in a certifiable case was to certify and place the patient in an asylum where there would be padded cells. He could not imagine anything worse than holding down by physical force or using a strait-jacket. As to wristlets and anklets, they might quickly subdue a patient who if held might feel he could get away. He agreed that they were not now employed for certified patients. He admitted that this view implied that they might be used in the case of a person of unstable or unsound mind indulging in violence, though not permitted for a person who had been certified. He would not have advised that Herbert Dyson should be kept alone in a room with the door locked. The short bed he would think right only as a temporary measure.

Dr. J. F. Woods gave evidence, in which he expressed approval of the use of morphia and hyoscine for violent patients.

Dr. J. C. Vaughan had attended at Dr. Meyrick's house in his absence and had given an injection of hyoscine and morphia to Herbert Dyson, who had attacked a nurse and had locked himself in his room.

Dr. E. W. Hedley said that he knew the plaintiff well, and had never seen him the worse for drink.

Dr. E. P. Scott had visited Herbert Dyson by the instruction of the Board of Control four times: on the last occasion the patient was not so well as on the first; he might have told the patient's mother that he had deteriorated. Personally he was against the use of hyoscine and other drugs, but had occasionally administered morphia and heroin. Cross-examined, Dr. Scott said he did not see the special book relating to seclusion, and did not see wristlets or anklets. He had entered in his report that there had been no seclusion, and must have been told so by nurses. He had to rely upon hearsay. In reply to the Lord Chief Justice, the witness agreed that superintendence such as his ought not to be exercised in a perfunctory manner. Dyson was the first patient he had visited thus. He had seen reports as to hyoscine and morphia being used, and had agreed with Dr. Meyrick that as the patient was going on satisfactorily the treatment should continue. He had not himself seen young Dyson in a condition in which drugs were needed, but relied on Dr. Meyrick who was in charge of the case. He had once asked about the dose, being biased against hyoscine, and had been told that the patient had been violent.

Dr. Mary Scharlieb had known Dr. Meyrick for about 15 years, and had visited his house. She thought him competent, and said that there was no ground for suggesting that he was given to drink. She thought the food must be good, as his patients had done well. She had not the slightest doubt that if the case were one of dementia præcox it was necessary to administer hyoscine and morphia. She would have administered them in the circumstances recorded in the manner in which they had been administered. There was nothing recorded to suggest that they had been used to save trouble.

Mrs. M. Miller, a nurse in the home, said that she had administered hyoscine and morphia to the patient under Dr. Meyrick's instructions. The food was good. It was not true that Dr. Meyrick was ever the worse for drink. Dyson had never been locked in his room or strapped down in his bed. Cross-examined, she said that wristlets and anklets had been used in "two other cases besides Mr. Dyson," and immediately corrected this statement, and said that they were never used for Mr. Dyson. She said she had made a mistake in saying "besides Mr. Dyson." She had never heard of their being used for him.

Several lay witnesses were called who had been treated or had had relatives treated, and who were thoroughly satisfied with the food, and had never seen Dr. Meyrick under the influence of drink. Captain Beddington had known Dr. Meyrick six years at his house and at his club; he had never seen him under the influence of drink. He had eaten good meals at Dr. Meyrick's house.

The Case for the Defendant.

Mr. Cassels opened the case for the defendant, laying stress upon the administration of drugs as being entirely improper, and upon the allegations of strapping down and of locking the patient in his room.

Mr. Dyson gave evidence as to the previous history of his son's case and his arrangements with Dr. Meyrick. He denied that on his first visit after his son had been received in the home Dr. Meyrick had complained of his son's habits, or said he must remove him to another room, or that he must raise his fees from the sum of 12 guineas per week originally agreed to 15 guineas. He denied that he had been told that the case was not suitable for Dr. Meyrick's home; he had been told that an extra nurse was required at 3 guineas a week and had refused to pay it. He stated that Mrs. Dyson had complained on Sept. 22nd of her son being drugged, and that Dr. Meyrick had been very angry. He described the scene at the removal of his son on Oct. 2nd, when he had asked Dr. Meyrick to give him a sedative as he was very violent, and had been made to sign a paper first requesting him to do so, as well as an undertaking to pay 5 guineas, because the plaintiff said his house was being disturbed. This claim was withdrawn in court by the plaintiff's counsel, his Lordship pointing out that in any case it had been made. Mr. Dyson stated that since leaving Dr. Meyrick his son had been better physically but not mentally. He criticised the accounts as to food to the effect that the prices showed that it could not be good. In cross-examination he said he had not removed his son sooner because he had not thought of doing so.

Mrs. Dyson, the patient's mother, in giving evidence, said that she had visited her son several times. She had not been satisfied with his accommodation. She had found him on Sept. 11th in bed in a dazed condition, and on another occasion outside his room refusing to enter it. She ascribed this to his wish to see life outside. He had shown her the marks of hypodermic injection on his arm. He was much better and had gained a stone since leaving Dr. Meyrick. Under cross-examination Mrs. Dyson said that her son was always more or less dazed and stupid when she saw him. She had not at first suspected the cause of this.

A brother of Herbert Dyson described the scene at his brother's removal from Dr. Meyrick's house.

Miss E. C. Podd, giving evidence, said that before going to Dr. Meyrick's in July, 1923, she had had four years' experience as a mental nurse. She sometimes took Dyson out for a walk; he gave no trouble but wanted to stay out longer, and once suggested having tea out. She was on night duty (9 P.M. to 9 A.M.) for three weeks from August 11th. She remembered Dyson having hyoscine and morphia injections, 42 in 28 days out of 69 days that he was in the home. She had used anklets and wristlets on four patients, including Dyson, always by Dr. Meyrick's instructions. She had found Dyson restless and walking about his room at night on August 9th; had got "the straps" by Dr. Meyrick's orders, and he had helped her to put them on the patient, after ordering him into bed. His hands and feet were put in the straps which were tied under the bed with webbing. They were used two or three times while she was on night duty, and she was told by Dr. Meyrick to use them if she had any difficulty. This was because the patient used to get up and walk about and switch on the electric light or look out of the window. The door of Dyson's room, as a rule, was locked, and the key kept on a ledge outside the door. Dr. Meyrick had told the nurses to lock it. There was no bell to the room; the patient had to knock on the door to attract attention, and he was visited by a nurse when there was an opportunity. On August 15th, at 5 A.M., he got up, broke a window and leaned out. She persuaded him to come in without trouble, after which Dr. Meyrick gave him an injection. She had told the plaintiff of Dyson's

wish to have tea out, and also to play the piano, but nothing was done. [At this stage the jury inspected the plaintiff's house.] Continuing her evidence, Nurse Podd said that on one occasion the patient attacked her in his room, took the key of it from her by force, and locked her in the room. She was certain that she had seen Dr. Meyrick intoxicated twice. On one occasion after attending a wedding he had smelt of drink, and had put his arms round her on the landing and kissed her. She had resisted and had afterwards told another nurse, Sister Charteris, what he had done. She spoke of another occasion when he had put his arm round her and called her endearing names over the banisters. Cross-examined, she said she knew of the duty to record the use of mechanical restraint, and that it was not right to lock a certified patient in his room. She had reminded Dr. Meyrick of the duty to write in the restraint book, and he had said that he did not keep one. He had told her not to enter it in her report book.

Miss R. Thompson, formerly a nurse at the plaintiff's house, said that she had gone into Dyson's room on one occasion in the morning and found him with his arms strapped. His door was always locked. In her opinion the food was very poor. She had seen Dr. Meyrick several times the worse for drink while Dyson was under his care. Cross-examined, she denied that she had been dismissed, saying that she had left because she thought the house was not a place where a decent girl ought to work, and on account of the company brought in at night by Dr. Meyrick.

Miss N. Charteris said she was a nurse at Dr. Meyrick's house while Dyson was there. His door was kept locked by Dr. Meyrick's instructions. She had been present when hyoscine and morphia were injected. They produced stupor for three or four hours, during which time nursing attention was not required. The plaintiff had complained, she said, of the expense of Dr. Vaughan being called in, and had said to her of Dyson, "Drug him well; you cannot kill a lunatic." She had seen Dr. Meyrick several times under the influence of drink. She had left without notice because the plaintiff had sworn at her, also because he ordered her to do things that were wrong.

Miss K. Pearce, parlourmaid and later cook at Dr. Meyrick's house from July 6th to Oct. 6th, 1923, described the food supplied for which a standing order had been given. She stated that Dr. Meyrick was often under the influence of drink, and that she had left because he had when in that condition used bad language to her in the kitchen.

Dr. F. Dillon described the condition of Herbert Dyson when at Northumberland House Mental Hospital as dull and mentally confused at first, but improving later, when he could play draughts and dominoes, and play on the piano. He had been given sedatives there, and hyoscine on one occasion.

Dr. Dillon described hyoscine as a powerful drug of uncertain action only to be used in emergency. He saw nothing in the reports of its use by Dr. Meyrick in the nature of evidence of excitement or of conditions that would render its frequent administration advisable. Hyoscine had been commonly used at one time, but was now discontinued in mental hospitals, as the opinion of medical men was against it. Asked by the Lord Chief Justice to define what he meant by the opinion of medical men, the witness explained that he meant the opinion of the majority. Some remained of the opposite opinion, but medical men in mental hospitals were opposed to the use of the drug, while those treating patients outside were in favour of its use. It was a question of experience. Cross-examined as to the evidence given by Dr. Risien Russell, the witness said that he gathered that Dr. Russell had said that the alternative to the use of hyoscine was a padded room and to let the patient exhaust himself. That was nonsense, as there were other alternatives to hyoscine. He admitted that at Northumberland House Dyson had been violent,

doing damage, and also assaulting a medical officer. He had also had delusions, and had sometimes needed six attendants to restrain him. The doses recorded at Dr. Meyrick's were not excessive.

Dr. R. H. Cole confirmed generally evidence given by Dr. Dillon. He had not seen the patient, but had read Dr. Meyrick's report book. He never used hyoscine except in a case of emergency. It paralysed and produced hallucinations. It interfered with nutrition, and he had never employed it in a case of dementia præcox. The case of Herbert Dyson seemed to the witness to have been a bad case unsuited for treatment in a private house. It would be very bad for a patient with dementia præcox to be kept in one small room. The diet at Dr. Meyrick's did not appear to be generous. Under cross-examination Dr. Cole said that in a case of dementia præcox it might be dangerous to take a patient out, and that Dyson would have required a man on each side of him, and exercise in a garden. His case was not suitable for London. Asked as to whether many medical men did not think it proper to use hyoscine in cases of excitement, he replied that there were a few who thought so. He considered that Dr. Meyrick should have advised the father to have his son removed, and should have gone to the Board of Control if he refused. In the alternative he should have changed his drugs. Dangerous drugs should not be given day after day for three weeks.

The Judge's Summing-up.

The Lord Chief Justice, in summing up, suggested that there was a question whether it was desirable that private individuals should be allowed to undertake the detention of human beings for profit. The jury, however, were dealing with the difficult case before them and not sitting to inquire into the Lunacy laws. The burden of proof as to the allegations of breach of duty was on the defendant, who was entitled to expect a reasonable performance of his contract in every part of it, food, lodging, medical care, and attention. The allegations of the defendant affected many points, and the jury might think that where everything was complained of they could not pay much attention to a complaint about anything. The question of food had provoked humour, but food was no laughing matter for people who had to live in establishments of the kind described. The food of a first-class hotel was not, however, to be expected in a nursing home, and might not be suitable. His Lordship criticised the system adopted of working out averages of diet from the food accounts produced. It was impossible to exaggerate the importance of the matters at issue, particularly with regard to mechanical restraint and confinement. As to this they had to ascertain what was actually done in the case before them. With regard to the use of drugs, it was not for the jury to decide between rival schools of treatment. The allegation on the part of the defendant was that the drugs administered to the patient in question on the scale, with the frequency, and in the circumstances shown, were not genuinely dictated by the medical needs of the patient's case, but were suggested by the interest and convenience of those administering them. With regard to mechanical restraint, Lord Hewart pointed out that its employment was unlawful under the Lunacy Act, 1890, except in specified circumstances and with a record kept of its use. No entry as to the use of mechanical restraint appeared in Dr. Meyrick's register. If, therefore, the anklets and wristlets produced had been used for Herbert Dyson their use was unlawful. The instruments that might be used were set out in detail. It was suggested that if used they had done no harm. The plaintiff had stoutly denied that they had been used on Herbert Dyson, but had spoken of the effect that they produced when employed as mesmeric. The patients upon whom wristlets and anklets were used might resist other things, but were mesmerised by them. That, his Lordship said, was very signi-

ficant. Discussion took place upon a question raised by the jury as to whether they could find that the straps had been used, but not by Dr. Meyrick's orders. His Lordship said that no suggestion as to this had been put to the nurses when they gave evidence, but that if the jury came to the conclusion that they had been so used they might say so. With regard to the locking of the patient in his room, he directed them that this was seclusion and should have been recorded, but that this had not been done.

Questions Answered by the Jury.

Lord Hewart concluded by leaving to the jury a series of questions, to which, after three and a half hours' deliberation, they returned answers as follows:—

1. Did the defendant agree that the weekly payment to the plaintiff should be raised to 15 guineas?—No.

2. Was the plaintiff guilty of negligence or breach of duty in the matter of—

(a) the bedroom or the bed?—No.

(b) drugs?—No.

(c) medical attention?—No.

(d) food?—No.

(e) staff of nurses and servants?—No.

(f) drink?—No.

(g) confinement to bedroom and seclusion?—Yes; in that the door was at times locked, and the times not entered in the necessary book.

3. Were the anklets and wristlets put upon Dyson—

(a) under the plaintiff's instructions?—No.

(b) not under the plaintiff's instructions?—No.

His Lordship then told the jury that by their answer to Q. 1 the plaintiff's claim was reduced to £98 4s. 6d., and that they must now say by what amount that sum must be reduced owing to their finding as to the seclusion of Herbert Dyson in his room (Q. 2 (g)). The effect upon him of that seclusion, his Lordship said, was highly problematical. While the jury were absent considering this question, argument took place upon the findings set out above, as to whether the illegal seclusion and the failure to record it (Q. 2 (g)) did, or did not, go to the root of the contract, so as to disentitle the plaintiff from recovering anything. The jury having found that owing to the seclusion of the patient and the failure to enter it, the plaintiff's claim should be reduced by 20s., it was alternatively submitted on behalf of the plaintiff that he should have judgment for £98 4s. 6d. and costs of the issues on which he had succeeded, and on behalf of the defendant that if the plaintiff were held to be entitled to recover anything, the defendant should still be entitled to judgment for the 20s. under Q. 2 (g) with costs, and to the costs of the issue relating to the claim for additional weekly payments (Q. 1).

His Lordship intimated that the questions raised were of great importance and reserved judgment.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 21st, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 149; scarlet fever, 1696; diphtheria, 1025; enteric fever, 48; pneumonia, 1473; puerperal fever, 34; cerebro-spinal fever, 13; acute poliomyelitis, 6; acute polioencephalitis, 1; encephalitis lethargica, 58; continued fever, 1; dysentery, 13; ophthalmia neonatorum, 124. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of one from the number for the preceding week. Thirty cases were notified from Derbyshire, 31 from Northumberland, 13 from Notts, 49 from Yorks, North Riding (Middlesbrough, C.B., 47) and 15 from Yorks, West Riding.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 76 from measles, 11 from scarlet fever, 130 from whooping-cough, 35 from diphtheria, and 352 from influenza, as compared with 354, 291, 202, and 195 in the four preceding weeks. In London itself the deaths from influenza numbered 88, from whooping-cough 45, and from diphtheria 8.

Correspondence.

"Audi alteram partem."

THE ORAL ADMINISTRATION OF GLUCOSE.

To the Editor of THE LANCET.

SIR,—The observations of Dr. T. Izod Bennett and Dr. E. C. Dodds on the Oral Administration of Large Quantities of Glucose, and its Therapeutic Uses (THE LANCET, Feb. 28th) lend new support to the established practice of sugar feeding in conditions in which other foods are poorly assimilated. Sir William Osler, in the "Principles and Practice of Medicine" (eighth edition), advocated liberal carbohydrate and sugar feeding in typhoid fever some years ago. I agree, however, that the amounts employed are usually much too small. In a paper entitled the Value of Sugar in the Treatment of Typhoid Fever,¹ I drew attention to the importance of giving large quantities of sugar in febrile illnesses and laid particular stress on (1) its ease of assimilability, (2) the readiness with which patients take it, and (3) the counteraction of acidosis which it achieves. My observations were made on a large number of typhoid cases among Belgian refugees. I employed ordinary cane-sugar in quantities varying from 6 to 10 oz. a day in addition to other carbohydrate in the form of biscuits, chocolate, and bread given as bread-and-milk, and I was able to compare clinical results in my own cases and in other cases treated with the old-fashioned milk régime. I concluded that the liability to grave acidosis, to serious wasting and bedsores, and to muscular weakness and tachycardia during convalescence was appreciably diminished by a liberal ration of sugar, and that from 500 to 1000 calories per diem could readily be supplied in this form. Since then I have always urged a liberal use of sugar (as cane-sugar, glucose, or lactose) in prolonged fevers and pneumonia. It may also be helpful in some cases of heart failure. I have also shown² that a solution of cane-sugar produces an inconsiderable rise in gastric acidity when given as a test-meal and for this reason suggested its use in ulcer dietaries. I have not, however, employed it in cases of under-nutrition such as Drs. Bennett and Dodds describe; in such cases, and particularly in those with a psychoneurotic basis, it is presumably preferable to insist, as soon as possible, on a mixed dietary, but sugar in some form should be valuable initially in helping to overcome the general weakness and the associated anorexia. The cane-sugar was consumed with avidity by my typhoid patients, whom I frequently saw scooping the remaining grains from the bottom of their cups. The calorie-value of cane-sugar is higher than that of commercial glucose (10 oz. giving 1000 calories) so that smaller quantities can be used, and with sugar at 7d. to 8d. per pound the cost is about the same or slightly less.

I am, Sir, yours faithfully,

Wimpole-street, W., Feb. 28th, 1925.

J. A. RYLE.

RHEUMATISM AND GOITRE.

To the Editor of THE LANCET.

SIR,—Perusal of your interesting annotation *re* "Cancer and Goitre" in THE LANCET of Feb. 14th reminds me that still more cogent evidence exists in favour of the possibility that a common factor may be involved in the incidence of goitre and rheumatism; and that a state of *hypothyroidism* favours the development of rheumatism.

The recent report of the Ministry of Health on the "Incidence of Rheumatic Diseases" reveals that alike in acute rheumatism (rheumatic fever), sub-acute rheumatism, cardiac rheumatism—muscular types as well as rheumatoid arthritis—the incidence is higher in *females* than males, and the same

¹ Guy's Hospital Gazette, Nov. 6th, 1915.

² Guy's Hospital Reports, 1921, lxxi., 158.

is true of osteo-arthritis in the later decades. As to rheumatic fever, it states: "Not only are our insured females from 16 to 24 attacked much more frequently (as 5 to 3) than insured males of similar age, but that in the next age-group, 25 to 34, females are attacked three times as often." The incidence of rheumatism between 10 and 15 years is higher also in girls than boys. That of rheumatoid arthritis, and to a lesser extent of rheumatic fever, is heaviest in the child-bearing decades, and of osteo-arthritis at and after the menopause.

In respect of *goitre*, too, we find the same preponderant incidence in females from childhood right up to the menopause with its maximum in the child-bearing decades. In short, the periods of increased incidence of rheumatism and *goitre* synchronise markedly with puberty, the child-bearing decades, and the menopause—viz., with those physiological processes menstruation, pregnancy, lactation, which determine oft-recurring or enduring hyperæmia of the thyroid. The increased incidence of *osteo-arthritis* in females at the menopause is doubtless dependent on the senile atrophy of the thyroid incidental to this epoch. Clinically speaking, the association between "rheumatism" and thyroid deficiency is intimate. The "rheumatic" child often shows minor signs of hypothyroidism. Again, rheumatic fever is often followed by a state of hypothyroidism, and I have noted the following peculiarities suggestive of a link with *goitre*. First, that in regions where *goitre* is endemic, the incidence not only of rheumatic fever and cardiac rheumatism, but of rheumatoid arthritis appears to be abnormally high. Secondly, that if rheumatic fever develops in the child of a *goitrous* mother it shows a strong impetus to chronicity, being rebellious to salicylates. Also, if it occurs in the child of a mother not necessarily *goitrous*, but resident in a region where *goitre* is endemic, it may show the same peculiarities. Thirdly, that this obduracy to salicylates relents if *thyroid* be superadded, the thyroid seeming to activate the otherwise impotent salicylates. As to rheumatoid arthritis and osteo-arthritis their association with hypothyroidism and often with *goitre* is well established, as also their favourable response to thyroid therapy.

As to geographical incidence, the findings of the report are somewhat suggestive. Thus, the death-rate from rheumatic fever and cardiac rheumatism is much higher in the North-West and South-West than in the East and South-East Counties. It is highest in Lancashire and lowest in Norfolk, but the former again falls below certain Welsh counties, notably Glamorgan. Finally, what is most arresting is that the death-rate in females from rheumatic fever and cardiac rheumatism in Bristol is immensely high even compared with Lancashire. The Cotswolds, the Mendips, and the valleys of the Pennines are all noted haunts of *goitre*. Now, Bristol lies partly in Gloucestershire and partly in Somersetshire, both counties in which *goitre* is endemic. Again, the river Avon on which it stands rises in the Cotswolds, coursing thence through Wilts and Somerset, and *goitre* is certainly endemic in some of the villages on or near its banks. This excessive incidence of rheumatic fever and cardiac rheumatism in a city lying in a *goitrous* district, and this among the female population, is very arresting. Viewed in light of the fact that rheumatic fever in children of the *goitrous* or those residing in endemic areas is rebellious to salicylates, but responds if thyroid be superadded, seems to suggest some ætiologic connexion between the heavy incidence of acute and cardiac rheumatism in Bristol, and the endemicity of *goitre* in the environs. The high death-rate of itself seems to predicate lack of response to salicylates, and presumably this obduracy must be due to some inherent defect in the female victims. May it not be that the females of the city are handicapped by an excessive liability to thyroid inadequacy or hypothyroidism? Hypothyroidic women tend to bear hypothyroidic children, and my experience

leads me to believe that hypothyroidism connotes a special liability to rheumatic affections. Turning to Glamorgan, whose death-rate exceeds that of Lancashire, we find *goitre* endemic on the Barry Estuary; and again, Lancashire traversed by the Pennine range is also the seat of scattered foci of endemic *goitre*. On the other hand, the lowest incidence of rheumatic diseases is in Norfolk, Cornwall, and Anglesey, and as far as my information goes they seem exempt from endemic *goitre*. As to rheumatoid arthritis and osteo-arthritis their predominant incidence appears to be in regions traversed by the Cotswolds, Mendip, and Pennine ranges.

Further inquiry is obviously necessary, but I submit that the evidence adduced is such as indicates that here is a line of investigation that might throw a flood of light on the much needed prophylaxis of rheumatic fever and cardiac rheumatism.

I am, Sir, yours faithfully,

LLEWELLYN J. LLEWELLYN.

Upper Brook-street, W., Feb. 26th, 1925.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—I had hoped that I had made it clear in my article in THE LANCET on Feb. 7th that I was working on the concentration of the hydrogen ions only, but Dr. Whitfield's criticism of it in your issue of Feb. 14th and also numerous letters that I have received have shown me that some readers of it have misunderstood me.

I have not been working on the amount of acid in the urine, I discovered long ago that this was not increased. I used the phrase "acidic value" so as not so frequently to reiterate the words "hydrogen-ion concentration" and "pH value," but it means the same thing. The tests, which now number some thousands, were carried out for me by two first-class biochemists, working independently, using the Clark and Lub colorimetric method, the results being checked electrically, showing that they were chemically and mathematically accurate.

If Dr. Whitfield will get his biochemical friends to work out the hydrogen-ion concentration of the urine in his cases of acne and seborrhoea he will find that 100 per cent. will give an abnormally high concentration. It is not a question of my opinion but a definite scientific fact which is very easily proved. Litmus is useless as an indicator for this kind of work, its range is too narrow, and has been given up by biochemists for nearly 20 years.

I have travelled much farther along the road since I wrote my article and realise more than ever the importance of testing specimens taken the last thing at night and the first thing in the morning. This is true both at the preliminary investigation of the patient's urine and while he is under the treatment with alkalis. At the times that a patient is usually seen the alkaline tide is at its height. One must be perfectly certain that alkalis have not been taken in any form before the first tests are made, or one's calculations will be upset; the amount taken may not be enough to clear up the lesions, but enough to bring the pH value of his urine towards the normal figure. When the patient is taking the alkali treatment it is sometimes found that either the night or the morning specimen is still abnormal, in which case an extra dose of the medicine must be given between 4 and 6 o'clock if it is the evening specimen that is abnormal, or the last thing at night if the morning specimen still has a high concentration. There will be little or no improvement in the patient's condition until his urine is normal for the whole of the 24 hours.

The only explanation I can offer to account for the negative results obtained by Dr. Whitfield and others whose patients did not improve on alkalis is that a sufficient amount was not given and that the urine was tested at the height of the alkaline tide, a fallacious value being thus obtained. If the readers

of my article will carry out my technique as advocated and will give alkalis in sufficient quantities to all their patients whose urine has a high acidic value they will be astonished with the results. Like Dr. Barber, I have found that when one starts a patient on alkalis the hydrogen-ion concentration of the urine tends to become higher; for instance, in a case of acne the pH value before treatment was 5.1 and three days later, after having taken large doses of alkalis, it was 4.7. As regards the alkaline tolerance, this is only comparative; it is very much higher than normal, but cannot compare to the enormous tolerance found in true cases of acidosis. In these cases it may take weeks with the patient on ounces of bicarbonate of soda a day before the urine reaches the alkaline side of neutrality, or it may never be reached. As regards cheilopompholyx, all those cases that I have seen since I started my investigations have had a urine with a high pH value. Owing to the intense irritation, however, the lesions are almost invariably scratched, infected with micro-organisms, and the skin sensitised. Thus, unless the patient is seen before this takes place, Dr. Barber is perfectly right in stating that alkalis alone will not cure the condition.

There is one fact that I have never seen mentioned and that is that seborrhœic cases have retraction of their gums, often to a very marked degree. This retraction, unlike that in pyorrhœa, is primarily along the roots of the teeth and not in between. As regards a clinical relapse due to over-treatment with alkalis, I stated that this was a rather rare result. I have only seen one well-marked case, this served as a warning of a possible danger and prevented me over-treating, although several subsequent cases were verging on a relapse; this was prevented by cutting down the treatment.

In my article, under the heading of acne, I stated that local treatment must be energetically carried out. In other words, that I do not consider alkalis alone are sufficient to cure the patient; therefore, Dr. Semon, even if he agrees with me entirely, is perfectly justified in using X rays as an adjunct.

I am, Sir, yours faithfully,

F. CARMINOW DOBLE.

Harley-street, W., Feb. 28th, 1925.

To the Editor of THE LANCET.

SIR.—The correspondence on the acidic value of the urine in skin disorders and other conditions raises points of far-reaching interest and medical importance, and I would like to make one or two comments on it from the standpoint of the general physician.

Twenty-five years ago I had the privilege of being the clinical assistant to the Skin Wards in the Royal Infirmary, under the care of the late Dr. Allan Jamieson, one of the pioneers of dermatology in this country. I formed then the impression, from the general study of the stools and urine, that the general run of skin cases were dependent upon a chronic constitutional disturbance, and required investigation and treatment from a rather wider standpoint than prevailed. I have a vivid recollection of furtive efforts I made to get some stools kept for a general examination, and after seeing them, or one might say coming within range of them, one could not help having some sympathy with the views obviously held by the members of the nursing staff as to the undesirability of trying to combine the work of the general physician with that of a special department. I later made some observations on a few selected cases coming under my own care, and published the results. These appeared to me fully to confirm the impression as to the general origin of these skin affections, this view being, indeed, held by a small number of dermatologists. Since that time there has been much work carried out, more especially by French physicians, emphasising the profound importance, and great value to the patient, of attention

being directed to the subject along these lines, and one therefore welcomes the recent valuable work of Dr. Barber, Dr. Semon, and Dr. Doble on this subject. I believe it will mark an era of advance in our knowledge of the ætiology and treatment of skin disorders of far-reaching importance.

I have read with interest Dr. Whitfield's letter of criticism and appreciate the useful note of caution which it sounds, but in my view—assuming the complete correctness of the facts which he has personally observed—it may be possible to interpret his results in a way which does not seriously invalidate the general conclusions of his brother specialists. I may say I do not completely accept the interpretation of the results of the observations made by Dr. Barber and his colleagues, but it is more important at the moment to emphasise the value of their line of inquiry and the encouraging nature of the therapeutic results they have recorded. I would like rather to touch upon one or two points of a more general kind which have been brought out in their writings.

Dr. Barber has drawn attention to the information which may be obtained from testing the reaction of the saliva in cases of skin disorder. This is an observation which I am satisfied can be usefully extended to many other disorders. His reference to constipation and dyspepsia of the fermentative type as factors of importance in the causation of a seborrhœic state may, I believe, be very usefully extended to other common skin disorders as well as to other departments of general medicine and surgery. I assume that in using the word fermentative he includes dyspepsia arising from putrefactive changes in the bowel. A further point of great value was suggested in Dr. Doble's paper, where he indicated the results of his examination of the urine in cases of so-called nervous disorders. In your issue of Feb. 28th there is a note of unique interest in the letter by the late Sir Clifford Allbutt on Alkalis in Certain Diseases of the Skin in which an interesting clinical fact is recorded, the observation being recorded without explanation, but simply as an empirical result. In this connexion I would like to suggest to our neurological friends that if a consecutive series of, say, 50 to 100 neurological cases were examined from the wider standpoint of medicine heralded in the recent dermatological writings referred to, and the urine, stools, and saliva examined by a slight amplification of the comparatively simple methods described in the published communications in question, data of enormous value would be obtained in regard to nervous disorders, which would have results of far-reaching importance *re* our knowledge of the ætiology of the diseases and add enormously to our skill in their treatment.

I am, Sir, yours faithfully,

CHALMERS WATSON, M.D.

Edinburgh, Feb. 28th, 1925.

To the Editor of THE LANCET.

SIR.—Dr. Barber's letter in your issue of Feb. 21st opens up a line of attack along which the clinical observer may achieve victory over a common and yet too often undefeated malady. But before one can feel convinced that a specific, or even a certain, remedy has been found, the laboratory worker must enter the field and make innumerable painstaking tests as to the degree of acidity of the urine, and also hydrogen-ion concentration measurements. Next must be decided the precise amount of alkali suitable for each case. For, according to the conclusions of the article on hydrogen-ion concentration of the urine, which appeared in your issue of the preceding week, certain skin diseases are cured when the correct degree of alkalinity is reached, but made worse when this exceeds a certain point.

Three questions leap to the mind at once in this connexion: (1) Is not acidity present with many types of toxæmia, and does not such toxæmia exist

often enough with skin diseases to arouse the suspicion that they are causally associated? (2) Surely the acidity of the saliva, at any rate, exists quite commonly in individuals who have not suffered, at any time of life, from any form of seborrhoea, nor, indeed, from any kind of skin disease? (3) Why do many cases of acne and other forms of seborrhoea become cured without receiving any alkaline treatment? To quote a typical case taken at random from my notes:—

Miss R., aged 20, had severe hairfall due to seborrhoea of the scalp; her back was covered with papular acne and had been so for years. The hands were blue and cold, the pulse was always over 100. These latter signs, together with a slight enlargement of the thyroid, gave the clue to the toxæmia existing in her case. A diet of vitamin-containing foods was ordered, farinaceous foods and sweets reduced to a minimum. Parathyroid 1/10 grain and a tablespoonful of paraffin daily were the only internal remedies. Acne bacillus vaccine was given at weekly intervals for the scalp condition. Within a month the pulse had dropped to normal; within two months the acne spots had disappeared, no fresh ones had taken their place, the hair had become steadily less greasy and ceased to fall. Best of all was the progressive improvement in the girl's appearance—the clear complexion, rosy cheeks, the normal pale hands, the absence of thyroid enlargement; from being a tired, uninterested girl, she was transformed into a lively, energetic young woman. No alkalies were given during the course of treatment.

Many similar cases have been seen whose symptoms point to the *Bacillus coli* as the guilty organism. As one of the best methods of dealing with that organism is the administration of large doses of alkalies, it would be of interest to discover whether the colon bacillus were often present in those seborrhoeics who are cured on taking alkalies. In the notes of my pre-war cases these words frequently occur: "Coated tongue, heavy morning sleep," and the best results were obtained by treatment directed to the colon. To-day I recognise that profound sleepiness in the early morning, in otherwise healthy young people, indicates in by far the majority a loaded pelvic colon; in almost all such cases the cæcum is palpable.

I am, Sir, yours faithfully,
AGNES SAVILL.
Devonshire-place, W., Feb. 28th, 1925.

DIAGNOSIS OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—The correspondence in THE LANCET on this subject brings up once again two—amongst other—important points: (1) the presence of diarrhoea or diarrhoea and vomiting, (2) the presence or absence of "normal temperature" and "normal pulse."

Diarrhoea or diarrhoea and vomiting may be the only symptoms complained of at the commencement of an attack, which eventually turns out to be one of appendicitis, so that careful examination should always be made to exclude the latter at the first visit. As an example of this the following case is typical:—

CASE 1.—On July 8th, 1912, I was called to see R. H., aged 9, who was supposed to be suffering from "summer diarrhoea" with slight vomiting. No pain of abdomen was complained of, but careful examination revealed deep tenderness over the appendix; the latter was removed two hours later and was found to be acutely inflamed.

CASE 2.—In this case, B. L., aged 19, had some slight "stomach-ache" in the afternoon and evening of Nov. 12th, 1913. This was followed by acute pain referred to the umbilicus from 5 A.M. to 7 A.M. on Nov. 13th. I saw the patient at 8.15 A.M., when the latter apologised to me for having me called to see him, protesting that he felt perfectly well. All pain had stopped; there was only very slight tenderness over the appendix. The temperature was 98.4° F. in the axilla; pulse 70. It was well known to me that the patient's ordinary temperature was 97.8° and that his pulse in the ordinary way was never more than 50. The sudden cessation of pain, the slight rise of temperature to the ordinary normal 98.4° and the rise in pulse from 50 to 70 made me confident that the diagnosis was one of perforated

and most probably gangrenous appendix. At operation, two hours later, the appendix was found to be as large as an ordinary sausage, gangrenous throughout, and perforated in two places. The abdomen was closed without drainage. There was rather severe hiccough for 36 hours after the operation, showing that septic absorption had already taken place and that in all probability we had only just got the patient in time. Recovery, except for the hiccough, was uneventful.

In the above case the surgeon was not convinced of the urgency of the case until the rise in frequency of the pulse to 70 was emphasised. Without previous knowledge of the individual patient one may be sadly misled by a "normal temperature" and a "normal pulse."

I am, Sir, yours faithfully,
Streatham, S.W., Feb. 26th, 1925. HARRY E. SMITH.

To the Editor of THE LANCET.

SIR,—Mr. Rendle Short's presentation of the subject of appendicitis in your issues of Jan. 31st and Feb. 7th is as perfect as any I have ever read. I speak as one who for seven years has had to see the patient with appendicitis through his trouble from beginning to convalescence—operation included. But it seems to me that far too much importance is attached to pneumonia—Mr. Rendle Short did not specify lobar pneumonia, as Dr. Knyvett Gordon would seem to imply—in the differential diagnosis. I have attended personally during the last seven years well over 300 cases of pneumonia of all sorts—I am speaking from figures and not memory—and only in one case did the possibility of appendicitis suggest itself to me, and then not very convincingly. This was in a case of central influenzal pneumonia in a boy of 6. These cases present pain referred to the abdomen—a high temperature, and incessant vomiting for the first 24 hours is quite common and not, as Mr. Short states, rather uncommon. Added to this, the chest is silent for days and it may be only a day or two before the crisis that the signs of consolidation are evident, if indeed they become so at all. Moreover, the respiratory distress is not nearly as marked as in lobar pneumonia. This is the type of case where I can conceive difficulties—the ordinary lobar pneumonia with signs at the very onset should not be confused with anything else. It is interesting to note in this connexion that in a similar case of central pneumonia I once had a suspicion of enteric. It would be interesting if some practitioners of wide experience of pneumonia would write their experiences in this direction.

An interesting early sign of appendicitis which I have observed in three cases—first attacks—all within eight hours of onset, is the presence over the appendix region on palpation and auscultation of fine friction sounds, and I operated in two of the cases in the absence of rigidity and fever on the strength of this sign; I was rewarded in all three cases with a definitely reddened appendix and some few ounces of clear serous fluid in the peritoneum. These friction sounds—I think "peritoneal crepitus" would be an apt term for them—I have also noticed in a case of acute cholecystitis (over the gall-bladder) confirmed by operation, and I think they are due to the rubbing of the inflamed peritoneal surfaces on each other. I take it they would disappear when fluid is effused in larger quantity and in a case of any standing adhesions would prevent much peritoneal gliding taking place. They must be, therefore, a very early sign, but I do not pretend to know in what percentage of cases they take place. This may be an old sign—I discovered it quite accidentally and shall be glad to hear if anyone has described it in connexion with appendicitis.

Looking over my last 45 personal cases of acute appendicitis I find that the diagnosis was easy in the majority of cases at least well within 12 hours. One case that it took me 21 hours to diagnose as an abdominal emergency was a pelvic appendix—the

only one of the series. Here there was no fever, tenderness, or rigidity for that period, and when tenderness did appear it was to the left of the middle line. Dysuria and rectal tenderness aroused me (Cope's test was negative), and an incision through the right rectus later disclosed a pelvic abscess. One case, ill for two days before I saw her, passed about 5 oz. of blood per rectum. At operation this was found to be due to a deeply engorged cæcum which had a rotten gangrenous appendix behind it. A drainage-tube was inserted and recovery took place without faecal fistula, which one rather expected.

I am, Sir, yours faithfully,

Aberdare, Feb. 23rd, 1925.

AMBROSE W. OWEN.

"POST-ANÆSTHETIC" VOMITING.

To the Editor of THE LANCET.

SIR,—In view of Dr. Mortimer's article on post-anæsthetic vomiting in THE LANCET of Feb. 14th, perhaps a note of my experience may be of use to others.

Vomiting occurs most frequently with ether anæsthesia, and frequently, though not vomiting, the patient complains that he can taste the anæsthetic for days, or at least until he has had an aperient. My point is that it is the ether vapour which is swallowed rather than that which is inhaled which causes vomiting and retching. This is due to irritation of the gastric mucosa, and consequent secretion of thick mucus in which the ether dissolves, and which remains there until vomited or passed on to the small intestine. While house surgeon at various hospitals I frequently noticed that many patients, especially mouth-breathers, complained of a dry mouth while being anæsthetised, sometimes due perhaps to the injection of atropine they might have had. These patients were apt to moisten their lips and swallow frequently during administration of the anæsthetic, and I perceived gradually that as a rule those who swallowed most were those who vomited later on. I then made a practice of telling the patient to breathe through the nose if possible, and even though the mouth felt dry, on no account to swallow, as he would swallow anæsthetic vapour and increase the risk of being sick. I am pleased to be able to say that in those cases in which the patient refrained from allowing air (and vapour) the vomiting was negligible. In some cases in which the patient had had previous operations with much post-anæsthetic vomiting he remembered that the mouth had been dry and that in consequence he had swallowed frequently; when this was pointed out to him and he refrained from swallowing, there was no vomiting at any subsequent operation.

I am, Sir, yours faithfully,

Ramsgate, Feb. 28th, 1925.

A. J. K. DREW.

TUBERCULIN DISPENSARIES.

To the Editor of THE LANCET.

SIR,—I am one of those doctors who watched and learnt Dr. Camac Wilkinson's method of treating tuberculosis with bi-weekly injections of tuberculin from 1910 onwards, and have myself followed out his teaching carefully with very many good results. From London dispensary work and in sanatoria at Rudgwick, Fritton, and Ockley, we got uniformly good results. And now in 1925 I have been told evidence exists of 50 per cent. of the tuberculin-treated patients being alive *ten years after cessation of treatment*, while as control, only 5 per cent. of the patients who were not so treated were alive, *all* being cases with T.B.

As recently as Feb. 27th a small but important meeting was held in Central London to suggest opening again tuberculin dispensaries. At least eight doctors were present, possibly more. At that meeting it was emphasised that any medical staff should be paid, as it is highly technical work requiring skill

and care, and wants training and practice. But it is work which only requires a couple of hours twice a week regularly and it is of the greatest possible interest. Those of us who have worked at it for years do believe in it—it is only those who do not wait for results who reject it as no good.

In my opinion there are a large number of untouched cases of early tuberculosis who might be entirely saved from disaster by six months' treatment at very little expense and without the patient losing a day's work. Late cases are often improved materially, and in any case the expectoration is minimised and so they become converted into comparatively harmless cases. My object in writing is to say I will give all help I can to any doctor who is anxious to see and learn at 37, Jeffreys-road, Clapham-road, S.W. 4, every Tuesday and Friday from 9-10 A.M.

I am, Sir, yours faithfully,

ANNIE MCCALL,

Feb. 28th, 1925.

Director, Clapham Maternity.

UNILATERAL PHRENIC NERVE PARALYSIS.

To the Editor of THE LANCET.

SIR,—The letter of Mr. Morrision Davies in your issue of Feb. 28th indicated that he has not found symptoms arising after evulsion of the phrenic nerve such as I described in your issue of the 21st, as accompanying pressure paralysis.

Mr. Morrision Davies is probably dealing with tubercle, and as such, his patients are likely to differ from the majority of mine in the following respects: (a) they are younger, or (b) they have had attacks of pleurisy.

As I stated in my paper, the symptoms are least marked in these two classes of individuals—namely, in the young, where thoracic movement is free, and in those in whom the diaphragm on the affected side is anchored by adhesions. This would seem to explain the differences in our experiences.

I am, Sir, yours faithfully,

CHARLTON BRISCOE.

Harley-street, W., March 3rd, 1925.

TINCTURE OF IODINE (PH. FR.).

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 28th the editor of the *Prescriber* points out the difficulty of the absence of a suitable preparation of tr. iodi without potassium iodide. I would like to state that I have for some considerable period used a preparation of iodine with alcohol and glycerine for the intensive iodine treatment on a large number of patients and have had no untoward symptoms, such as iodism, &c., the amount of iodine tolerated being very surprising and the immense benefit derived in arthritic cases has been very assuring. I may add that the formula is to be found in the Extra Pharmacopœia (Martindale), vol. i., p. 1004, under the head of guttæ iodi (Farrer).

I am, Sir, yours faithfully,

CLAUDE ST. AUBYN-FARRER.

Harley-street, W., March 2nd, 1925.

METHYLATED SPIRIT AND ITS SUBSTITUTES.

To the Editor of THE LANCET.

SIR,—With reference to the annotation with this heading published on p. 398 of the issue of THE LANCET for Feb. 21st, we should be glad if you would give publicity to the fact that the Petrohol brand of isopropyl alcohol is imported solely by ourselves. To any of your readers who are interested, we shall be pleased to forward copies of the publications referred to in your article, and for your own information we enclose copies of same.

We are, Sir, yours faithfully,

ANGLO-AMERICAN OIL COMPANY, LIMITED.

Albert-street, Camden Town, N.W. 1, Feb. 23rd, 1925.

Obituary.

GEORGE SIGERSON, M.D. R.U.I., HON.
F.R.C.P. IREL.

Dr. George Sigerson, professor of biology in University College, Dublin, and Senator of the Irish Free State, died at his residence in Clare-street, Merrion-square, Dublin, on Feb. 17th, at a very advanced age. He had received his degree of doctor in medicine as long ago as 1859, and was probably the senior medical practitioner in Ireland. A native of Co. Tyrone, George Sigerson was educated at Cork, Dublin, and Paris, and throughout all his life kept up a close connexion with the medical school of Paris, which he visited almost every year. He was a member of several Parisian scientific societies and of the Scientific Society of Brussels. In his early days he was a pupil of Charcot, of Claude Bernard, and of Duchenne, and he translated Charcot's "Lectures on Diseases of the Nervous System" into English for the Sydenham Society. He also engaged in research work in biology, and his investigations attracted the attention of Darwin and Tyndall. On his return to Dublin Sigerson was, in 1865, appointed professor of botany in the Cecilia-street School of Medicine. Subsequently he became professor of biology in the school of University College and retained that professorship up to his death. He also engaged in private practice as a physician, chiefly concerning himself with nervous affections. He was for a time examiner in psychological medicine and diseases of the nervous system in the Royal University of Ireland.

It was, however, outside the field of medicine that Sigerson earned most distinction. He was an earnest student of the history and literature of Ireland, and translated many of the ancient Gaelic poems into English verse. It is only within the past few months that he published a work on which he had been engaged for years, "The Easter Song of Sedulius." He also wrote an authoritative work on Land Tenures and a book on Political Prisoners. He was a member of Earl Spencer's Commission on Prisons, and was responsible for many improvements in the treatment of prisoners which followed on the report of that Commission.

In 1918 the Royal College of Physicians of Ireland conferred its honorary Fellowship on Dr. Sigerson as a mark of respect for his scholarship. In 1922 he was nominated a member of the first Senate of the Irish Free State, and at the first meeting of the Senate, pending the election of officers, he presided. A man of wide learning in science and literature, with a keen appreciation of the arts, a brilliant conversationalist, Dr. Sigerson was loved for his personality as greatly as he was respected for his scholarship.

REGINALD ARTHUR MORRELL, M.R.C.S.,
L.R.C.P. LOND.

By the death of Reginald Arthur Morrell, honorary radiologist to the Sheffield Royal Hospital, which occurred with tragic suddenness on Feb. 19th, the medical profession of Sheffield and district loses a valued member, and the subject of radiology a promising and enthusiastic worker. Dr. Morrell was at work when he suddenly collapsed and died within an hour from a pontine hæmorrhage; his death came as a great shock to his friends, who were quite unaware of any impairment in his health.

Morrell was born at Pangbourne, Berks, in 1883, and received his early education at Bradfield College. After spending three years at the electrical school of engineering, Kensington, he entered St. Thomas's Hospital Medical School and took the Conjoint Diploma in 1908. He originally intended to practise as an ophthalmic surgeon, and held several hospital appointments in that specialty, on which he contributed papers to *The Lancet* and the *British Medical Journal*, but he became impressed with the possibilities

which radiology offered and determined to take up this branch of medicine. During the war he became attached to the Third South General Hospital as radiologist, with the rank of captain in the R.A.M.C., and later was medical officer in charge of the Physiotherapy Department of Headington Orthopædic Hospital under the Ministry of Pensions. After an assistantship in the X ray department at the Radcliffe Infirmary, Oxford, he was appointed radiologist to the Sheffield Royal Hospital, where he soon proved himself not only a master of technique, but also an able organiser. During his brief tenure of the post the amount of work carried out by his department increased to a remarkable extent. He was a man of great energy, and in addition to a large and growing private clientèle he acted as radiologist to the Chesterfield Royal Hospital, to the City of Sheffield King Edward VII. Memorial Hospital, and as lecturer on radiology in the University of Sheffield. He found time, however, to contribute regularly to the medical press. In 1922 he published in our columns an introductory lecture delivered to the senior medical students of Sheffield University, on Radiology: its Use and Abuse. In it he emphasised the exacting nature of radiology in the service of medicine, pointing out that the radiologist must be a physicist of no mean order as well as an expert biophysicist and a medical man. During recent months he had become deeply interested in violet-ray work, and at the time of his death was engaged in making investigations in this subject.

A colleague writes of him: "He was a man of high ideals, deeply interested in the proper guidance and training of young men. His death leaves a gap amongst both students and staff which will be difficult to fill. Had he lived there is little doubt that he would have taken a high position as a radiologist. At a time when one hears much of the dangers to health which attend workers in this specialty it is assuring to know that Morrell's untimely end could in no way be attributed to that cause."

RICHARD WILLIAMS, M.R.C.S. ENG.,
L.R.C.P. EDIN., L.R.F.P.S. GLASG.,

CONSULTING SURGEON, LIVERPOOL EYE AND EAR INFIRMARY.

Richard Williams, who died at his residence, Pen-Bre, Bangor, recently, in his eighty-first year, obtained his first qualification in Glasgow more than 54 years ago, after which he studied ophthalmology in London and Paris, and held various local hospital appointments in that specialism. In 1873 he became ophthalmic surgeon to the Liverpool Royal Southern Hospital and later surgeon to the Eye and Ear Infirmary, while he also held the appointment of ophthalmic surgeon at the Albert Edward Infirmary, Wigan. He left Liverpool in 1910 after 37 years of steady ophthalmological work, but continued to practise as an ophthalmic surgeon at Bangor until a few months before his death. During the most active part of his career he was a Vice-President of the Ophthalmological Society of the United Kingdom and of the Liverpool Medical Institution, President of the Wigan Medical Society, and a Justice of the Peace for Liverpool.

A friend and colleague writes: "Richard Williams was a man of striking and unusual characteristics, the type of man who has many devoted friends but is sometimes misunderstood by mere acquaintances. He had an original and logical mind, was more of a thinker than a reader, and had a keen eye for essentials. He was a fine operator, high-strung, sensitive, but full of initiative and courage. His ingenuity is shown by the following examples: An eye speculum with eyelash guards; iridectomy scissors for use with the right hand on the left eye; a particularly handy cotton-wool holder; the treatment of conical cornea by the corneal cautery; a method of muscle advancement by a single circular stitch (this operation was usually done in seven or eight minutes under cocaine and was invariably successful); the vertical radial corneal incision in hypopyon ulcer, instead of the

better known Saemisch transverse section; the double iridectomy for incarceration of the iris in a corneal or limbal scar, performed by puncture and counter puncture with a Graefe knife; an excellent but little known operation for ectropion without excision of tissue. But to judge of his resource and inventiveness one had to see Williams at work. Every case was treated entirely on its own necessities and almost without reference to established custom, and this was especially true of plastic operations about the lids and conjunctiva—the greater the deformity the more Williams was pleased and the better seemed the result. Williams was extremely modest and could with great difficulty be induced to publish his methods, so that much of his original work was and is still known to a few colleagues only."

THE BATEMAN APPEAL.

As was explained in THE LANCET last week, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

We have received:—

	£	s.	d.
The Proprietors of THE LANCET..	250	0	0
Lieut.-Colonel Henry Smith, C.I.E., I.M.S.	5	0	0
Dr. J. Bright Banister	5	0	0
Dr. C. G. Martin	1	1	0
Dr. J. Norman Dugdale	0	10	0
Dr. C. O. Hawthorne	3	3	0
Dr. Herbert Spencer	5	0	0
Mr. R. H. Paramore	5	5	0
Dr. E. D. Telford	3	3	0
Mr. G. MacLellan Blair	1	1	0
Dr. Hester M. Henderson	2	2	0
Dr. Jas. Taylor	2	2	0
Mr. H. Cecil Broadhurst	1	1	0
Dr. Edward H. Squire	1	0	0
Dr. W. T. Rowe	2	2	0
Sir Charles Ballance	3	3	0
Anonymous	2	0	0
Dr. Howard Stratford	2	2	0
Dr. R. D. Attwood	1	1	0
Mr. G. Grey Turner	5	5	0
Dr. Louis Macpherson	1	0	0
Dr. M. C. Moxham	1	1	0
Dr. R. W. Rix	0	10	6
Dr. C. Attenborough	1	1	0
Dr. J. Walker	0	10	0
Dr. Wm. W. Floyer	2	2	0
Drs. Mitchell and Campbell	2	2	0
Dr. Bernard E. Potter	1	0	0
Dr. M. O. Raven	1	1	0
Dr. Thomas Laird	2	2	0
"A.M.O."	1	0	0

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

H. E. Hall to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. M. D. Ahern is secd. for serv. under the Colonial Office.

Capt. D. W. M. MacKenzie is secd. for duty with Sudan Defence Force.

The undermentioned to be Lts. (on prob.): T. A. J. M. Dodd, R. A. Bennett, Lt. W. D. Speedy (Res. of Off., R.A.), J. N. Atkinson, W. A. D. Drummond, J. D. Corner, W. H. Carter, J. G. E. Vachell, and J. T. Smyth.

The undermentioned Lts. are confirmed in their rank: K. Fletcher-Barrett, C. W. Greenway, A. E. Campbell, and G. C. Phipps.

ARMY RESERVE OF OFFICERS.

Lt.-Col. A. R. O'Flaherty, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ROYAL AIR FORCE.

G. J. Griffiths is granted a short service commission as a Flying Officer, for three years on the active list.

Medical News.

UNIVERSITY OF LONDON.—A meeting of the Senate was held on Feb. 25th, Prof. E. A. Gardner, the Vice-Chancellor, being in the chair. Dr. J. H. Dible was appointed to the University chair of Pathology tenable at the London School of Medicine for Women. Dr. Dible had a distinguished career at the University of Glasgow, where he obtained the M.B., Ch.B. degrees with honours in 1912, gaining distinctions in zoology, materia medica and therapeutics, midwifery, and surgery. In 1913 he was appointed demonstrator in pathology in the University of Sheffield. In August, 1914, he joined the R.A.M.C., and in 1915 was appointed pathologist to No. 1 General Hospital, B.E.F., and after six months took command of No. 7 Mobile Laboratory until the end of the war. In 1919 he was appointed lecturer in pathology in the University of Manchester and assistant pathologist to the Manchester Royal Infirmary, and in 1921 lecturer in bacteriology and senior assistant in the department. He is the author of numerous publications in scientific medical journals.—The title of Emeritus Professor of Hygiene in the University was conferred on Prof. H. R. Kenwood, who held the Chadwick chair of Hygiene at University College from 1904 to 1924.—The title of Emeritus Professor of Medicine at University College was conferred on Sir John Rose Bradford, F.R.S., who occupied at that College the chair of Materia Medica, Pharmacology, and Therapeutics from 1895 to 1903, and the chair of Medicine and Clinical Medicine from 1899 to 1907.—The School of Pharmacy of the Pharmaceutical Society of Great Britain has been admitted as a school of the University in the Faculty of Medicine (in pharmacy only) for a period of five years as from Jan. 1st, 1925.

The following doctorates have been conferred:—D.Sc. in Biochemistry: Mr. Robert Robison; D.Sc. in Chemistry: Mr. G. R. Clemo; D.Sc. in Physics: Mr. Frederick Simeon.—The following were appointed Fellows of King's College: Prof. Edward Barclay-Smith, Prof. Owen Willans Richardson, F.R.S., and Sir John Charlton Briscoe.

University of London, University College.—The annual report of the College committee for the year ending Feb. 28th, 1925, has just been issued, and indicates a year of considerable activity. During the session 1923-24 the total number of students enrolled was 2835. From European countries there were 177 students: Switzerland 35, France 27, Holland and Russia each 22, Denmark and Germany each 9, Norway and Sweden each 6; 43 students came from the United States of America (17 undergraduate, 24 research, and 2 vacation course). From other countries, the largest—36—came from Japan; of these 8 were doing research work. The College has for many years taken an active part in promoting adult education by providing public lectures that are open without fee. Over 7000 persons attended these lectures during the session 1923-24, the approximate aggregate number of attendances being 12,180. The financial statement shows on the maintenance account a total expenditure of £176,994 and income of £168,943, leaving a deficit of £8051. This deficit is mainly accounted for in the very heavy expenses incurred in the maintenance of the new buildings and in the rating of these buildings. It is also partly accounted for in the slight decline in the number of students in the professional faculties in which fluctuation is bound to take place from time to time according to the financial position prevailing in the country. Steps are being taken to prevent a recurrence of the deficit, and hope is expressed that the University Grants Committee may be able to increase their grant in view of the large donations received by the College through the Rockefeller Trust and other bodies for the erection and equipment of the new buildings. During the year the Ramsay Memorial Laboratory of Chemical Engineering was opened by Prince Arthur of Connaught and is now in full working order. There is a satisfactory list of benefactions and donations, showing that the old students and friends of the College are still active in giving it support.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The nineteenth meeting of the Commission was held at the Home Office, Whitehall, on Feb. 26th, with Sir Andrew Duncan, and later Lord Lawrence of Kingsgate in the chair. The Public Dental Service Association of Great Britain, Ltd., represented by Mr. T. Clifford Wing, L.D.S., Colonel H. C. Howkins, L.D.S., Mr. A. H. Condry, and Mr. P. I. Wigoder, L.D.S., gave evidence on the question of making dental treatment a universal benefit under the Health Insurance Act, and the scope, administration, and cost of such a benefit. Mr. Benjamin Broadbent, J.P., of Huddersfield, submitted proposals for revising and extending maternity benefit. Evidence was given on behalf of the

United Women's Insurance Society by the Lady Emmott, J.P., and Mr. Alban Gordon relating to the general work of the society and in particular to their scheme of dental benefit. Thereafter the National Amalgamated Approved Society, represented by Sir T. Neill, J.P., Mr. Farmer, and Mr. Pike, was heard on the constitution, operations, and finances of that society. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting of Feb. 12th are now on sale at H.M. Stationery Office. (2s. 3d.)

"POTATO WEEKS" AT NOTTINGHAM.—The third annual series of "potato, fruit, and vegetable weeks" in aid of Nottingham General Hospital have brought donations in kind to the value of £500, in addition to £190 in cash.

METROPOLITAN HOSPITAL.—The Lord Mayor Metropolitan Hospital Flag Day Appeal will be held on March 17th. It is hoped to raise a part of the £50,000 required to build the nurses' home and to extend the casualty department of the hospital at Kingsland-road, London, E.

SOCIETY FOR THE STUDY OF INEBRIETY.—The annual meeting of this society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Tuesday, April 21st, at 4 P.M., when Dr. Courtenay C. Weeks will open a discussion on Alcohol in Medical and Surgical Practice.

ST. MARYLEBONE HOSPITAL LEAGUE.—Since this league was formed 15 months ago to increase the contributions to hospitals from business houses, £7137 has been collected, as compared with a former average of £1500. The employees' section, which numbers 1900 members, is increasing at the rate of nearly 100 a week.

FRENCH POST-GRADUATE COURSE IN TUBERCULOSIS.—An Easter course of six lectures on Osteo-articular and Glandular Tuberculosis will be given by Dr. E. Sorrel, surgeon to the hospitals of Paris, at the Maritime Hospital at Berck (Pas-de-Calais) from April 6th to 11th. The lectures will be supplemented by demonstrations of methods of examination of patients, treatment, and laboratory technique. Full information may be obtained from Dr. Delahaye, at the Maritime Hospital.

ROYAL INSTITUTION.—On Tuesday, March 10th, at 5.15 P.M., Prof. E. N. da C. Andrade will begin a course of two lectures at the Royal Institution on the Evolution of the Scientific Instrument, and on Thursday, March 12th, Dr. Leonard Hill will deliver the first of two lectures on the Biological Action of Light. The Friday evening discourse on March 13th will be delivered by Prof. Gilbert Murray on the Beginnings of the Science of Language, and on March 20th by Prof. J. W. McBain on Soaps and the Theory of Colloids.

BELGRAVE HOSPITAL FOR SICK CHILDREN.—An offer has been made of £10,000 towards the £30,000 required for the completion of the hospital, the provision of a new X ray department, and accommodation for the nursing staff, on condition that a similar amount is raised in 10 donations of £1000 or 20 of £500 each. At present the nurses live, some in the hospital, and others in two outside houses, one of which is some distance away.

AMERICAN HEART ASSOCIATION.—The first annual meeting of this association was held at the Academy of Medicine, New York, U.S.A., on Feb. 2nd. Dr. Lewis A. Conner, the President, reviewed briefly the progress of the development of the association and commented on the need for such an organisation and the widespread interest which its formation had developed. Dr. Haven Emerson, chairman of the Committee on Membership, described the methods employed to reach all parts of the United States and Canada; regional agents covering one or more States have been appointed, and already 37 States are represented in the membership of the association. It was decided to employ one or more workers with a knowledge of the most recent and approved methods for the prevention of heart disease, and for the organised care of cardiac patients; these workers will be sent to different sections of the country to encourage the establishment of new centres, demonstrate the methods found to be effective, and aid in solving local problems as they arise. At a meeting of the board of directors immediately following the annual meeting, the following officers were elected: Dr. Lewis A. Conner, President; Dr. James B. Herrick, Vice-President; Dr. Robert H. Halsey, Secretary; Dr. Paul D. White, Treasurer; Miss M. L. Woughter, Acting Executive Secretary. The central offices of the society are at 370, Seventh-avenue, New York.

A HOSPITAL FOR WEMBLEY.—A hospital is to be erected at Wembley at a cost of £12,500, nearly half of which has already been raised. A site has also been given.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—A meeting will be held at the Elizabeth Garrett Anderson Hospital on March 10th at 8.15 P.M., when Dr. Dorothy Hare will read a paper on the Value of the Electrocardiograph to the Physician and Surgeon.

SOCIETY FOR CONSTRUCTIVE BIRTH CONTROL AND RACIAL PROGRESS.—A special meeting of this society will be held on March 15th, at 3 o'clock, at the Criterion Theatre, Piccadilly-circus, London, W., to discuss Why Doctors Disagree About Birth Control. The chair will be taken by Sir John Cockburn, M.D., and the meeting will be addressed by Dr. H. Maxwell Telling, Dr. Jane L. Hawthorne, Mrs. Marie Stopes, D.Sc., Ph.D., and others.

HOSPITAL ACCOMMODATION IN NORTH-WEST MIDDLESEX.—The Ministry of Health has sanctioned the raising by the Hendon Board of Guardians of a loan of £134,000 for the erection of a hospital to take the place of the infirmary which was built about 80 years ago.—Pinner and Northwood have decided to join forces for the provision of a permanent cottage hospital in the latter parish. The present hospital is housed in a temporary building.

BRITISH ORTHOPÆDIC ASSOCIATION.—The first award of the Sir Robert Jones Medal and British Orthopædic Association Prize of £50 has been made to Mr. G. Perkins, F.R.C.S., assistant surgeon at the Royal National Orthopædic Hospital, for his essay on the Diagnosis, Treatment, and End-results of Tuberculous Disease of the Hip-joint. The subject of the essay for 1925 is the Classification and Differential Diagnosis of the Different Forms of Arthritis. Particulars may be obtained from the hon. secretary of the Association, 1A, Portland-place, London, W. 1.

ECCLES HOTEL ESTABLISHMENT, BANTRY BAY.—On March 1st-2nd a large medical party visited the Eccles Hotel Establishment, Glengariff. Situated on Bantry Bay in the extreme west of Ireland, it has a long reputation as a climatic station, and recently peat- and sun- and light-baths have been employed in the establishment with success. It is proposed to develop these and other methods of physical treatment on the expressed medical opinion that the climate, together with suitable medical facilities, will be of benefit in convalescence from illness or operation, in many neuros-thenic cases, and in certain forms of rheumatism. Glengariff occupies a very sheltered position at the head of the bay, intersected by headlands, and containing many rocky islands where semi-tropical vegetation flourishes. Fuchsia hedges, eucalyptus, hydrangea, and myrtle attest the mildness of the climate. The party from London were met by Sir William Thompson, President of the Royal College of Physicians of Ireland, and various well-known Irish physicians.

VENEREAL DISEASE: Deputation to the Minister of Health.—On March 3rd the Minister of Health, supported by the chief medical advisor, the secretary of the department, and other technical advisors, received a joint deputation from the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease. In the absence of Lord Trevethin, President of the National Council for Combating Venereal Diseases, the joint deputation was introduced by Sir Auckland Geddes, President of the Society for the Prevention of Venereal Disease, acting on behalf of both societies. Sir Auckland Geddes stated the case on the lines agreed by the joint conference of the two societies, and supported the recommendation contained in Clause 14 of the Trevethin report: "That the law should be altered so as to permit properly qualified chemists to sell ad hoc disinfectants, provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority." Sir Auckland Geddes further urged on behalf of the deputation that this competent authority preferably should be the Ministry of Health, otherwise the Medical Research Council or a commission of experts. In reply, Mr. Neville Chamberlain thanked the deputation for attending and promised to consider carefully the suggestions which had been made. He would communicate the result of his further consideration of these suggestions to the two societies as soon as possible. The members of the joint deputation were as follows:—National Council for Combating Venereal Diseases: Mr. L. Bowden, Mr. D. Bramah, Mrs. Ogilvie Gordon, Prof. Kenwood, Dr. D. Lees, Mrs. Neville-Rolfe, and Mr. E. B. Turner. Society for the Prevention of Venereal Disease: Sir Auckland Geddes, Dr. Jane Lorimer Hawthorne, Dr. R. A. Lyster, Dr. Mearns Fraser, Mr. Basil Peto, M.P., Mr. Frank Souter, and Mr. Wansey Bayly.

Parliamentary Intelligence.

HOUSE OF COMMONS.

MONDAY, FEB. 23RD.

The Production of Certified Milk.

Mr. HURD asked the Minister of Agriculture what was the number of producers of certified milk as compared with a year ago, and whether, in the interests of public health, he would recommend that the licence fee for such producers be made purely formal so as to encourage farmers to produce this milk.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: The number of producers of certified milk at the present time is 74. I cannot give the number for this date last year, but the numbers at Dec. 31st, 1923, and Dec. 31st, 1924, were 55 and 71 respectively. The licence fees have been settled on a basis estimated to cover the special expenses of the Ministry of Health in respect of inspection and bacteriological examinations, and my right hon. friend does not think that he can recommend any reduction.

WEDNESDAY, FEB. 25TH.

Nursing Homes Registration.

Mr. G. B. HURST, in asking leave to introduce under the Ten-Minute Rule a Bill "to provide for the registration and inspection of nursing homes," said it was a measure which could not be regarded as being of a controversial character, and among its backers were members of all parties in the House. At present the term "nursing home" had no meaning whatever. Any person, however unqualified, could call his or her institution, however ill-run or managed, a nursing home, however unskilled or untrained the nurses might be and however extortionate the charges. The prevalence of these bogus institutions dragged down the prestige of great and deserving institutions, and the expense of such institutions was a drain on public resources. The intention was to provide for the registration and inspection of nursing homes, so that no institution could be carried on as a nursing home which was not worthy of the title. Under the Bill no institution would be entitled to be called a nursing home if it was carried on by unqualified or unsuitable persons or if the nursing or domestic staff was ill-accommodated and the ventilation bad, or the lighting or warming inadequate. Those having charge of the management would have to be State-registered nurses after Jan. 1st, 1930. Nothing in the Bill was intended to preclude anyone having no connexion with the nursing profession from being registered, but the matron or person in charge must be a fully qualified person. Persons refused registration could appeal to the Minister of Health and he could appoint a referee to deal with the complaint. The question of proprietorship was unaffected, and so far as the details were concerned the promoters were most anxious to meet everybody interested, so that the measure might be definitely regarded as uncontroversial. Although the Bill had been drafted by the College of Nursing, it was not intended to help any section, but to help all nurses. He hoped that the Ministry of Health would do what it could for the Bill. The motion for leave to introduce the Bill was agreed to and the measure was brought in and read a first time.

Diabetes Treatment in Scotland.

On the motion for the second reading of the Public Health (Scotland) Amendment Bill,

Sir J. GILMOUR (Secretary for Scotland) explained that it was exactly the same measure as that which the House discussed last year, and which, after passing through the House of Commons, was given a second reading in the House of Lords. It empowered the public health authorities in Scotland to provide insulin to persons suffering from diabetes who required assistance in obtaining the treatment. It was a matter of some urgency, because since the early part of 1924 certain local authorities had been, in fact, providing insulin, and this Bill was for the purpose of regularising the position. The Bill was confined to diabetes.

Mr. J. STEWART (who was Under Secretary of Health for Scotland in the Labour Government) said that he thought it was very creditable to the Government that they were anxious to give effect to the promise made last year. Everyone who knew what the treatment of diabetes by insulin meant would realise that this was a scheme which ought to be hastened. But there were many diseases of a somewhat similar nature about the cure of which nothing was known at present. The Labour Party thought that provision should be made for the treatment of other diseases if occasion arose without the need for passing a separate Bill. Under the Bill of last year it was provided that the measure could be applied to other diseases besides diabetes by an Order in Council laid on the Table and passed by both

Houses of Parliament, and he urged that provision should be re-inserted in the present Bill.

Several other Labour Members having supported Mr. Stewart,

Sir J. GILMOUR said that he could give no assurance that if the Chairman of the Scottish Grand Committee would allow an amendment to be moved restoring the former provision that the Government would be willing to accept it.

Labour Members continued to protest, and Sir J. Gilmour remarked that if the Opposition preferred to lose the Bill it was for them to decide.

Mr. Buchanan was still speaking when at 8.15 P.M., under the rules of the Houses, the debate was adjourned in order to allow a private Bill to be discussed.

Inoculation of Naval Ratings.

Mr. ROBERT YOUNG asked the First Lord of the Admiralty how many naval ratings were inoculated against enteric fever during the past six months; how many refused to be inoculated; whether any naval ratings were refused leave for declining to be inoculated; and, if so, what ranks they belonged to and the dates of refusal of leave.—Mr. J. C. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The statistics asked for would entail reference to all H.M. ships and establishments in different parts of the world and involve much time and labour. The regulations on the subject are given in Sections 10 and 11 of Article 1316 of the King's Regulations and Admiralty Instructions which reads as follows:—

10. No punishment or penalty is to be incurred for declining vaccination or revaccination on conscientious or other grounds, but every precaution is to be taken to prevent objectors becoming a danger to the Service. They are not to land in ports where there may be any danger of contracting small-pox, and while the ship is lying at such ports they are to be inspected daily by the medical officer. The fact that a man has refused vaccination or revaccination is to be noted on his Service certificate, and in no circumstances is he to be allowed to re-engage or to be enrolled in the Royal Fleet Reserve (see Article 830, Clause 9).

11. When circumstances arise which render it advisable to inoculate officers and men against enteric fever, cholera, or any other infectious diseases, voluntary inoculation can only be performed. The provisions of Clause 10 are to apply to persons objecting to such inoculation on conscientious or other grounds.

Cost of Maintenance in Asylums and Sanatoriums.

Mr. HANNON asked the Minister of Health the average annual cost, including administration per individual, of maintaining patients in sanatoriums, county and borough asylums, and institutions belonging to Poor-law authorities.—Mr. NEVILLE CHAMBERLAIN replied: The average gross cost per inmate for the year 1923-24 is as follows: Sanatoriums, £136; county and borough lunatic asylums, £75 10s.; and Poor-law institutions, £63 10s. It will be understood that the figure given for Poor-law institutions covers all persons in receipt of institutional relief and not merely sick persons.

THURSDAY, FEB. 26TH.

Mortality Among Ex-Service Men.

Mr. GROVES asked the Minister of Pensions whether he had statistics to show whether the disabilities from which ex-Service men suffered had progressively decreased or increased; and the degree of mortality among those ex-Service men who received pensions in 1920, 1921, 1922, 1923, and 1924.—Major TRYON replied: The statistics of my department taken over a term of years show that in the great majority of cases the ailments or injuries occasioned by war service have either reached a stable condition or have materially improved, though necessarily a proportion of the cases have deteriorated. The mortality among men on the pension list in each of the six years from 1919 to 1924 has been 13.5, 11.6, 12, 14, 12 and 13.5 per 1000 respectively.

Medical Referees.

Mr. THOMAS WILLIAMS asked the Home Secretary if he was aware that in certain cases the medical referee under the Workmen's Compensation Act had been known to be almost a permanent representative of employers in compensation disputes; and would he take steps so that in future all medical referees should be independent of either employers or employees.—Mr. LOCKER-LAMPSON replied: I know of no such cases among the medical referees at present appointed under the Act. It is a condition of the appointment of a medical referee that he shall hold no permanent employment either on the employers' or on the workers' side, and the medical referees are enjoined that in their private practice they should as far as possible avoid cases which are likely to come before them in their official capacity. It has not been found practicable to impose any further restrictions on them.

Unhealthy School-buildings.

Mr. ROBERT YOUNG asked the President of the Board of Education whether he could say when the last survey of

school-buildings was taken; how many education authorities had been notified of the unfit and unhygienic condition of their schools; and what was the number of such schools throughout the country.—The DUCHESS OF ATHOLL (Parliamentary Secretary to the Board of Education) replied: A survey was made last year of the worst public elementary school premises in the areas of the London County Council, the county boroughs, and the boroughs and urban districts in England, which are local education authorities for elementary education. As a result, letters have been addressed to 165 authorities (out of 239), and the number of schools or departments mentioned is 807 (out of 5760). This figure includes not only schools which in the opinion of the Board are altogether unsuitable, but also schools which are structurally unsuitable in part or for their present numbers in varying degrees. A similar survey is in progress in the areas of the county councils in England (apart from London) and it is hoped that the results of the survey of the areas of all local authorities in Wales will shortly be available.

Government Medical Staff.

Lieut.-Colonel HORLICK asked the Minister of Health what was the total cost of the medical staff of the Local Government Board in 1914 and 1918, and of the increased medical staff of the Ministry of Health in 1919, 1923, and for the current year; and how many new medical officers had been appointed in the last 12 months.—Mr. NEVILLE CHAMBERLAIN replied: The total cost of the medical staff of the Local Government Board for salaries and travelling and subsistence expenses was £30,420 in 1914–15, and in 1918–19, including bonus, £35,743. The medical staff of the Ministry of Health cost £55,985 in 1919–20, £121,454 in 1923–24; the estimated cost for the current financial year is £122,910. My hon. friend is no doubt aware that the functions of the Ministry of Health include not only those of the Local Government Board, but also of the National Health Insurance Commissions for England and Wales. The figures for 1923–24 and the current financial year include the salaries and expenses of the regional medical officers; approximately four-fifths of the total cost of this service is recovered out of National Health Insurance funds. Three new medical officers have been appointed in the last 12 months to fill vacancies in existing posts.

Antenatal Clinics.

Mr. WINDSOR asked the Minister of Health whether he proposed, in view of the present rate of maternal mortality, to call the attention of local authorities to the importance of establishing effective antenatal clinics and of making adequate provision for the care of women about to become mothers.—Mr. NEVILLE CHAMBERLAIN replied: A circular was issued by my department on June 30th calling the attention of local authorities to the importance of these and other measures for reducing the maternal mortality-rate.

Infant Mortality in Bombay.

Mr. JOHNSTON asked the Under-Secretary of State for India whether he was in a position to give the official figures on the infant mortality in Bombay during the year 1921.—Earl WINTERTON replied: According to the reports of the health officer of the Bombay Municipality the infant mortality in Bombay City was 667 per 1000 births in 1921, 403 per 1000 in 1922, 411 per 1000 in 1923, and 419 per 1000 in 1924. Examining in 1922 the vital statistics from the beginning of the century the health officer remarked that the fluctuations in infant mortality, which corresponded in time and direction with those of the general death-rate, were indirectly or directly due to plague in the first decade of the century and to influenza in 1918–21.

FRIDAY, FEB. 27TH.

Unqualified Dental Dressers.

Lieut.-Colonel MASON asked the Minister of Health how long the unqualified dental dressers, employed under the Ministry of Education in Derbyshire and Shropshire, would be permitted to continue in practice.—Mr. NEVILLE CHAMBERLAIN replied: The conditions under which dental dressers may be employed in the school dental service have been formulated in a circular issued by the Board of Education after consultation between the Dental Board and the Ministry of Health. In order to allow time for the arrangements in Derbyshire and Shropshire to be reorganised in conformity with the new conditions, permission was granted to the local education authorities of these counties to continue the employment of their existing dental dressers without modification up to the end of the present year.

MONDAY, MARCH 2ND.

Pensions Medical Officers and Overseas War Service.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Pensions what were the special qualifications, medical or otherwise, of each of the undernamed officers without overseas service, which rendered their retention in the service

of the Ministry, in the interests of the pensioner, more desirable than that of the officers with overseas service and in some cases with a war disability whose full-time services were about to be terminated: Dr. A. C. Pickett, Bristol (no overseas service), Dr. A. Williams, Brighton (no service during the war), Dr. J. D. Allen, Bath, and Dr. T. Sheedy, Ministry headquarters, London; whether he was aware that one of their number only obtained his medical qualifications in the year 1916 and had had practically no experience in the medical practice of his profession since that date, having been employed by the Ministry of Pensions, since he joined the Ministry, on purely administrative duties of a subordinate nature during the past five years; and whether he had been told that he was to succeed an officer with overseas service and a war disability whose services were to be dispensed with, part of whose duties consisted in visiting pensioners at their homes and the holding of medical clinics.—Major G. C. TRAYNOR replied: The considerations governing the selection of medical officers of the Ministry of Pensions for further employment were fully explained in a reply which I gave the hon. and gallant Member on Feb. 12th, and it is due solely to those considerations that the officers mentioned in the question are being retained.

Boy Prisoner's Mental Condition.

Mr. SCURR asked the Home Secretary whether his attention had been called to the sentence imposed on Robert Oulagi, a boy of 18, at the Old Bailey on Feb. 26th; and if he would cause an inquiry to be held into the mental and physical condition of the prisoner before the punishment of 20 strokes with the cat was carried out.—Mr. LOCKER-LAMPSON (Under Secretary for the Home Department) replied: I have received reports showing that there is no medical reason why the sentence of the court on this prisoner should not be carried out. It will not, of course, be carried out until the expiration of the ten days within which the prisoner may apply to the Court of Criminal Appeal.

Mr. SCURR asked if there was not considerable evidence that the prisoner was absolutely abnormal.—Mr. LOCKER-LAMPSON said that the senior medical officer of Brixton Prison had reported very fully on this case and he stated that the prisoner was sane and in robust physical health and condition. His general bodily and mental development was far in advance of his actual age and there was no evidence of epilepsy. The doctor could not come to any other conclusion than that he was responsible for his actions.

High Death-rate at Singapore.

Mr. CECIL WILSON asked the Secretary of State for the Colonies whether he was aware that, in the course of an inquiry in 1905 into the high death-rate in Singapore, it was pointed out that one-fifth of the population was permanently on the sick-list and that much of the death and sickness was preventable; and what had been done since that time to improve housing and sanitary conditions and what amount of money had been spent on such improvements.—Mr. ORMSBY-GORE (Under Secretary for the Colonies) replied: I am calling on the Governor to supply a comprehensive report on the points raised in this question and will communicate further with the hon. Member as soon as it is received.

Lee Commission and Indian Medical Services.

Lieut.-Colonel FREMANTLE asked the Under Secretary of State for India when the Government would state their proposals for dealing with the recommendations of the Lee Commission with regard to the medical services in India; and whether the House would be given an opportunity of discussing them before any decision was arrived at.—Earl WINTERTON replied: My noble friend has not yet received the Government of India's recommendations, though he expects them very shortly. He would prefer to await them before giving any undertaking in reply to the last part of the question.

TUESDAY, MARCH 3RD.

Maintenance of Lunatics.

Mr. GROVES asked the Minister of Health whether, in view of the increase in the cost of maintenance of inmates of lunatic asylums now chargeable to boards of guardians and the inadequacy of the sum of 4s. per head repaid to the various unions under the Local Government Act, 1888, he would consider the introduction of legislation amending the Act in order to provide a repayment to boards of guardians of 50 per cent. of the cost incurred for the maintenance of such patients.—Sir KINGSLEY WOOD replied: My right hon. friend cannot undertake to introduce legislation on this subject at the present time. The grant in question was intended to make up the difference between the cost of maintenance in asylums and in Poor-law institutions, and the latest figures show that the average cost in asylums is only £10 a year more than the average cost in Poor-law institutions.

Medical Diary.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, Piccadilly, W.
 THURSDAY, March 12th.—4.30 P.M.—*Papers to be read*: Sir Charles Sherrington: Remarks on Some Aspects of Reflex Inhibition. E. G. T. Liddell and Sir Charles Sherrington: Recruitment and Some Other Features of Reflex Inhibition. D. T. Harris: Studies on the Biological Action of Light. (Communicated by Prof. A. V. Hill.) H. Hartridge and F. J. W. Roughton: The Kinetics of Hemoglobin. III. (Communicated by Prof. J. N. Langley.)—*Paper to be read in title only*: S. B. Schryver, H. W. Buston, and D. H. Mukherjee: The Isolation of a Product of Hydrolysis of the Proteins Hitherto Undescribed. (Communicated by Prof. V. H. Blackman.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. MEETINGS OF SECTIONS.

Monday, March 9th.

WAR: at 5 P.M.
 Award of the North Persian Forces Memorial Medal for 1923 to Wing-Commander Harold E. Whittingham, R.A.F.M.S.
 The Medal will be presented by Sir StClair Thomson, President of the Society.
Paper:
 Wing-Commander H. E. Whittingham, R.A.F.M.S.: The Treatment of Malaria by Novarsenobillon.

Tuesday, March 10th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Communications:
 Dr. J. Trevan, Mr. W. H. Gray, and Miss E. Boock: The Physiological Properties of Some Derivatives of Cocaine.
 Dr. W. J. Smith Jerome: The Unknown Factors of Gout.
 Miss Steabben: Observations on the Action of Colloidal Substances on Blood Elements and Antibody Content.
 PSYCHIATRY: at 8.30 P.M.

Paper:
 Dr. T. W. Mitchell: The Psycho-analytic Theory of Suggestion and Hypnosis.

Thursday, March 12th.

COMPARATIVE MEDICINE (Special Discussion: at 5.30 P.M.)
 TROPICAL DISEASES Infective Abortion in Cattle
 OBSTETRICS AND its Relation to Mediter-
 GYNÆCOLOGY ranæan Fever.

Opener:
 Prof. John Eyre.

Other Speakers:

Mr. L. E. W. Bevan, Sir Percy Bassett-Smith, Colonel J. C. Kennedy, Prof. Louise McIlroy, Mr. J. T. Duncan, Mr. Leslie Pugh, and others.

NEUROLOGY:

Clinical Meeting at the National Hospital for the Paralysed and Epileptic, Queen-square, W.C., at 8 P.M.
 Notes of Cases (concise and in a form suitable for publication) must reach one of the Hon. Secretaries of the Section not later than first post on Monday morning, March 9th.

Friday, March 13th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
 Sir Percy Bassett-Smith: Case of Raynaud's Disease.
 Dr. Bernard Myers: (1) Case of Chorea. (2) Case of Chorea in a Girl of Twelve.
 Dr. Parsons-Smith: Two Cases of Cardiac Disease.
 Mr. James Driberg: Case of (?) Tubercular Disease of Rib.
 Dr. L. S. T. Burrell: Case of Bronchiectasis.
 Other cases will be shown.

OPHTHALMOLOGY.

Clinical Meeting at Guy's Hospital, S.E. 1, at 5 P.M.

Cases:
 Mr. Ormond: (1) Case of Arachno-dactylia. (2) Case of Glioma of Retina Treated by Deep X Ray Therapy. (3) Case with "Hole in the Macula."
 Mr. O. G. Morgan: (1) Congenital Lagophthalmos. (2) Recurrent Third Nerve Paralysis in a Child.

Other cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 9th.—8.30 P.M., Discussion on the Fundus Oculi in General Medicine, to be introduced by Mr. Ernest Clarke, followed by Mr. R. Foster Moore, Dr. James Collier, and others.

BIOCHEMICAL SOCIETY.

MONDAY, March 9th.—5 P.M. (at the Lister Institute, S.W.)
Communications: F. W. Fox: The Cholesterol Content of Bile and its Bearing upon the Metabolism of Cholesterol and the Bile Acids. J. R. Marrack: The Total Base Content of Plasma. D. Hoffer and I. S. Maclean: The Action of Yeast on Lactic Acid. E. H. Lepper and C. J. Martin: (a) The Influence of Salt Concentrations on the CH of Buffer Solutions as Indicated by the Electrometric and Colorimetric Methods Respectively: (b) Can the CH of mixtures of NaHCO₃ and CO₂ in High Dilutions be Determined by the Hydrogen Electrode?

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich, S.E.
 FRIDAY, March 13th.—8.45 P.M., Mr. Hugh Davies: Some Interesting Abdominal Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 9th, to SATURDAY, March 14th.—BARNES HALL, Royal Society of Medicine. A Discussion on Post-Graduate Teaching in London will take place on Wednesday, March 18th, at 6 P.M., Sir Arbuthnot Lane, Bt. (President of the Fellowship), will preside. All members of medical profession invited to attend, from whom criticisms of the existing arrangements and suggestions for improvement are desired.—WEST LECTURE HALL, Royal Society of Medicine. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. Wednesday, March 11th, at 5.30 P.M., Mr. Oswald Addison on Cleft Palate.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Lecture-demonstrations in Diseases of the Eye. Daily in the afternoons.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lecture-demonstrations will be given in the Wards and Out-patient Departments.—NORTH-EASTERN FEVER HOSPITAL, St. Ann's-road, N., Wednesday and Saturday at 11 A.M., Demonstrations on the Diagnosis and Treatment of the Acute Infectious Diseases will be given by Dr. Frederic Thomson.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, March 9th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

TUESDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 4.30 P.M., Dr. Trevor Davies: Gynæcological Demonstration.

THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. Bishop Harman: Eye Dept. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—10.30 A.M., Dr. Dowling: Skin Dept. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Dept.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: FEB.-MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, March 9th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Syphilis of the Nervous System (1): Dr. Adie.

TUESDAY, March 10th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., The Myopathies: Dr. Birley.

THURSDAY, March 12th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Recovery of Function after Nerve Anastomosis: Dr. Bailey.

FRIDAY, March 13th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Surgery of the Sympathetic System: Mr. Percy Sargent.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, March 12th.—12 noon, The Neuron: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, March 9th.—12 noon, Cranial Nerves: Dr. Hinds Howell.

The Fee for this Course will be £2 2s.

Dr. H. J. MacBride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, March 11th.—3.30 P.M., The Oculomotor Nerves: Mr. Leslie Paton.

Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course. J. G. GREENFIELD, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, March 10th.—4.30 P.M., Mr. E. S. Pierrepont: The Mouth as an Aid to Diagnosis.

FRIDAY.—4.30 P.M., Mr. E. Gillespie: Enlargements of the Prostate.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.
 SATURDAY, March 7th and 14th.—3 P.M., Sir Ernest Rutherford: The Counting of the Atoms.
 TUESDAY, March 10th.—5.15 P.M., Prof. E. N. da C. Andrade: Evolution of the Scientific Instrument.
 THURSDAY.—5.15 P.M., Dr. Leonard Hill: Biological Action of Light.
 HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
 THURSDAY, March 12th.—4 P.M., Mr. Pitts: Affections of the Gums in Children.
 QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.
 THURSDAY, March 12th.—5 P.M., Mr. C. S. Lane Roberts: Venereal Diseases in Pregnancy.
 CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
 FRIDAY, March 13th.—4 P.M., Mr. Walwyn Thomas: Acute Mastoiditis.
 ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
 TUESDAY, March 10th.—5 P.M., Dr. H. G. Adamson: Rodent Ulcer.
 THURSDAY.—5 P.M., Dr. H. MacCormac: Malignant Growths.
 MANCHESTER ROYAL INFIRMARY.
 TUESDAY, March 10th.—4.15 P.M., Mr. H. H. Rayner: Cancer of the Breast—A Review of the Results of Treatment.
 FRIDAY.—4.15 P.M., Dr. E. M. Brockbank and Mr. E. D. Telford: Clinical Cases.
 ANCOATS HOSPITAL.
 THURSDAY, March 12th.—4.30 P.M., Dr. Norman Kletz: Dyspepsia.
 CHADWICK PUBLIC LECTURES.
 MONDAY, March 9th.—8 P.M. (at the Inner Temple Hall, London), The Lord Newton: The Necessity for Legislation with Regard to Smoke Abatement.
 ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.
 TUESDAY, March 10th.—4 P.M., Dr. Anderson and Dr. MacLennan: Albuminuria and the Specific Fevers. Discussion.
 THE PEOPLE'S LEAGUE OF HEALTH.
 Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.
 WEDNESDAY, March 11th.—6 P.M., Dr. H. Scurfield: Principles of Infant Feeding.

Appointments.

GRIFFIN, A. J. B., M.B., Ch.B. Liverp., D.P.H., has been appointed Assistant Medical Officer of Health, Walsall.
 HOLDEN, O. M., M.D., Ch.B., Birm., D.P.H., Medical Officer of Health, Blackburn.
 Certifying Surgeons under the Factory and Workshop Acts:
 WADE, A. R., L.M.S.S.A. (Highbridge, Somerset);
 WILLIAMS, R. T., M.B., B.S. Lond. (Llanfairfechan, Carnarvon); McILRAITH, L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg. (Frickheim, Forfar); McCLISTER, D., M.B., B.Ch. Belf. (Stillington, Durham); and LUNN, J. (Bruton, Somerset).

Vacancies.

For further information refer to the advertisement columns.
 Albert Dock Hospital, Connaught-road, E.—H.S.'s at rate of £110.
 Ashton-under-Lyne, District Infirmary.—H.S. at rate of £150.
 Ayr County Hospital.—H.S. and Jun. H.S. at rate of £100 and £80 respectively.
 Barnet, Wellhouse Hospital.—Asst. Res. M.O. £150.
 Birmingham and Midland Hosp. for Dis. of Nervous System, Park-row.—Clin. Asst. for Out-patient Dept. at rate of £50.
 Birmingham Asylums Committee.—Consulting S.
 Birmingham, Queen's Hospital.—Third Phys. £50.
 Bradford Royal Infirmary.—H.S. £150.
 Bristol Royal Infirmary.—Hon. Med. Reg.
 Bristol, Southmead Hospital.—Res. Med. Supt. £650.
 Burton-on-Trent Infirmary.—H.S. £150.
 Cardiff, Welsh National School of Medicine.—Asst. Lecturer in Dept. of Physiology. £400.
 City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Anaesthetist.
 Derbyshire County Council.—M.O.H., &c. £1400.
 Doncaster Royal Infirmary.—Hon. Ophth. S.
 Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.
 Federated Malay States.—Research Studentship in Tropical Medicine. £700.
 Freemasons Hospital and Nursing Home, 237, Fulham-road, S.W.—R.M.O. at rate of £250.
 Guy's Hospital Dental School.—Dental Travelling Scholarship.
 Halifax Royal Infirmary.—Third H.S. at rate of £150.
 Hospital for Diseases of the Throat, Golden-square, W.—Hon. Surg. Reg.
 Hospital for Epilepsy and Paralysis, Maida Vale, W.—R.M.O. and H.P. at rate of £150 and £100 respectively.
 Hull, Victoria Hospital for Sick Children, Park-street.—Res. H.P. £80.
 Inverness, Northern Infirmary.—Jun. M.O. £100.
 Kingston-on-Thames, Kingston and District Hospital.—Second Asst. Res. M.O. at rate of £300.

Liverpool Open-air Hospital for Children, Leasowe, for Non-Pulmonary Tuberculosis.—Jun. M.O. £200.
 London Homœopathic Hospital, Great Ormond-street, W.C.—Third Anaesthetist. £50.
 London Hospital, E.—First Asst. to Surgical Firm. £400.
 Manchester, Christie Hospital.—Cancer Research Worker. £500.
 Manchester, St. Mary's Hospitals.—Two H.S.'s. Each at rate of £50.
 Manchester University.—Lecturer in Morbid Anatomy and Histology. £500.
 Metropolitan Asylums Board, Infectious Hospitals Service.—Asst. M.O.'s. £500.
 Metropolitan Hospital, Kingsland-road, E.—S. for Dis. of Nose, Throat, and Ear. Also Hon. Anaesthetist.
 Middlesex Hospital and Medical School, W.—Obstet. and Gynecological Reg. £300. Also University Chair of Biochemistry. £800.
 National Hospital for Dis. of the Heart, Westmoreland-street, W.—Res. M.O. at rate of £150. Also Out-patient M.O. at rate of £125.
 National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Ophth. S.
 Portsmouth, Royal Hospital.—Sen. H.S. at rate of £200.
 Preston and County of Lancaster Royal Infirmary.—Third H.S. £150.
 Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—R.M.O. £200. Also Two H.P.'s and Cas. H.S. Each at rate of £100.
 Richmond, Surrey, Royal Hospital.—Asst. H.S. £100.
 Royal Chest Hospital, City-road, E.C.—Phys.
 St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. at rate of £75.
 Sheffield Royal Hospital.—Hon. Radiologist.
 South London Hospital for Women, South Side, Clapham Common, S.W.—H.P. and Three H.S.'s in each case at rate of £50.
 Suva, Fiji.—Port M.O. and Bacteriologist, &c. £750.
 Walsall General Hospital.—Hon. Pathologist. 50 guineas.
 West Ham Union, Central Home, Union-road, Leytonstone, E.—Res. Asst. M.O. £441.
 West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.
 West Riding County Council.—Dist. Tuberculosis O. £600.

Births, Marriages, and Deaths.

BIRTHS.

BALL.—On Feb. 21st, at Warwick-mansions, Pond-street, Hampstead, the wife of Norman Dyer Ball, M.B., of a son.
 CONNAN.—At "Sanno," Cotsford-avenue, New Malden, on Feb. 23rd, to Annie Dorothy (née Mackintosh), wife of Dr. D. M. Connan—a daughter.
 HARE.—On Feb. 22nd, at Earl Soham, Suffolk, the wife of W. Theodore Hare, M.C., M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

GARFIELD—ELMAN.—On Feb. 25th, Montagu Garfield, M.R.C.S., L.R.C.P., L.D.S. Eng., of Palmeira-mansions, Hove, to Marguerite Elman, M.R.C.S., L.R.C.P., of Amhurst-road, London, E.
 HILL—GLAISYER.—On Feb. 18th, at Christ Church, Hampstead, Arthur Hilary Clifton Hill, M.R.C.S. Eng., L.R.C.P. Lond., to Ellen Phoebe, youngest daughter of Mr. and Mrs. Edmund Glaisyer, of Putney.

DEATHS.

DE WATTEVILLE.—On Feb. 24th, near Geneva, Armand de Watteville, M.D., late of Welbeck-street, W., in his 79th year.
 GRAHAM BROWN.—On Feb. 28th, at Edinburgh, John James Graham Brown, M.D., F.R.C.P. Edin., aged 71.
 HARDING.—On Feb. 25th, at Sydney-place, Bath, suddenly, Alfred William Harding, B.A., M.B., M.R.C.S. Eng., aged 78.
 VINRACE.—On Feb. 27th, at "Deenhurst," Moseley, Birmingham, Emelin S. Vinrace, only daughter of the late John Vinrace, M.D.
 WILLIAMS.—On Feb. 20th, at Pen-Bre, Bangor, Richard Williams, J.P., M.R.C.S., Ophthalmic Surgeon, late of Rodney-street, Liverpool.
 N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LATE MR. J. F. STEEDMAN.—John Francis Steedman, F.R.C.S. Eng., who died recently from heart failure while attending an International Rugby football match, was an old Bart.'s man who qualified M.R.C.S. Eng. in 1883, taking the F.R.C.S. two years later. He was born 70 years ago in Shropshire. Mr. Steedman had been in private practice in Streatham for nearly 30 years and was greatly esteemed by all who knew him in that district. He was keenly interested in local hospital and charitable work and for 20 years was hon. medical officer at the Magdalen Hospital, Dewstead-road. He assisted in the work of the Streatham Red Cross Hospital during the war. Mr. Steedman was an enthusiastic sportsman, playing cricket, golf, and lawn tennis, and to the end took a great interest in all games. He leaves a widow and five children.

Notes, Comments, and Abstracts.

THE OPERATIVE TREATMENT OF UTERINE DISPLACEMENTS.

BY ARTHUR E. GILES, M.D., B.Sc.LOND., F.R.C.S.ED.,
GYNÆCOLOGIST, PRINCE OF WALES'S HOSPITAL, TOTTENHAM;
CONSULTING SURGEON, CHELSEA HOSPITAL FOR WOMEN.

UTERINE displacements fall naturally into two groups:
(1) Backward displacements: Retroversion and retroflexion;
(2) downward displacements: Prolapse and procidentia.

Backward Displacements of the Uterus.

Retroflexion is in some cases a matter of shape more than of position; it is indeed possible for the fundus to be sharply bent back over the cervix, while the uterine axis as a whole maintains almost its normal position. Such a retroflexion may be regarded as developmental, and is strictly analogous to acute antelexion, which is a matter of conformation rather than one of position. In other cases, when the uterine tissues are lax and the axis of the uterus has become tilted backwards, retroflexion may occur as a secondary condition, when it may be regarded as an exaggerated form of retroversion. In speaking of retroversion in the following remarks the term will be used so as to include cases complicated by retroflexion.

Formerly the treatment of retroversion by pessaries was the rule; operative treatment was the exception. Now this is reversed. The increasing safety of abdominal operations has been the primary factor in the change; education of feminine public opinion has followed. No healthy and nice-minded woman likes either the idea of having a foreign body in her vagina or the necessity for frequently recurring examinations. It becomes as obvious to patients as it is well known to their doctors that pessaries have the effect of setting up or increasing unpleasant discharges; and it has become known to them, as it has long been to us, that the long-continued irritation of a pessary in the vagina is a possible cause of malignant disease. Many women have endured the wearing of pessaries, even for years, simply because they did not know that there was any other mode of treatment, and because, even with the attendant disadvantages of pessaries, they were at least more comfortable with one than without one. Once the more excellent way is shown to them, the great majority of women choose operation in preference to pessaries.

There is only one class of case of retroversion in which pessaries are even permissible, and that is when the uterus is freely mobile and there are no complications. When the uterus is adherent, the introduction of a pessary is not only futile, but harmful. Of course, it ought not to be possible for a pessary to be introduced in such a case, because the first and cardinal rule in the treatment of retroversion by a pessary is that the displacement must be corrected before a pessary is put in. Obviously, if this rule be followed, the fixation of the uterus cannot be overlooked, because in such a case the displacement cannot be corrected. It must be admitted that gynecologists do have women coming to them wearing a pessary with an adherent retroversion, and wondering why they still feel discomfort; and the admission must be made sorrowfully, because the point is explicitly stated in text-books, and has repeatedly been emphasised in lectures both to students and to post-graduates. The fact that I have come across such cases recently makes me feel that it is still necessary that it should be stated afresh.

The other condition in which pessary treatment is definitely barred is when there is disease of the uterine appendages, or of the uterus itself. Here the accompanying disease is more important than the displacement, and should be treated, surgically if necessary, and the displacement can be dealt with at the same time.

Operative Treatment of Retroversion.—There are several ways of dealing surgically with a retroversion. It is not necessary to make more than a passing reference to the fantastic view that has been seriously propounded by some recognised teachers of gynecology that retroversion can be cured by curetting. An examination of this view must at once convince the impartial observer of its absurdity. Nor need we consider seriously the operation of vaginofixation; it has no possible advantages over other procedures, and it has the manifest disadvantage that it leaves the uterus immobilised in a faulty position. Two types of operation are worthy of consideration: *Shortening of the round ligaments*, and suture of the uterus to the abdominal wall—an operation that is properly described as *hysteropexy*.

Shortening of the Round Ligaments.—Historical reviews refer to the extraperitoneal method of shortening the round ligaments devised independently by Alexander and

by Adams, and known usually by their joint names as the *Alexander-Adams operation*. It served its purpose at the time, as a pioneer method; its drawbacks were so evident that it fell out of use and was replaced by better procedures. The present-day methods are intraperitoneal, and are founded on the operation devised by Gillian. His plan was to reflect the skin back for a short distance on each side of the median incision, pass a forceps through muscles, fascia, and peritoneum on either side, pick up the round ligament, draw it out through the hole made in the muscle and fascia, and suture a loop of it there. Others pass a purse-string suture along the course of the round ligament from where it enters the internal inguinal ring to its origin in the uterine fundus. When the two ends of the suture are drawn together and tied the round ligament is crumpled up in a close loop. A more particular modification of Gillian's operation is to strip back the skin as he does, but low down over the external inguinal rings. A curved forceps is then passed up the inguinal canal and brought out at the internal inguinal ring; the round ligament is seized and brought out through the inguinal canal. This method is theoretically very sound; but there is a definite risk of wounding the deep epigastric artery, and as a result of this accident troublesome hæmorrhage occurs.

Suture of the Uterus.—The idea of suturing the uterus to the abdominal wall is 30 years old. Yet there are few operations concerning which more confusion prevails at the present time than we find centred round the suturing of the uterus. The confusion lies in the terms *ventrofixation* and *ventrosuspension*.

Ventrofixation, as originally devised, was as follows: The uterine fundus was brought up and doubled forward; silk or silkworm-gut sutures were passed through the muscle, fascia, and peritoneum of one side, then through the posterior wall of the uterus, then out through the peritoneum, fascia, and muscle of the other side. When the sutures were tied the uterus lay with its posterior surface in contact with the abdominal wall. The advantage of the operation was that the results were permanent; the disadvantage was that if carried out in a woman of child-bearing age and she became pregnant, serious trouble was bound to occur.

Ventrosuspension.—In this operation the sutures were passed through the peritoneum only on either side, and through the anterior surface of the uterus. The advantage was that a subsequent pregnancy was not interfered with; the disadvantage was that the peritoneal attachment stretched so readily that a long thin band soon formed, allowing the uterus to fall back as badly as ever.

Neither of these operations is ever done to-day; neither has been done for many years past unless by operators who do not know the correct way to suture the uterus. The term *ventrosuspension* is very seldom heard. But *ventrofixation* is still spoken of to describe the very different operation that is done now. The consequence is that many people with imperfect knowledge of this subject—and it would appear that we must include in this category a number of quite eminent gynecologists—use the term *ventrofixation*, which they know, in speaking of the modern operation, which they do not know, and proceed to condemn it wholeheartedly, saying that it is a most dangerous operation to perform in a woman of child-bearing age. The truth is that this observation would be entirely correct if it referred to the original operation, which is not performed, but it is entirely incorrect when applied to the modern operation. This operation I shall now describe.

Hysteropexy.—In view of the confusion entailed by the use of the words *ventrofixation* and *ventrosuspension*, I long ago decided to abandon both words, and to use the non-committal word *hysteropexy* to describe the modern operation. The principle of it is that the sutures are passed through the muscles and fascia, as in *ventrofixation*, whereby the stability of the attachment is secured. But in the uterus they are passed on the anterior surface, as low as possible above the bladder reflection, and all of them lower than the uterine fundus. The result of this is that in case of pregnancy the uterus is free to expand, and pregnancy and labour proceed normally. In saying this I am not speaking of what, theoretically, *should happen*, but of what, in practice, *has happened*. Among over 1200 hysteropexies which I have myself carried out, a considerable number were done in women of child-bearing age, either married at the time or who married subsequently. Inquiries into their later history have resulted in information concerning over a hundred cases in which pregnancy has occurred and labour has taken place as normally as in women who have not been operated upon. In the majority of cases information derived from the patients has been corroborated and supplemented by letters or verbal communications from the medical practitioners who have attended them in their confinements. Therefore, I can assert confidently that hysteropexy, properly carried out, is a safe and proper operation to perform on women of child-bearing age.

Hysteropexy versus Shortening of the Round Ligaments.—While I have performed hysteropexy many times, I have shortened the round ligaments in relatively few cases. It is a proper question that I should be asked why I prefer hysteropexy. The answer is that these are operations whose merits stand or fall by their results, and that in judging of results one cannot do otherwise than be guided by one's own experience. The two outstanding questions are: (1) What is the effect of the operation on pregnancy, and of pregnancy on the operation? (2) Are the results permanent as regards the correction of the displacement? With regard to hysteropexy, I have answered the first part of the first question, and the answer to the second part is that I have examined a large number of patients after the confinement and have found the uterus still attached to the abdominal wall. With regard to shortening of the round ligaments, I have no experience of cases of subsequent pregnancy; but certainly better results could not be obtained than have followed hysteropexy. With regard to the second question, it has been my experience to come across a number of cases operated upon by other surgeons, where the round ligaments had been shortened, and examination showed that the uterus had fallen back into a position of retroversion. A careful statistical investigation of cases examined after hysteropexy, often after many years, showed that the attachment remained good in about 98 per cent. I should much like to see carried out an investigation of the after-results of a large number of cases of shortening of the round ligaments; and if the results should prove to be better than those of hysteropexy, I would gladly follow the better method. At present I can come to no other conclusion than this—that hysteropexy, which is a simple and safe operation, is as safe as it is possible to be from the point of view of subsequent childbirth, and that it gives more permanently good results than does the operation for the shortening of the round ligaments.

Downward Displacements of the Uterus.

These include the various degrees of prolapse and procidentia of the uterus together with the frequently associated prolapse of the vaginal walls. No form of prolapse can be cured by pessary treatment. A considerable degree of comfort can be obtained by means of pessaries, but a woman who chooses a pessary in preference to operation will have to wear one for the rest of her life. The drawbacks of pessaries detailed in the remarks on retroversion remain the same when they are used for prolapse—the frequent examinations, the discharge, and the chronic irritation which in some cases may pave the way for malignant disease.

The secret of success in the operative treatment of prolapse is to leave no part of the prolapse untreated. For example, when a marked cystocele complicates the descent of the uterus, it is not sufficient to fix up the uterus; the cystocele would remain, and would be capable of causing as much discomfort as the prolapse of the uterus itself. In the same way, when the uterus is heavy and markedly prolapsed, it is not sufficient to repair the perineum and do an anterior colporrhaphy, for the heavy uterus will continue to press down and cause the typical "bearing-down" feeling. For a slight prolapse of a small uterus associated with a deficient perineum and a cystocele a perineorrhaphy and anterior colporrhaphy may suffice. If the uterus be heavy and hyperplastic, or much prolapsed, or both, I regard the suturing up of the uterus as essential. There is a doctrine, emanating chiefly from Manchester, to the effect that an abdominal operation should never be done for prolapse, and that the proper treatment is amputation of the cervix, an extensive anterior colporrhaphy and a thoroughgoing perineorrhaphy. My belief is that this doctrine is fundamentally unsound, and in practice most pernicious. The hyperplasia in these cases, for which the amputation of the cervix is ostensibly performed, is in part apparent more than real. When the uterus comes down, bringing down the vaginal walls with it, the cervix appears to be elongated, because the vaginal fornix is drawn down in a cone-like fashion simulating a long cervix. When the uterus is pushed up into place the true state of things is at once evident. Such a cervix certainly does not need to be amputated. Moreover, such hyperplasia as is present—and there is often some hyperplasia of the supra-vaginal portion of the cervix—is due to the prolapse itself, and when the uterus has been slung up to the abdominal wall the hyperplasia clears up.

But my objection to amputation of the cervix in these cases is not based only on the fact that it is unnecessary; a still more important objection is on the ground that it is harmful. It leaves a scarred and mutilated stump in the vagina, and with the accompanying thorough colporrhaphy there is a great deal of cicatricial tissue in and round the vaginal vault. I saw a case that had been treated in this way, and indeed it was a sorry sight. Scar-tissue alternated with raw patches. The patient was a still young woman

anxious to have another baby, and the outlook seemed pretty hopeless. This mutilating treatment is done in order to avoid opening the abdomen and slinging up the uterus; I am certain that the woman is left in a far more normal condition with her cervix intact and the uterus attached to the abdominal wall, and in the latter case the chances of pregnancy and natural labour are not in the least degree impaired.

In many cases an old tear of the cervix is present, with that eversion of the mucous membrane commonly called "erosion," but more correctly described as "ectropion." It is good procedure to repair such a cervix by means of a trachelorrhaphy, and when the uterus is hyperplastic, or there is a history of menorrhagia or discharge, a curetting should precede the trachelorrhaphy. This is a very different matter from an amputation of the cervix. Repair leaves a cervix that is practically normal, and serviceable for child-bearing. When anterior colporrhaphy is required, the procedure will vary according to the degree of the vaginal prolapse. With a simple elongation of the anterior vaginal wall, it is sufficient to remove a diamond-shaped area and suture the cut edges so as to form a transverse seam. When the bladder protrudes markedly, a good method is to make a vertical incision and dissect two lateral flaps. The bladder is thus exposed, and with the help of a few light touches with the scalpel it can be separated from the front of the cervix and pushed up with a swab. When it is sufficiently out of the way, the bases of the flaps are brought together with two or three mattress sutures; the redundant portion of the flaps is cut off, and their edges brought together with a continuous catgut suture.

When all that is necessary in the way of vaginal and cervical repair has been done, the abdomen is opened and the uterus is sutured to the abdominal wall, as previously described. The advantage of hysteropexy over shortening of the round ligaments, which I regard as definite in cases of retroversion, is even more pronounced in dealing with prolapse and procidentia. The round-ligament operation will hardly ever hold up permanently a heavy prolapsed uterus. Sometimes the case may be complicated by the presence of a small ovarian cyst or some fibroids, and ovariectomy or a myomectomy can then be carried out before the uterus is sutured. Sometimes a patient with procidentia is sent to us with the suggestion that a hysterectomy should be done. To accept the suggestion would be a very great mistake. If such a uterus be removed, the sequel is almost always a very troublesome recurrence of prolapse of the vaginal walls, which is apt to be most difficult to deal with. It is much better to retain and fix up the uterus, and so use it to pull up and support the vaginal walls. So important do I consider this point that if I have to deal with a prolapsed uterus with fibroids, the fact of the prolapse would induce me to do a myomectomy even in cases where a hysterectomy would otherwise be certainly indicated.

It will be seen that in many cases several procedures are required when dealing with downward displacements of the uterus. We may summarise them as follows:—Hysteropexy and perineorrhaphy, when the prolapse is associated with a deficient perineum. Hysteropexy and anterior colporrhaphy, when the perineum is good, but a cystocele is present. Hysteropexy, anterior colporrhaphy and colporrhaphy, when cystocele and rectocele and a deficient perineum complicate the prolapse. Hysteropexy, curetting, and trachelorrhaphy, when the vaginal walls are good, but the cervix is torn. Hysteropexy, curetting, trachelorrhaphy, anterior colporrhaphy, and perineorrhaphy, when the vaginal walls and cervix also want attending to. This whole operation can be completed in about an hour when no time is wasted. Any or all of these procedures may be carried out without hesitation in a woman of child-bearing age with the assurance that pregnancy and labour will not be prejudiced thereby.

AN INDISPENSABLE YEAR BOOK.

"Burdett's Hospitals and Charities, 1925" (London: The Scientific Press, Ltd. Pp. 1019. 17s. 6d.), has reached us. This year book, founded 35 years ago by the late Sir Henry Burdett, is too well known to need detailed description. It is sufficient to say that it gives an account of over 8000 institutions and serves as an exhaustive record of current charitable work. As a guide to British and colonial hospitals and asylums, medical schools and colleges, nursing and convalescent institutions, sanatoria, dispensaries, and benevolent institutions it is indispensable; the index is well compiled and comprehensive. Among new features may be noted a section in which seamen's hospitals throughout the world are grouped together, and a new sub-section, which contains a list of the London, provincial, and Scottish settlements for social work. The directory of institutions overseas has been enlarged, Africa taking a good share of the newly allotted space.

A Study

OF

TWINS IN HEALTH AND DISEASE.

A Presidential Address delivered before the Manchester Medical Society on Feb. 4th, 1925,

BY GEORGE R. MURRAY, M.D., F.R.C.P.,

PROFESSOR OF SYSTEMATIC MEDICINE IN THE VICTORIA UNIVERSITY; SENIOR PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY.

THE simultaneous start on the voyage of life of two identical individuals presents a unique opportunity of observing the development of hereditary characteristics and of comparing them with those resulting from the "changes and chances of this mortal life." As Francis Galton¹ aptly expresses it, "twins have a special claim upon our attention; it is that their history affords means of distinguishing between the effects of tendencies received at birth, and of those that were imposed by the special circumstances of their after-lives." Thus we find that the lives and characters of twins have always afforded a fascinating theme both in fact and fiction.

A study of the pathology of disease as it affects the different races of mankind has yielded much useful information as to modes of infection and variations in immunity. The occurrence of familial diseases, such as hæmophilia, is also highly instructive, but an examination of the incidence of disease in twins provides special opportunities for tracing the origin of certain maladies. The material for such an inquiry is probably much greater than might be expected, for Siemens² was able to obtain in Munich alone the addresses of 100 homologous twins of which he had been able to examine 50 pairs. In this country there must be a great deal of useful information as to the health and progress of twins which has been gathered at the various welfare centres and which only awaits investigation to yield valuable results.

CLASSES OF TWINS.

There are three distinct classes of twins, and so many synonymous terms have been used in describing them that confusion is apt to arise if their meaning is not clearly understood. First, there is the most important class of twins which arise from a single ovum and are described as "monozygotic," "homologous," "monochorionic," "uniovular," "one-egg," "similar," or "identical" twins. Second, there are those which arise from two separate ova fertilised at the same time, known as "dizygotic," "heterologous," "dichorionic," "binovular," "two-egg," "dissimilar," "fraternal," or "pigeon" twins. Third, there are the conjoined twins which show all degrees of conjunction from a slight union, as in the case of the Siamese twins, up to a high degree of fusion as in the various forms of double monsters, which are always developed from a single ovum.

Uniovular twins are always of the same sex, they are always enclosed in a single chorion, and are provided with a single placenta. They are usually almost identical in appearance, and are the most important in considering the incidence of disease in such similar individuals. Homologous twins are not common, and the definite proof of their origin from a single ovum can only be obtained by an examination of the placenta and foetal membranes at the time of their birth. As such evidence is rarely obtainable we must, for all practical purposes, conclude that when twins of the same sex are alike in appearance, with the same colour of hair and eyes, and the same type of skin they are monozygotic in origin. Binovular twins are not of so much interest, as they do not resemble each other more closely than other brothers and sisters born at different times, but they are subjected to similar influences during gestation and early childhood. They may be either of the same or of opposite sexes. Conjoined twins, when viable, are of interest as they are uniovular, but few of them survive.

5298

FREQUENCY AND PROPORTION OF MULTIPLE BIRTHS.

The frequency of multiple births varies in different localities. Kleinwachter³ quotes statistics collected by Wappaus of 19,698,322 pregnancies, which resulted in the birth of 19,930,556 children. In this large number there were 19,468,832 single children, 226,807 twins, 2623 triplets, 59 quadruplets, and 1 quintuplet, which gives 1 twin birth in about every 87 pregnancies. The proportion of twin births varies in different towns: thus Kurschner found there was 1 twin birth to 158 single births in Naples, 1 to 126 in Palermo, 1 to 88 in Berlin, 1 to 85 in London, 1 to 84 in Paris, 1 to 74 in Vienna, 1 to 52 in Heidelberg, and 1 to 57 in Dublin. Of 1,339,975 births in the United States in 1917, 1 in 93 was a twin birth (Abt).⁴ It has been estimated by Newman⁵ that one-half of the twins of the same sex are uniovular and that one-fourth of the total number of human twins belong to this class, whereas Ballantyne⁶ estimates that similar twins occur in only 12.25 per cent. of all twin births. It is therefore not surprising that, while we find extraordinary similarity in some twins, in the majority there are well-marked differences.

CAUSES OF TWINS.

It has generally been considered that "identical" twins are the result of fertilisation of a single ovum by two spermatozoa. Little, however, is really known of the causes of twinning in man. The experiments of Newman on the eggs and embryos of the starfish of the Pacific coast (*Patiria miniata*) led him to the conclusion that a retardation of the rate of development, such as occurs in unfertilised parthogenetic eggs, or in those which are too crowded, is a direct cause of twinning. He quotes Korchelt's experiment in which, after excision of a central portion of an earthworm, the anterior and posterior portions regenerate into double or even triple heads or tails, and regards this as a result of retardation following the operation. This question has also been studied in fish and especially in trout, and separate one-egg twins are believed to arise either from the appearance of two embryonic rudiments on one blastoderm or the presence in the egg of two separate blastoderms. In trout there also occur conjoined twins of the "autosite-parasite" variety which occurs in man as in the case of "Lulu." Identical twins may also arise in trout. In the armadillo of Texas (*Dasypus novemcinctus texanus*) two pairs of twins (quadruplets) normally are developed from a single ovum so that all members of the litter are of the same sex and all are alike, and Newman suggests that this is also due to retardation of the development resulting from slow action of the corpus luteum.

DIFFERENCES AND SIMILARITIES OF TWINS.

In uniovular twin pregnancy in women a larger number are males and the mothers are usually near either the beginning or the end of the child-bearing period. The difference in weight at birth is often considerable, and this is attributable to an inequality in the vascular supply to each twin during pregnancy. Abt⁴ mentions a case in which at birth one twin weighed 6 lb. and the other only 3 lb. Three years later the former was normal and the latter defective in development and weighed only 20 lb.

All the familiar anecdotes of the mistakes and practical jokes which have arisen from the similarity of twins relate to the uniovular variety. This type of twin has often afforded useful material for the dramatist and for the novelist. The Heavenly Twins, Castor and Pollux, the sons of Leda, according to classical tradition, were the result of the union of Zeus, in the form of a swan, with their mother. One tradition even states that Leda brought forth two eggs, from one of which Castor and Pollux were born and Helen from the other, so that they were one-egg twins. The earliest play in which twins appear is the "Menaechmi" of Plautus. In this play the similarity between Menaechmus of Epidamnus and Menaechmus Sosisles is thus described by Messenio, the servant of

L

the latter: "But I never beheld one person more like another person. Neither water, believe me, is ever more like to water nor milk to milk, than he is to you, and you likewise to him." Owing to this remarkable similarity the brothers, who are unaware of each other's presence in Epidamnus, unwittingly personate each other on various occasions and so give rise to many amusing situations until mutual recognition solves their difficulties at the end of the play. The "Comedy of Errors" is largely based on this play, but the situations are rendered rather more complicated by the introduction of the twin Dromios as attendants on the twin brothers Antipholus of Syracuse and Antipholus of Ephesus. In the words of the Duke of Ephesus:—

"These two Antipholuses, these two so like,
And these two Dromios, one in semblance."

Shakespeare well expresses the similarity of two pairs of homologous twins. It is notable that in this play these twins are rightly of the same sex, whereas in *Twelfth Night* Viola, dressed as a man, is identical in appearance and manner with her twin brother Sebastian, so that when they meet Orsino exclaims:—

"One face, one voice, one habit, and two persons;
A natural perspective that is and is not."

and Antonio asks:—

"How have you made division of yourself?
An apple, cleft in two, is not more twin
Than these two creatures."

In the *Corsican Brothers* Alexandre Dumas pictures two similar twins who were conjoined at birth but separated afterwards by an operation. The two brothers Louis and Lucien are described as being closely alike in appearance though differing in temperament and in tastes. Dumas draws on his imagination however in making both twins subject to the same physical and moral sensations, so that at the moment when Louis received a fatal bullet wound beneath the right sixth rib in fighting a duel at Vincennes, Lucien, who was in Corsica, felt a violent blow in the side, then found a bright-red mark in the same situation and knew his brother had been killed. It is said that in some cases both twins suffer from their origin or that one may prove himself a better man than the other all through life. Twinship appears to be a handicap, as it has been maintained that no "similar" twins have acquired great intellectual distinction. The two Scotts of Newcastle, who afterwards became Lord Stowell and Lord Eldon, were both "dissimilar" twins, as the former was born with a sister in 1745, and the latter with another sister in 1751. It may be mentioned that in this remarkable family, a third pair of twins, a son and daughter, were still-born about 1754. Jacob and Esau, the most ancient pair of twins on record, differed so much both physically and mentally that we may conclude that they were binovular in origin. The earliest record of English twins who became famous appears to be of the "Biddenden Maids," who are reputed to have been born in 1100 in the village of this name in Kent. They lived for 34 years and left money for the making of cakes, with an impression marked upon them for distribution to the poor on Easter Day. This impression shows them united at the elbows. Ballantyne,⁶ however, thinks this is improbable as it would be unique and suggests that they were probably pygopagous twins, united by the nates, and that the representation of the union by the arms was due to their going about with their arms round each other's necks. Many well-known English families have produced twins, and some more than one pair. Thus, in Brittain's well-known case a woman had 25 children, including twins 10 times. This tendency may appear in different branches of the same family. The striking similarity in the appearance of identical twins is shown in many well-known cases in all ranks of life, whose portraits not infrequently appear in the daily and weekly illustrated papers. In a recent case before the Law Courts of New Jersey it was stated that one twin, who closely resembled his

brother even in his birth-marks, had so successfully personated him for two years that his sister-in-law, being ignorant of her husband's death, did not detect the fraud. When the surviving twin was accused of bigamy both his wife and his brother's widow claimed him as husband, as he used to spend five days in the week with the former in New Jersey and two days with the latter and her sons in Philadelphia.

RESEMBLANCES IN CAREERS OF TWINS.

Not only do twins resemble each other in appearance, but in some cases they have had almost identical careers. The Gordon brothers, afterwards known as the "Gemini Generals," entered the army on the same day and both became full generals on the same day. Each became a K.C.B., and both were authorities and writers on affairs in India, where their military career was spent. Mr. R. C. Lucas⁸ describes identical twin brothers who entered as medical students on the same date and passed the examinations of the Royal Colleges and also of the M.B. of London University at the same time. In the intermediate examination the total numbers of marks obtained by the two brothers were the same. The records of their work were signed 33 times by 17 teachers, and in all the 66 records the only variation was that one brother was described as "excellent" and the other as "very good indeed." So that in the opinion of 17 teachers the abilities of the two brothers were identical. A striking example of equality in games was furnished by the Allen twin brothers, who for three years in succession represented Cambridge against Oxford at lawn tennis, and were also remarkably successful in many double events at the chief tournaments. In a different walk in life may be mentioned the brothers W., who were born in 1851, have worked together since 12 years of age, and for 34 years at the same steelworks. They were married on the same day, live in adjoining houses, and each has 10 children. Both are teachers in the Sunday school and are choristers. Galton¹ collected some striking examples of this similarity and the errors which may arise from one twin being mistaken for the other. In Galton's investigation, however, he found only one case in which the hand-writing of the twins was indistinguishable by themselves, and barely two or three in which no distinction could be made by others.

Twins may resemble each other in bad as well as in good traits as both may suffer from alcoholism. Curiously enough, in the case of Chang and Eng Bunker, the Siamese conjoined twins, one drank wine freely while the other did not, and this disparity in their tastes often gave rise to domestic strife. Chang, who had been hemiplegic for several years developed bronchitis at the age of 63 and died. Eng died two hours later.

ANATOMICAL SIMILARITIES.

The similitude of twins is found even in anatomical details. F. Sano⁹ who examined the brains of two still-born twins found them very much alike in structure. In the majority of pairs of twins both are either right or left-handed. Siemens² examined 45 pairs of identical twins and found 35 were right-handed and only one left-handed. In nine pairs one was right and the others left-handed. The characters of twins are often similar, so that they speak with the same inflection of voice and have the same dreams. They may have the same ideas simultaneously though separated at the time; thus Galton mentions a case in which one twin, A, bought a set of champagne glasses in a town in Scotland as a surprise for his brother, B, who at the same time bought a set of exactly the same pattern in England as a present for A. The similarity between twins is not confined to the obvious and easily recognisable features, but extends even to the fine structure of the friction-skin patterns of the palms and soles which may be almost identical. Gauthier and Rominger (Abt) found that there was a marked similarity in the finger prints and in the arrangement of the lines of the hands of five pairs of uniovular twins, whereas in the case of 42 pairs of binovular twins there was not the same striking

correspondence in the appearance of these lines. Symmetrical reversal is of much interest as it involves transposition of the viscera in conjoined twins. This reversal, though rare in separate twins, may appear in the finger prints which may be identical in outline but reversed, as in the case of the index fingers of identical twins observed by H. Wilder.¹⁰ As might be expected, various forms of congenital malformations have occurred in both twins. Among these may be mentioned spina bifida, cleft palate and lip, pseudo-hermaphroditism, excess of fingers, cerebral hernia, hypospadias, and hypertrophy of the umbilicus. In most cases the twins are almost certainly uniovular. Congenital defects also occur in only one of twins, which are then probably of the binovular variety.

The birth of twins is regarded as a misfortune by some races and as a blessing by others. In Matabeland it was attributed to the influence of evil spirits and so both twins were destroyed at birth. The Masai welcome twins, and in another tribe a special string of beads was given to the mother in honour of the occasion.

MORTALITY OF TWINS IN EARLY LIFE.

Twins are subject to a high rate of mortality in early life. Of 3883 pairs of twins in the Moscow Infant Asylum, 62.9 per cent. died during the first few weeks of life. In half of these fatal cases both died on the same day, and in the remainder one only survived the other by a few days. After the first few weeks the highest mortality occurs in the first two years. After the fifth year the mortality of twins appears to be the same as that of other children. Dentition does not necessarily occur at the same time and may be as much as four months later in one twin than the other. Twins may live to an advanced age. The D. brothers were both alive at 81 and had worked as pilots until the previous year. The G. brothers were well and active at 91, and there is a record¹¹ of an inquest which was held on a woman who was a centenarian at which her twin sister gave evidence of finding the deceased lying dead on the sofa when she returned from market. From what has already been said as to the remarkable similarity of physical and mental characteristics of homologous twins, it is not surprising to find that certain deviations from normal health are apt to occur in such twins at or near the same period of life.

HEREDITARY DEFECTS AND DISEASES IN TWINS.

The development of a disease in "similar" twins is strong evidence of it being due to some inborn or hereditary defect, whereas the occurrence of a malady in one twin and not in the other is in favour of it being due to some extraneous factor. Even during the first few days or weeks of life twins are liable to suffer from the same maladies. Thus Abt¹ mentions two boys who had simple pemphigus and two others who both developed left-sided mastitis followed by erysipelas. He also records the case of twin girls, aged 9 weeks, who both suffered from convulsions, well-marked tetany, and rickets. Abnormalities in metabolism may appear in either homologous or heterologous twins; thus Sir Archibald Garrod¹² mentions that five twin births have occurred in the known alcaptonuric families, comprising 112 recorded cases. In three of these the twins were binovular. In two pairs one twin was normal, and in the other three it is probable that only one was affected. Although alcaptonuria is a familial disorder it is notable that in no case were both twins alcaptonuric. In the pedigrees of 1000 albinos Sir Archibald Garrod found 29 records of twins, one or both of which were albinotic. In 11 pairs both were albinos, and 10 of these were of the same sex and so may have been homologous. In the case of cystinuria the same authority refers to two pairs of male twins observed by Colm and by Kietschmer, all of whom were cystinuric. My attention was first drawn to this subject by the occurrence of diabetes mellitus in twin sisters. One of this pair consulted me because she

had noticed an increase in the amount of urine she was passing. She stated that her twin sister, to whom she was greatly attached, had developed diabetes mellitus about a year previously. The disease had run a rapid course and ended in coma at the end of nine months. The development of the diuresis in her own case had made her apprehensive. When I first saw her the urine was free from sugar, but she returned after an interval and was then found to be suffering from well-marked diabetes. The disease ran just the same course as in the twin sister and she also died in coma at the end of nine months. Michaelis has recorded another example in the case of twin brothers of 60, who, living in different surroundings, both developed at the same time paræsthesia of the legs, perforating ulcer of the toe, diabetes, and albuminuric retinitis, and died within a few weeks of one another. These observations tend to support the view that in some cases of diabetes there is an inborn liability to failure of the islets of Langerhans, which may, however, occur early or late according to the habits and circumstances of the patient. In any case, it behoves us to take special precautions when diabetes appears in one twin to save the other from any undue strain on his sugar metabolism by unsuitable diet. Galton mentions the case of twin brothers who were similar in appearance and tastes, both obtained Government clerkships and lived together. One developed Bright's disease, which proved fatal, and the other died of the same malady seven months later.

MENTAL DISEASES IN TWINS.

As twins are similar in mental characters in health it is not surprising to find that they are liable to suffer from certain forms of mental and nervous disease, due in all probability to some inborn mental defect. This liability was shown by similar twin sisters observed by Marandon de Montyel.¹³ They began to menstruate the same day, and suffered from identical forms of the following maladies at the same time—colds, intestinal disorder, measles, mumps, and chicken-pox. They married and became pregnant at the same time, and in the fourth month of pregnancy each suffered from acute mania with identical religious and erotic hallucinations. The children, born within 48 hours of each other, were both boys. Both mothers rapidly recovered. Mongolian idiocy is a congenital defect, the true pathology of which is unknown. It is therefore highly significant that this condition may occur in uniovular twins. Dr. A. Strauch¹⁴ records an example of twin male mongols with typical features of the malady. On examining the literature he was only able to find two other examples of mongolism in both twins of the same sex, those recorded by Hjorth and by De Bruin, whereas in 17 cases only one was a mongol. As far as could be ascertained, it seems probable that the three former examples were uniovular twins, and all the others binovular in origin. Dr. W. H. Coupland¹⁵ mentions the case of twin sisters, aged 11, one of whom was a typical mongol, and the other normal. The rarity of mongolism in both twins is remarkable. When it occurs in one twin it may be due to the pair being binovular in origin, or it may be due to some defect which is present in only one of two spermatozoa fertilising a single ovum. Under the name of "La Folie Gemellaire" Soukhanoff¹⁶ collected 29 cases, and described another, of primary dementia in twin brothers. In these the insanity hardly ever developed simultaneously. Some became affected within a short period of each other, but in the others, varying periods of time, up to as much as 12 years, elapsed between the onset of the symptoms in the brothers. When one of a pair of twins becomes insane, it is most important to keep the other under observation so that any early symptoms of mental disorder may be treated at once. Sir Thomas Clouston¹⁷ records an example in which one brother was insane, but prompt treatment of the premonitory symptoms which appeared in his brother averted any further development of mental disorder.

SIMILAR AND SIMULTANEOUS ILLNESSES IN TWINS.

Whatever view we may take of the nature and causes of asthma, there can be no doubt that a familial predisposition is an important factor in many cases. It is not surprising to find that similar twins are both affected, as in the case of two brothers who always suffered from asthma at Marseilles, but were free from it at Toulon. Both suffered from rheumatic ophthalmia at the same time, even if they were at different places (Trousseau).¹⁸ The simultaneous onset of illness in twins is of much interest, as it may occur even when they are separated. Laycock²⁰ mentioned the case of the twin brothers Lautand who were nurses at a hospital in Bordeaux, who were always ill together and became affected with cataract at the same time. I have been informed of another example of this in the case of twin brothers living in different parts of Europe who both suffered from empyema at the same time. So also with migraine, as C. Gill¹⁹ observed twin sisters who suffered from headache and biliousness at the same hour, though they were at different places. They both became insane at the same time.

In some diseases of the blood and lymphatic glands of unknown causation we find examples occurring in twins, which is suggestive that some inborn error is an important factor in their origin. Dr. G. Peacocke²¹ described two cases of Hodgkin's disease in twin brothers at the age of 4. One died 18 months after the glandular enlargement first appeared, the other was still alive at the time of the report. Siemens² mentions an example of splenic leukaemia in twin sisters recorded by Senator. In hæmophilia it may be mentioned that in the well-known Yeadon family, recorded by Legg²² there were twin brothers who were both bleeders. This, however, is hardly surprising in a family in which male bleeders have appeared for the last 200 years. The development of tumours, either innocent or malignant, in twins appears to be a rarer event than might be expected. Halliday Groom recorded the cases of two sisters who first menstruated on the same day and from 30 years of age suffered from menorrhagia until the menopause at 50. At 53 both suffered from adenocarcinoma with myoma of the uterus. Siemens refers to two twin sisters observed by V. Szontagh, who at the same time developed papilloma of the larynx with identical symptoms. Davis²³ has recorded an example of congenital hypertrophic pyloric stenosis in twin boys. The Rammstedt operation was done in both, and a year later they were awarded the first prize for twins at a baby show. He refers to another similar pair of twins reported by H. L. Moore in which the same operation was carried out at the age of four weeks, but both died.

Goitre has been observed simultaneously in both twins but does not appear to be common. Siemens² refers to uniovular goitrous cretins observed by Hanhart. Twin brothers⁴ with goitres but no symptoms of myxœdema, and also twins of myxœdematous appearance were recorded by Petschacher.²⁴ With the exception of the cases of diabetes already referred to, I have seen no cases of any disease of an endocrine gland in both twins.

SUMMARY.

The evidence here considered shows that similar twins not only closely resemble each other in appearance and character but also in the finer details of structure and metabolism. This similarity renders them liable to suffer from those diseases which are due to some inborn error which sooner or later indicates its presence by definite symptoms of disease. Conversely, those diseases which are found to occur in both twins are most probably due to an inborn error rather than to external circumstances. It is therefore important to remember that where such a malady develops in one of similar twins it is not unlikely to develop in the other. The healthy twin under these circumstances should be watched and any possible steps taken to prevent the onset of the same malady, or at any rate to treat it in its earliest stage.

(Continued at foot of opposite column.)

Milroy Lectures

ON

EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

Delivered before the Royal College of Physicians of London on March 5th, 10th, and 12th, 1925,

By ARTHUR SALUSBURY MACNALT, M.A.,
M.D. Oxf.,

A MEDICAL OFFICER OF THE MINISTRY OF HEALTH; EXAMINER
IN PUBLIC HEALTH IN THE UNIVERSITY OF OXFORD.

LECTURE II.*—EPIDEMIOLOGY OF CEREBRO-SPINAL FEVER AND OF ACUTE POLIOMYELITIS.

I.—THE EPIDEMIOLOGY OF CEREBRO-SPINAL FEVER.

History.

For a knowledge of the history of the epidemiology of cerebro-spinal meningitis up to the year 1886 all writers upon the subject are indebted to the authoritative and exhaustive article by Hirsch¹ in his "Handbook of Geographical and Historical Pathology." Hirsch groups the epidemic prevalence of the disease into four periods. The recent epidemics may be regarded as constituting a fifth period, according to Osler² and other authorities. In the first period, from 1805 to 1830, the disease occurred in isolated epidemics in various European localities and more generally in the United States. The second period was from 1837 to 1850 when the disease prevailed in widespread epidemics chiefly in military centres in France, Italy, Denmark, Algiers, and the United States. The third period lasted from 1854 to 1875. In this period the disease was widely prevalent throughout the greater part of Europe, in parts of Asia, in the United States, and in parts of Africa and South America. The fourth period, from 1876 to 1886, was denoted by a return to isolated epidemic outbreaks in various portions of the world, while the fifth period, beginning in 1896 and extending to the present day, has exhibited extensive and widely diffused major epidemics.

* Lecture I. appeared in THE LANCET last week. Lect. III. will appear in a subsequent issue.

(Continued from previous column.)

TWINS IN HEALTH AND DISEASE: REFERENCES.

- Galton, Francis: *Inquiries into Human Faculty*, London, 1883.
- Siemens, H. W.: *Die Zwillingspathologie*, Berlin, 1924.
- Kleinwachter, L.: *Die Lehre von den Zwillingen*, Prag, 1871.
- Abt, I. A.: *The Journal of the Iowa State Medical Society*, September, 1924.
- Newman, H. H.: *The Biology of Twins*, University of Chicago.
- Ballantyne, J. H.: *Antenatal Pathology and Hygiene*.
- Plautus: *Menaechmi*; trans. by H. T. Riley, London, 1900.
- Lucas, R. C.: *THE LANCET*, Dec. 23rd, 1911, p. 1757.
- Sano, F.: *Phil. Trans. Roy. Soc.*, cccviii., 1916.
- Wilder, H.: *Science*, 1908, xxvii., p. 451.
- THE LANCET*, 1889, ii., p. 349.
- Garrod, Sir A. E.: *Inborn Errors of Metabolism*, London, 1923.
- Marandon de Montyel: *Arch. de Neurolog.*, 1906, xxii., p. 241.
- Strauch, H. A.: *Jour. of the Amer. Med. Assoc.*, vol. lxxxi., No. 26.
- Coupland, W. H.: *Ann. Rep. of the Royal Albert Institution*, 1922, p. 18.
- Soukhanoff: *Ann. Méd. Psychol.*, 1900, 8 sér., xii., p. 214.
- Clouston, Sir T.: *Lectures on Mental Disease*.
- Trousseau: *Clin. Méd. de l'Hôtel Dieu de Paris*, 1885, iii., p. 472.
- Gill, C.: *Journal of Mental Science*, 1883, xxviii., p. 540.
- Laycock: *Brit. and Foreign Medical Review*, July, 1844, p. 169.
- Peacocke, G.: *THE LANCET*, Dec. 3rd, 1904, p. 1517.
- Legg, W.: *St. Bart. Hosp. Rep.*, 1881.
- Davis: *Jour. of the Amer. Med. Assoc.*, August 30th, 1924, p. 686.
- Petschacher: *Wien. Klin. Wehnschr.*, 1922, xxxv., p. 749.

Cerebro-spinal Fever in Great Britain.

Doubtful outbreaks occurred at Dartmoor in 1807 and at Sunderland in 1830, but the disease is not recognised generally as having appeared in Great Britain until Hirsch's third period.

In 1865 groups of cases were reported from several English districts, including London and Rochester; in 1866 a small outbreak of epidemic meningitis occurred at Bardney, near Lincoln. Infection may have been conveyed by reapers from Ireland. From 1887 to 1905 scattered outbreaks were noted from time to time. During this period a series of ten fatal cases came under the notice of Ormerod³ at St. Bartholomew's Hospital, details of which he published in THE LANCET during March, 1895. From 1902 to 1911 outbreaks occurred in Sussex, Lincolnshire, Northamptonshire, and Cambridgeshire.⁴

In 1912 the notification of cerebro-spinal fever became compulsory in England and Wales. From the end of 1914 to 1918 cerebro-spinal meningitis was epidemic on an unprecedented scale in this country. The epidemic synchronised in onset with the importation of cases of cerebro-spinal fever by the Canadian troops, the first cases occurring on Salisbury Plain where these troops were encamped. According to the report of the Medical Research Council's special advisory committee, the Canadians did not import a new disease, but they did introduce a virulent strain of the meningococcus, and were in some degree responsible for its spread. Infection was widespread, but the greater number of cases of the disease were notified in the Eastern and South-Eastern parts of England, where the majority of the troops were stationed. The general distribution of troops, therefore, appears to have influenced the prevalence of cerebro-spinal fever.

During the war epidemic (1914-18) 6450 cases of cerebro-spinal fever were notified in England and Wales. According to Reece,⁵ 4238 military cases of cerebro-spinal fever occurred in this country during the same period.

It will be seen from Table I. (Lecture I.) that the notifications of cerebro-spinal fever have declined without intermission since the year 1917, and the figures for 1923 are the lowest on record; with the passing of war and post-war conditions the incidence of this disease has now returned to normal. Scotland and Ireland suffered during the years of the war epidemic.

Geographical Distribution and Incidence.

Cerebro-spinal fever occurs in nearly all quarters of the inhabited world, being, perhaps, rather more prevalent in the temperate zone of the Northern Hemisphere.

The incidence of cerebro-spinal fever in any given population is necessarily dependent upon whether or not the estimation is made during a period of epidemic prevalence. The non-recognition of mild and abortive cases, classed otherwise as febriculae or "influenza," influence also the estimation, as in the allied examples of poliomyelitis and encephalitis lethargica. As a rule, the disease in large cities does not attack much more than 1 to 2 per 10,000 of the population.⁶ This is a much smaller morbidity-rate than that of measles, scarlet fever, diphtheria, and pneumonia in non-epidemic periods. The incidence of cerebro-spinal meningitis itself on the general population in non-epidemic periods is naturally extremely low. The attack-rate per 1000 of the population in England and Wales for the three years 1919, 1920, and 1921 was only 0.011.

Incidence in Urban and Rural Communities.

The stress of cerebro-spinal meningitis falls upon urban dwellers. In an epidemic year 1917, 347 cases occurred in London, 844 in urban, and 202 in rural districts. The increased incidence of the disease in urban communities seems not only to be due to the greater aggregation of persons in these communities with increased opportunities for acquiring infection, but is also associated with unhygienic

conditions and overcrowding, infringements of sanitary laws which prevail chiefly in towns and cities.

Mortality.

The mortality of cerebro-spinal meningitis varies considerably not only in different epidemics but also according to the age of the patient attacked. Koplik's⁷ statistics for children admitted to Mount Sinai Hospital show that the mortality in non-epidemic times is less severe than in epidemic periods, 38 per cent. in the former case as compared with 50 per cent. in the latter. In the two epidemic years, 1917 and 1918, the fatality-rates per 100 cases among the civil population in England and Wales, including London, were 65.4 and 67.6 respectively, but it is probable that many cases were not notified.

In Table I. (Lecture I.) the number of cases of cerebro-spinal fever notified in England and Wales from 1913 to 1923 are given, and the number of deaths from 1915 to 1923 in the civil population, but through the neglect to notify cases it is clearly valueless to calculate the fatality-rates with any degree of statistical satisfaction. It will be observed that in 1921 the number of deaths (414) exceeded the number of notified cases (411). The Glasgow ten-year rate of 72 per cent. may be regarded as a fairly average fatality-rate in an epidemic period. Higher and lower rates may occur. The epidemic in Sweden, which lasted from 1854 to 1861, is an example of a comparatively low fatality-rate; it was only 35.9 per cent.

In the early stages of an epidemic fulminating and fatal cases incline to prevail, while in the late stages mild and recoverable cases are more numerous. As Rolleston⁸ has shown, experience in the Navy testifies to the beneficial influence of serum in diminishing the mortality of cerebro-spinal fever.

Age, Sex, and Race.

The age of the patient has an important influence upon the mortality of cerebro-spinal fever. The mortality is heaviest among children under 2 years of age (over 80 per cent.) and in adults over 40 years, in the one extreme when the resisting powers of the body are imperfectly developed, in the other when these powers are not in their maximum force and vigour. From 2 to 15 years the mortality-rate tends to diminish—with the exception of a slight fall between 20 and 30 years the mortality rises again, the increase being marked after 30 years and increasing to a maximum with each successive ten-year period. In posterior basic meningitis, the special type of cerebro-spinal meningitis in children, which is most often seen between the ages of 4 months and 2½ years, but may occur up to the age of 5 years, the mortality is over 75 per cent. (Lees and Barlow⁹). Alike in epidemic and non-epidemic periods, the greatest incidence of cerebro-spinal fever falls on children under 15 years of age.

Cerebro-spinal fever on the whole affects both sexes nearly equally. There is, perhaps, a greater tendency for males to be affected. In Texas in 1912, of 2575 cases, 1598 were males and 977 females. In the epidemic of the war years males were chiefly affected. In the civil population of England and Wales the percentage of males affected was 51.4 in 1917 and 53.4 in 1918. The addition of the military cases notified in these years would materially swell the incidence of the disease on males. The male death-rate is often slightly higher than the female death-rate. In 1917 male deaths constituted 53.2 per cent. and in 1918, 56 per cent. of the total deaths.

Race and nationality, with the possible exception of the Negro race, which has been visited with particular severity in certain of the American epidemics, appear to exercise no predisposing effect upon the incidence of cerebro-spinal fever. Sophian¹⁰ has noted certain racial differences in epidemics, but it is probable that social status, overcrowding, and unhygienic surroundings are more responsible for them than any true racial incidence.

Season and Meteorology.

Epidemic cerebro-spinal meningitis is essentially a disease of the winter and spring months of the year. Approximately 80 per cent. of the epidemics occur in the winter and spring months. The majority of recorded epidemics have begun within one of the four months, December, January, February, and March, the maximum intensity of the epidemic being attained in April or May. From May the epidemic steadily declines and usually terminates by the end of July.

Similar features were seen in the epidemic in England and Wales in the years of the war. The period of maximum seasonal prevalence of the disease was in the early months of the year, and the greatest number of cases recorded in any one week in 1915 was in the first week in March, and in the years 1916 and 1917 in the fourth week in March. In the three years 1915-17 the rise and fall of the curve was steep although the fall was less abrupt, and in each year there was a preliminary rise in December. In 1918 the seasonal rise in the early months of the year reached its summit in the second week in February, and was less acute and the peak of the curve was less marked than in the previous years. Many cases occurred among the troops, and Reece⁵ has pointed out that the conditions of training and hut occupation in the early months of the year favoured the dissemination of infection acquired through the naso-pharynx. Glover¹¹ has shown that overcrowding is a more potent factor than season in favouring the incidence and carrier-rate of cerebro-spinal fever.

Whilst it must remain true that unusually cold weather is often associated with epidemics and with their highest peak in the epidemic curve, the occasional anomalous association with warm climates and warm weather is probably best explained by sudden marked temperature changes to which a particular community is not accustomed, and which cause widespread nasopharyngeal catarrh.

Sanitary Conditions.

Overcrowding, when it occurred in billets, hutments, and barracks during the Great War, undoubtedly favoured the spread of cerebro-spinal fever among the troops. It not only provides increased opportunities for contagion to spread from case to case, but it is invariably associated with lack of free ventilation which is another important predisposing factor. Multiple cases occur in households and are due to personal infection. Owing to the low vitality of the meningococcus outside the body it is unlikely that infection persists in dwelling-houses or in fomites.

Occupation and Fatigue.

The incidence of cerebro-spinal fever on troops has been repeatedly mentioned. The disease may be termed the camp-follower of war. That the chief cause of the enhanced incidence on troops is personal infection in populous urban centres is seen from the rarity of military epidemics in the field. The incidence of the disease in the Royal Navy during the war furnishes a parallel example. Rolleston¹² records that out of the 417 cases of cerebro-spinal fever in the Navy during the first three years of the war, 310, or 75 per cent., arose in the large depôts at Portsmouth (110), Plymouth (94), the Crystal Palace (59), and Chatham (49), while only 42 cases, or 10 per cent., were reported from sea-going ships. Jehle¹³ recorded outbreaks of cerebro-spinal fever in Silesia and Westphalia with a high incidence upon coal-miners and their families. Physicians and nurses sometimes contract cerebro-spinal fever in the course of their attendance on the sick, but the number attacked is not high.

By most authorities previous *fatigue* is recognised as a condition predisposing to cerebro-spinal fever. In a series of military cases (1914 to 1918) recorded by Worster-Drought and Kennedy,¹⁴ over 84 per cent. of the cases were in men of under one year's army service, that is among young recruits who were

unaccustomed to the strain of their new duties. Clinically, in epidemic periods it has often been recognised that undue mental or physical fatigue in individual cases predisposes to an attack of cerebro-spinal fever.

Previous Health.

With the exception of catarrhal conditions the previous state of health appears to exercise no predisposing effect on cerebro-spinal fever. The epidemicity among troops, usually men of superior physique, indicates that the healthiest persons may suffer from the disease in a severe form. The question of catarrhal conditions in cerebro-spinal fever calls for special consideration. Dopter¹⁵ recognised three stages in cerebro-spinal meningitis: (1) catarrhal, (2) septicæmic, and (3) meningeal, but this has not been borne out by the experience of Flack¹⁶ and Foster and Gaskell.¹⁷ The reports of the Medical Research Council indicate that in the opinion of the majority of the bacteriologists there is no causal relationship between catarrh and carriers of the meningococcus. Many cases of cerebro-spinal meningitis are unassociated with catarrh. It is now a usually accepted view that catarrhal affections of the respiratory tract, if preceding cerebro-spinal meningitis, are not due to the meningococcus, but favour the onset of the disease in epidemic periods.

Incubation Period.

In one's own experience in both military and civilian outbreaks in 1915-16, the usual incubation period appeared to be from three to four days. I have notes of two fulminating cases of cerebro-spinal fever in which the incubation period, so far as one was able to judge, appeared to be as short as 24 hours, a period which coincides with Sophian's minimum incubation period. Worster-Drought and Kennedy,¹⁸ reviewing the available evidence on the incubation period of cerebro-spinal fever, conclude that this period varies between 24 hours and seven days, its average duration being four days, and most authorities would agree with this opinion. With carriers who subsequently develop the disease the incubation period must of necessity be extremely variable. Flack¹⁶ adduces evidence to show that carriers may develop the disease at almost any time up to six or seven weeks after infection with the meningococcus.

II. EPIDEMIOLOGY OF ACUTE POLIOMYELITIS.

History.

The first authentic description of poliomyelitis was given by Michael Underwood¹⁹ in a treatise on the "Diseases of Children," published in 1784. Underwood was a Licentiate in Midwifery of the College; he was a skilful accoucheur and attended the Princess of Wales in 1796, when the Princess Charlotte was born. He associated the disease with teething and termed it "debility of the lower extremities." In 1822 Shaw¹⁹ reported a few cases in a book entitled "Nature and Treatment of the Distortion to which the Bones of the Spine and Chest are Subject." He related the disease to weaning in infants. Dr. John Badham,²⁰ of Worksop, Notts, in 1835, described four cases of poliomyelitis in the *London Medical Gazette*. The title of his paper was *Paralysis in Childhood: Four Remarkable Cases of Suddenly Induced Paralysis of the Extremities Occurring in Children without any Apparent Cerebral or Cerebro-spinal Lesion*. Badham for the first time drew attention to the cerebral symptoms presented by patients.

Jacob Heine²¹ (1799 to 1878) wrote a very instructive monograph on poliomyelitis in 1840, and is regarded generally as the pioneer contributor to modern knowledge of the disease. Heine was the first to recognise poliomyelitis as a disease of the spinal cord. Further clinical cases were reported by British and French physicians from 1841 to 1863, but no study of the pathology was made until the last-named year, when von Reinecker and von Recklinghausen,²² in Germany, and Cornil,²³ in France, described the lesions in the anterior cornua and

lateral columns of the cord. Afterwards there was considerable controversy over the nature of the changes in the medical press of the day, Charcot maintaining the disease to be a primary atrophy of the spinal cord, whilst others held opposing views. Rissler²⁴ first investigated the histology of the acute forms, and his work has been followed up and completed by the studies of Harbitz and Scheel²⁵ (1907). Wickman²⁶ (1905 and 1910), Strauss²⁷ (1910), and Peabody, Draper and Dochez²⁸ (1912). The first adult case of poliomyelitis appears to have been described by Vogt²⁹ in 1859. This brings us to the period when the work of Medin and Wickman conclusively demonstrated the true character of poliomyelitis as an acute infectious disease. This modern work was considered in the first lecture and its record completes the historical account of the disease.

Poliomyelitis in Great Britain.

The following is a summary of the chief epidemics of poliomyelitis recorded in England and Wales:—

- 1897. Outbreak in Hertfordshire (W. Pasteur).
- 1904. Cases in London (F. E. Batten).
- 1908. Outbreak at Upminster (W. W. Treves).
- 1909. Outbreak at Bristol (G. Parker).
- Cases in London (L. G. Parsons).
- 1910. Outbreaks in Cumberland (Carlisle), Northumberland, Nottinghamshire, Leicestershire, Dorset, Gloucester, and York.
- 1911. Epidemics in Devon and Cornwall (R. J. Reece), Plymouth, Huntingdon, Bedfordshire, Suffolk, Yorkshire, Westmorland, Derbyshire, and Wales.
- 1913. Outbreaks in Barrow-in-Furness, N.W. Lancashire, and Westmorland (Macewen).
- 1917. Outbreaks in Esher and the Dittons Urban District and Epsom Rural District (MacNalty), Cambridge, and Cambridgeshire (Macewen).
- 1921—Further increase in notifications of poliomyelitis. Many local outbreaks are still unnoticed until the appearance of crippling after-effects.
- 1923.

Poliomyelitis prevails in Scotland, and outbreaks have been reported and studied by Byrom Bramwell,³⁰ Edwin Bramwell,³¹ H. Bruce-Low,³² and others. Since 1913 small outbreaks have been recorded in Ireland.

Geographical Distribution.

The most extensive epidemics of poliomyelitis which have hitherto been recorded have occurred in Scandinavia and in the United States. The classical survey of epidemic poliomyelitis throughout the world was made by Bruce-Low,³³ and for details of the epidemics in various countries reference should be made to his illuminating report in the annual report of the Medical Officer of the Local Government Board for 1915–16.

Incidence and Frequency.

It is difficult to form even an approximate estimate of the incidence of acute poliomyelitis upon the general population. Although notification of the disease has been in force since 1912 in England and Wales a considerable number of cases of the disease are never notified. In support of this statement, already made several times, the following instances occur to mind: In 1911, 268 cases of poliomyelitis were officially notified in England and Wales; but in addition to these notifications there were reported at least 330 more cases, making a total for that year of 598 cases that came in one way or another under observation.

In certain towns poliomyelitis is endemic yet the disease attracts little attention. In the county borough of Sunderland, which had, in 1911, a population of 165,295, paralysed children are brought year after year to the Sick Children's Hospital, where the true nature of the disease is recognised. In 1912 the hospital books showed that eight cases of poliomyelitis were treated; ten in 1913, nine in 1914, and 12 in 1915. The medical officer of health for the borough only received six notifications of poliomyelitis between September, 1912, and March, 1916. This non-recognition of poliomyelitis in the acute stage occurs in other countries. The New York epidemic of 1907 was practically not noticed until the acute stage was over, when the large number of cases applying to the dispensaries and to the

neurologists for treatment led to full investigation by the New York Department of Health.

Table II. gives the proportion per million of the population of poliomyelitis for the years 1916, 1917, and 1918 as worked out for the notified cases of the disease in those years.

TABLE II.—Incidence on Population of Poliomyelitis.

				Proportion per 1,000,000 population.		
				London.	Urban districts.	Rural districts.
1916	..	..		45.5	17.6	12.6
1917	..	..		12.6	9.8	11.6
1918	..	..		12.9	6.1	5.8

These figures are subject to the qualifications previously discussed and the same reservation must apply to the American figures. The incidence must be controlled by many factors, of which probably the most important are the intensity of the outbreak, the virulence of the causal virus, and the susceptibility of the population. In an "unsalted" community—that is, one previously unattacked by poliomyelitis—there will naturally be a much higher incidence than occurs in a community where previous attacks have eliminated susceptibles or protected the juvenile members of the population from subsequent attack.

Incidence in Urban and Rural Communities.

It is possibly of significant interest that in 1910 and 1911, when epidemic poliomyelitis was ascertained to be largely prevalent in England and Wales, the cases observed chiefly occurred in rural areas and in small urban districts. More recent figures show an increased incidence in urban communities in England and Wales.

Mortality.

The case-fatality of poliomyelitis varies in different epidemics. An average variation is from about 10 to 25 per cent. The variable case-mortality is chiefly dependent upon whether the mild and abortive cases of the disease are recognised or escape detection in the different epidemics. The case-fatality rates are probably lower than those usually given on account of the failure to detect mild cases. In the Surrey outbreak of 1917, in which many mild and abortive cases were detected, I found the case-fatality to be 7.1 per cent., which is within the limits assigned by Holt and other observers. Nevertheless, instances are on record where there was an unusually high mortality. Wickman, for example, in a small epidemic of 26 cases, recorded a mortality of 42.3 per cent.

Age.

Table III. showing for England and Wales during the year 1918 for certain age-periods the age distribution of 228 cases of poliomyelitis, the number of deaths, and the mortality per cent., indicates that for persons over 10 years of age the mortality from the disease is higher. In this table, however, the highest case-

TABLE III.—Showing for England and Wales During the Year 1918 for Certain Age-periods the Age Distribution of 228 Cases of Poliomyelitis, the Number of Deaths, and the Mortality Per Cent.

Age in years	Cases	Deaths	Mortality per cent.	Age in years	Cases	Deaths	Mortality per cent.
0-1	23	9	39.1	15-20	14	4	28.5
1-5	100	24	24.0	20-30	7	1	14.2
5-10	49	11	22.4	Over 30	8	3	37.5
10-15	27	10	37.0				

mortality is seen in persons under 1 year of age, and it is highly probable that many mild and abortive cases for the age-periods under 10 years were unnoticed. The cases at the higher ages are more likely to have been notified as they are more readily diagnosed.

Generally, as Table III. indicates, the largest proportion of cases occurs between the first and fifth year of life. In the New York epidemic of 1907 as high a percentage as 90.5 per cent. of the cases occurred during the first six years of life. It is not altogether certain whether the disease occurs in utero. Morton,³⁴ Batten,³⁵ and others have reported cases which they considered examples of intra-uterine infection. The disease not infrequently occurs within the first years of life, 23 of the 228 cases notified in England and Wales in 1918 fell within this age-period. Duchenne³⁶ reported a case 12 days after birth, Bramwell³⁷ one of 3 weeks of age, and Sinkler³⁸ two cases under 1 month of age. Ruhräh and Mayer³⁹ state that adults are affected generally to the extent of about 10 per cent. of the various epidemics, but in this there are great variations, at times the percentage being higher and sometimes much lower. The second year of life appears to be most constantly affected by poliomyelitis.

Sex and Race.

Of 228 cases of poliomyelitis notified in England and Wales in 1918, 118 were males and 110 females. As a rule there is not much sex difference in the incidence of poliomyelitis; the figures of almost all epidemics agree in showing a slightly greater proportion of males than females attacked. In the New York epidemic of 1916 boys were 55.8 per cent. and girls 43.7 per cent. of the total.⁴⁰ Caverly⁴¹ reports males 57 to 60 per cent. and females 43 to 40 per cent. The proportion of males attacked seems to be higher in later life. Ruhräh and Mayer³⁹ observe that the disease is more liable to be severe in boys and the mortality-rate somewhat higher.

The factor of race does not appear to play an important part in the problem of susceptibility to poliomyelitis.

First and Second Attacks.

As a rule one attack of poliomyelitis produces permanent immunity. A few anomalous examples have been recorded by Medin, Leegaard, Auerbach, Neurot, Forster, Schwartz, and others in which there was recovery from an acute attack of poliomyelitis, and after an interval of several weeks or months the disease recurred with increased paralysis. Possibly this condition may be due to a re-activation of the original virus rather than to a subsequent re-infection. There are exceptional and rare cases in which a definite second attack of poliomyelitis has occurred in the same individual. Two cases of the kind occurred in the New York epidemic of 1916. Eshner⁴² has reported the case of a girl in which 11 years elapsed between the two attacks. Sanz⁴³ records a similar case with 14 years' interval.

Seasonal Prevalence and Meteorology.

There is a well-marked seasonal prevalence for poliomyelitis. It is noteworthy that the disease occurs more commonly in temperate than in warm climes, yet in the northern hemisphere it is most prevalent in the warm months of the year—namely, July, August, and September—though it may linger on during other parts of the year. In America Sinkler³⁸ studied 270 cases and found that 78.8 per cent. occurred from May to September, the dry months of the year. Poliomyelitis may indeed occur in any month of the year either in sporadic or in epidemic form, but the majority of the cases as indicated arise in the late summer and early autumn. The fewest cases occur in the winter and early spring. Epidemics in the cold months of the year are not unknown.⁴⁴

Transmission of the Disease and Consideration of Possible Predisposing Causes.

Evidence previously considered has indicated that the main factor in the spread of poliomyelitis is personal contagion. Here may be mentioned other views as to transmission of the disease and certain predisposing causes.

Transmission by Insects.—There is experimental evidence that the virus of poliomyelitis may be transmitted from infected monkeys by biting insects (bed-bugs and the stable-fly, *Stomoxys calcitrans*), and that it may be mechanically carried upon and in the bodies of common house-flies. These experiments would not necessarily establish that this is a natural method of transmission. The seasonal prevalence of poliomyelitis corresponding to the season and maximum prevalence of numerous insects, the early appearance of poliomyelitis in rural areas, and the irregular spread of epidemics are epidemiological features which have suggested the agency of some insect in conveying the disease. In epidemics personally studied, many of the patients were found to have been bitten by flies and other insects. I have notes of a case with a bad fly-bite on the eyelid a week previous to the onset of poliomyelitis; a similar history of a mosquito-bite was obtained in another case. Many patients, on the other hand, gave no histories of being bitten by insects in epidemic zones. Returns made to the Central Health Authority for the year 1918 show that insect-bites were seen on 2.2 per cent., and not seen on 52.6 per cent. of the patients. There was no available information in regard to 45.2 per cent. of the cases.

Regarding the seasonal prevalence of poliomyelitis, as Frost⁴⁵ has observed, it is not so definitely limited to the warmer months as would be anticipated if the disease is transmitted by outdoor insects, such as mosquitoes or biting flies. It differs, for example, from the well-defined seasonal prevalence of yellow fever. The usual restriction of the seasonal prevalence of poliomyelitis to summer and autumn militates against the likelihood of transmission by the parasitic insects of man, bed-bugs, lice, and fleas. The facts chiefly opposed to this view are, first, the evidence relating to personal contagion; secondly, the small total incidence of poliomyelitis; and thirdly, the preponderating incidence of the disease on children. Insect-borne diseases do not usually affect children rather than adults. The favouring influence of warm temperatures may be exercised upon the virus of poliomyelitis itself when infecting human beings rather than upon an hypothetical intermediate host.

Other Possible Modes of Transmission.—There is no substantial evidence as to the conveyance of poliomyelitis by foodstuffs, dust, or sewage, and the English and American statistics indicate that the disease cannot be specially associated with uncleanness of the patient or of the patient's surroundings.

Incubation Period.

The duration of the incubation period is said to be variable. In the experimentally produced disease in monkeys, Flexner⁴⁶ found that the time elapsing between inoculation and the onset of paralysis is from three or four days to 33 days, the average being eight or nine days. A virus passed through several generations of monkeys becomes adapted to its new host, and has a more constant period of incubation than when it is first transferred to the monkey from man. This fixed virus regularly causes paralysis in from seven to eight days. In man the incubation period appears to be short and to range within the limits of two to ten days. Wickman considered the period as from one to four days, basing his opinion on the interval between the dates of onset of the disease in two members of the same family. The observations of Draper, Peabody, and Dochez²⁸ on cases of familial infection would lead to a similar conclusion if they had not felt that it was impossible to exclude simultaneous infections of two members of the same family from a common source. Indeed, neglect of this factor is a trap for the unwary in the study of epidemics of nervous disease. Further statements on good evidence concerning the incubation period have been made as follows: Muller,⁴⁷ between five and ten days—average one week; Flexner,⁴⁶ two days to two weeks or even longer; Kling and Levaditi,⁴⁸ two to three days; Currie

and Bramwell,³¹ four days or less. My personal observations, based on case to case infection in epidemic periods, would place the incubation period at from two to ten days, the average period being three to four days.

POLIO-ENCEPHALITIS.

The record of the epidemiology of poliomyelitis would be incomplete without some reference to the cerebral form of the disease termed polio-encephalitis. In this type the lesion chiefly or solely involves the upper motor neuron giving rise to spastic paralysis. Vizioli,⁴⁹ in 1880, noted the close relationship of certain cerebral palsies in children to the spinal form of poliomyelitis, but polio-encephalitis was first described and named by Strümpell⁵⁰ in a lecture at Leipzig in 1884. He also first affirmed that poliomyelitis and polio-encephalitis are only to be regarded as different localised manifestations of a specific disease. The cases initially described were 24 in number, all under 6, and 19 under 4 years of age. The majority of cases indeed occur in children, but adults may be affected. In Medin's original paper† 11 out of 14 cases were described with cerebral signs. This was exceptional. Wickman,²⁶ in the Swedish epidemic in 1905, did not see a single instance. No case was reported in the New York epidemic of 1907, in which 1000 cases were observed. Peabody, Draper, and Dochez²⁸ met with no cerebral cases in their study, and few cases were found in the New York epidemic of 1916. Zappert,⁵¹ in 555 cases, described five cerebral cases. Two cases were observed in the Norwegian epidemic of 1905 in Christiania.

There has been series of instances in which there was a combination of the flaccid and spastic paralysis. Such cases have been reported by Wickman, Pierre Marie, Oppenheim, Neurath, and others. Ruhräh and Mayer³⁹ quote Möbius, who has described a brother and a sister taken ill at almost the same time with a febrile affection. In one there was a spastic hemiplegia with choreiform movements; in the other, flaccid paralysis.

In the small outbreak of poliomyelitis in Esher and the Dittons Urban District and Epsom Rural District in 1917, two cases of the cerebral form, both in children, were observed. One was a case of facial paralysis (pontine type), the other an ophthalmoplegia. Both cases occurred in intimate association with ordinary cases of infantile paralysis. The rare cerebral cases are sometimes somnolent, and cases of epidemic stupor in children, similar to those described in the first outbreak of encephalitis lethargica by Batten and Still,⁵² were recorded by Peabody, Draper, and Dochez²⁸ in the New York epidemic of poliomyelitis. Speech changes‡ (notably in Medin's ataxic cases), nystagmus, tremors, choreiform movements, rashes, and other symptoms similar to those seen in encephalitis lethargica have also been described in polio-encephalitis.

It is only in a few cases that the lesions of polio-encephalitis have been described, although it is not uncommon to find scattered lesions in the brain in cases of ordinary spinal poliomyelitis. Harbitz and Scheel²⁵ made a microscopical examination of the brains from two cases of polio-encephalitis occurring in the Norwegian epidemic of 1905 and found the lesions present identical with those of acute poliomyelitis.

When encephalitis lethargica first appeared in 1918 the suggestion was made that the cases of "the new disease" were only examples of the cerebral form of poliomyelitis, but our investigations soon indicated that the differences were more real than the apparent resemblances. Polio-encephalitis is a rare disease; it may be apparently sporadic, but it also occurs in direct association with other forms of poliomyelitis in epidemic periods, and Strümpell's early contention as to the identity of the two forms has been amply

substantiated. I have notes of several isolated cases of polio-encephalitis which have occurred in places where endemic foci of poliomyelitis exist.

Since Jan. 1st, 1919, cases of polio-encephalitis in England and Wales have been separately notified from cases of spinal poliomyelitis. Table IV. shows the number of cases notified in the period 1919 to 1923, with the number of deaths in the years 1921, 1922, and 1923.

TABLE IV.—*Polio-encephalitis in England and Wales. Numbers of Notified Cases and Deaths.*

Year.	Cases.	Deaths.	Year.	Cases.	Deaths.
1919 ..	62	—	1922 ..	31	27
1920 ..	36	—	1923 ..	57	40
1921 ..	51	40			

It will be seen from Table IV. that the mortality from this form of poliomyelitis is a high one. From the evidence available the incidence of polio-encephalitis would appear to be higher in England and Wales than in America. I should imagine there are few neurologists in this country who have not encountered examples of the disease.

REFERENCES.

Epidemiology of Cerebro-spinal Fever.

- Hirsch, A.: Handbook of Geographical and Historical Pathology, Trans. by C. Creighton, London, 1886, iii., 547-594.
- Osler, W.: Discussion on Epidemic Meningitis, Proc. Roy. Soc. Med., 1913, viii., 41.
- Ormerod, J. A.: Ten Fatal Cases of Acute Idiopathic Cerebro-Spinal Meningitis, THE LANCET, 1895, i., 735.
- Bruce-Low, R.: Prevalence and Distribution of Cerebro-Spinal Fever throughout the World during Recent Years, Reps. on Cerebro-Spinal Fever, Reps. to the Loc. Govt. Board on P.H. and Med. Subjects (N.S. No. 110), London, 1916, 115.
- Reece, R. J.: History of the Great War, Medical Services, Hygiene of the War, Prevention of Cerebro-Spinal Fever, London, 1923, ii., 280, 281.
- Heiman and Feldstein: Meningococcus Meningitis, Philadelphia, 1913, 43, 47, 48.
- Koplik, H.: Med. Record, 1908, lxxiv., 557.
- Rolleston, H. D.: Lunnleian Lectures on Cerebro-Spinal Fever, THE LANCET, 1919, i., 645.
- Lees and Barlow, T.: Simple Meningitis in Children, Allbutt's System of Medicine, 1899, vii., 492.
- Sophian, A.: Epidemic Cerebrospinal Meningitis, London, 1913, 14, 15.
- Glover, J. A.: Military Overcrowding and the Meningococcus Carrier Rate, Medical Research Committee's Publications, March 9th, 1918.
- Rolleston, H. D.: Jour. Roy. Naval Med. Service, 1918, iv., 18.
- Jehle: Wien. klin. Wochenschr., 1907, xlv., 1213.
- Worster-Drought, C., and Kennedy, A. M.: Cerebro-Spinal Fever, London, 1919, 47, 48, 58.
- Dopter: Diagnostic et traitement de la méningite cérébro-spinale, Paris, 1918.
- Medical Research Committee Report on Studies in Cerebro-Spinal Fever, London, 1917.
- Foster, M., and Gaskell, J. F.: Cerebro-Spinal Fever, Cambridge, 1916, 122.

Epidemiology of Acute Poliomyelitis.

- Underwood, M.: Diseases of Children, first edition, 1784.
- Shaw: Nature and Treatment of the Distortion to which the Bones of the Spine and Chest are Subject, 1822.
- Badham, J.: Paralysis in Childhood, &c., Lond. Med. Gazette, Nov. 14th, 1835.
- Heine, J.: Beobachtungen über Lähmungszustände der untern Extremitäten und deren Behandlung, Stuttgart, 1840.
- Von Reinecker and Von Recklinghausen: Deutsch. Klinik, Jan. 31st, 1863.
- Cornil: Gaz. Méd., 1864, 290.
- Rissler: Zur Kenntniss der Veränderungen des Nerven Systems bei Poliomyelitis Anterior Acuta, Nord. Med. Ark., 1888.
- Harbitz and Scheel: Pathologisch-anatomische Untersuchungen über Akute Poliomyelitis und Verwandte Krankheiten, Christiania, 1907.
- Wickman, I.: Beiträge zur Kenntnis der Heine-Medinschen Krankheit, Berlin, 1907; Die Akute Poliomyelitis, bzw., Heine-Medinsche Krankheit, Leipzig and Vienna, 1911.
- Strauss: The Pathology of Acute Poliomyelitis, Rep. of Collective Investigation Comm. on the New York Epidemic of 1907, 68; Strauss and Huntoon: N.Y. Med. Jour., 1910, xci., 64.
- Peabody, F. W., Draper, G., and Dochez, A. R.: A Clinical Study of Acute Poliomyelitis, Monographs of the Rockefeller Inst. for Med. Research, No. 4, New York, 1912.
- Vogt: Ueber die Essentielle Lähmungen der Kinder, Berne, 1859; Schwietzer Monatsschrift f. prakt. Med., 1857-8-9.

(Continued at foot of next page.)

† Trans. Internat. Congress of Medicine, Berlin, 1890.

‡ In my opinion, however, the speech changes described by Medin and others are not identical with the highly specialised and characteristic speech changes seen in encephalitis lethargica.

THE SURGICAL TREATMENT OF DUODENAL ULCER.

BY CHARLES A. PANNETT, B.Sc., M.D. LOND.,
F.R.C.S. ENG.,

PROFESSOR OF SURGERY, UNIVERSITY OF LONDON; SURGEON
TO ST. MARY'S HOSPITAL, PADDINGTON.

THE more closely the investigation of the treatment of duodenal ulcer is carried out, the less grows the inclination to be dogmatic in the matter, or, indeed, to lay down any inviolable rules of practice. An unbiased study of the writings of the accredited leaders and directors of thought in medicine and surgery leads to a most perplexing attitude towards the subject, so that the investigator is inevitably thrown back upon his own resources of experience to guide him in the treatment of cases which come under his care.

The extremes of opinion, that duodenal ulcer should almost never require surgical aid, and that once a duodenal ulcer can be diagnosed beyond reasonable doubt, the treatment should *always* be surgical, do not come into question, for it is easy to refute both these statements. At St. Mary's Hospital the two extreme schools of thought do not exist. Many duodenal ulcers are treated medically, get well, and remain so. Thus, of 91 patients diagnosed as duodenal ulcer admitted to the hospital during the years 1920-23, excluding, of course, cases of perforation, only 45 came to operation. It may be argued that it is an unwarranted assumption to regard all these diagnoses as correctly made when no operation has been performed, but experience on the surgical side of this hospital amongst patients handed over from the physicians has shown that the diagnostic error is not so high as to invalidate the general truth of the statement that many duodenal ulcers get well in the medical wards under treatment which includes a dietetic régime, the exhibition of alkalies or of atropine, and always rest in bed.

References: Continued from previous page.

30. Bramwell, Byrom: Scottish Medical and Surgical Journal, June, 1908.
 31. Bramwell, E.: Acute Poliomyelitis, Edin. Med. Jour., June, 1919; (with D. W. Currie) Suggestive Observations in Relation to the Incubation Period of Acute Anterior Poliomyelitis, Rev. of Neurology and Psychiatry, January, 1911.
 32. Bruce-Low, H.: Proc. Roy. Soc. Med. (Epidem. Sect.), February, 1912.
 33. Bruce-Low, H.: A Short Account of the Epidemiology of Acute Anterior Poliomyelitis in Recent Years, App. No. 4, Forty-fifth Ann. Rep. of the Loc. Govt. Board (Rep. of the Med. Officer for 1915-16) (Cd. 8423), London, 1917, 14-74.
 34. Morton: Philadelphia Med. News, July 12th, 1890.
 35. Batten, F. E.: Brain, 1910, xxxiii., 149.
 36. Duchenne, G. B. A.: L'Electrisation Localisée, third edition, 381-437.
 37. Bramwell: Studies in Clinical Medicine, No. 1, i., 11.
 38. Sinkler: American Jour. Med. Science, April, 1875.
 39. Ruhräh, J., and Mayer, E. E.: Poliomyelitis in all its Aspects, Philadelphia and New York, 1917, 62, 63, 64, 65, 84.
 40. Report of New York City Department of Health, 1917.
 41. Caverly, C. S.: Bull. Vermont State Board of Health, 1914, xiv., 3.
 42. Eshner: Med. Rec., 1910, ii., 527.
 43. Sanz: Rev. Neurol. and Psych., 1915, xiii., 544.
 44. Draper, G.: Acute Poliomyelitis, London, 1917, 8.
 45. Frost, W. H.: Epidemiologic Studies of Acute Anterior Poliomyelitis, U.S. Pub. Health Service, Washington, 1913.
 46. Flexner and Lewis: Jour. Amer. Med. Assoc., 1909, liii., 1639; Ibid., 1910, liv., 178.
 47. Müller, E.: Die Spinale Kinderlähmung, Berlin, 1910.
 48. Kling and Levaditi: Ann. Inst. Pasteur de Paris, 1913, xxvii., 718, 839.
- Polio-encephalitis.*
49. Vizioli: Dell' Emiplegia spastica Infantile (Heine), Morgagni, Napoli, 1880, xxii., 568.
 50. Strümpell: Jahrb. f. Kinderh., 1885, 73.
 51. Zappert, J., Von Wiesner, R. R., und Leiner, K.: Studien über die Heine-Medischen Krankheit (Poliomyelitis Acuta), Leipzig und Wien, 1911, 45.
 52. Batten, F. E., and Still, G. F.: Epidemic Stupor in Children, THE LANCET, 1918, i., 636.

Indications for Surgical Intervention.

In the Surgical Clinical Unit opinion has crystallised as far as this, that operative intervention is not undertaken as a rule unless the disease has lasted for a considerable time, has proved refractory to medical measures, or has endangered life by causing a hæmorrhage, although the symptoms may be of very recent origin. As a matter of fact, the ordinary man, the bread-winner of a family, does not submit to operative treatment, with its associated considerable interference with his work, until he has failed to get relief from medicine after one or more fair trials, and finds life becoming too burdensome and intolerable for him to carry on. The following case is a warning against resorting to surgery at too early a stage in the disease.

CASE 1.—The patient, a male, suffered from symptoms which suggested the existence of an ulcer of the stomach or duodenum, and was operated upon at a large London Hospital by a well-known surgeon in 1915. A careful search was made, but no lesion of the stomach or duodenum could be found. The surgeon had no choice but to close the abdomen, leaving its contents untouched. No relief followed, and the patient struggled on with recurrent attacks of increasing severity until forced again into the hands of the surgeon in 1923, when he entered the St. Mary's Surgical Clinical Unit. A skiagram now demonstrated a deformation of the duodenal shadow and a persistent fleck after evacuation. On opening the abdomen a large ulcer on the posterior wall of the second part of the duodenum, penetrating into the pancreas, was revealed, with much surrounding fibrosis. The affected part of the duodenum with the pylorus was excised and, as the stump was rather short, owing to the amount removed, it was sewn up, and the open end of the stomach implanted into the jejunum. The patient has not had a moment's pain since.

A similar case is reported by E. Nordman,¹ where a neurotic girl was explored most carefully without result, whilst one year later a callous ulcer was found in the duodenum.

The following case shows how large an acute gastric ulcer may be without giving any evidence of its presence on the outer aspect of the stomach.

CASE 2.—The patient, a man aged 66, was admitted to St. Mary's Hospital in 1922, having had two severe hæmatemeses, accompanied by mælena. He was given two blood transfusions and operated upon by one of the surgeons, a rapid gastro-jejunostomy being performed. No ulcer could be detected on a careful examination of the stomach, but suspicion fell upon the duodenum. The patient, an ex-sanguinated elderly man, died within 24 hours. Post mortem there was found a large acute ulcer of the lesser curvature of the size of half-a-crown, with sharply punched-out edges and no reaction in the outer coat of the stomach at all, although it had nearly perforated. It could not be felt before opening the stomach, even on the post-mortem table.

An ulcer that is confined to the mucosa alone may give no evidence at all of its existence on the peritoneal surface of the viscus, nor may it give rise to palpable induration. Such ulcers may heal or they may be in process of evolution towards the callous state. Operation at this stage is premature and perhaps unnecessary. It must be remarked here that the detection of an ulcer on the posterior wall of the duodenum is by no means always simple. Palpation must be carried out through the anterior wall of the viscus, and the posterior wall, where the ulcer lies, cannot always be exposed to inspection. No examination is complete unless the lesser omental sac is penetrated and a search made from within it. On several occasions when resecting the duodenum, a second ulcer has been revealed first, only when the stomach has been cut across and the duodenum turned over to the right.

Results of Gastro-Jejunostomy.

The consideration of surgical treatment in duodenal ulcer starts then from the assumption that the patient has received adequate medical advice and acted upon it without avail, or that his life has been put in jeopardy by a hæmorrhage, without perhaps

having had any pain at all. The real difficulty is met when the efficacy of gastro-jejunostomy in the treatment of duodenal ulcer comes under inquiry, for strikingly diverse opinions are expressed.

A number of years have passed since the pioneer work of Moynihan established gastro-jejunostomy as the routine operation, so reliable knowledge on the subject should be at our disposal. Moynihan himself finds that over 90 per cent. of his operated cases (gastro-enterostomy with infolding of the ulcer) consider themselves perfectly well, and that the incidence of jejunal ulcer formation is not more than 2 per cent.² J. Sherren, in 500 cases, found 92.6 per cent. well two or more years after operation, and declares that if patients go for two years without symptoms, they never develop them afterwards.³ A. J. Walton,⁴ in 114 cases, had 85.8 per cent. cures and 10.5 per cent. very much relieved. Turning now to America, we find equally good results recorded. D. C. Balfour⁵ investigated the end-results in 1000 patients, all of whom had been operated upon for more than 10 years; 88 per cent. remained cured and only 3.5 per cent. of recurrences are known to have happened. The operative mortality was less than 2 per cent.

These results wellnigh reach such perfection as we can ever hope to get in any serious surgical procedure, and were it not for expressions of discontent with the operation of gastro-jejunostomy from continental surgeons, we could complacently continue to carry out treatment along these lines until the advance of medicine put such knowledge into our hands as would lead to the elimination of surgery for these patients.

H. V. Haberer in 1915⁶ expressed himself as being by no means satisfied with simple gastro-jejunostomy. He related three cases where at intervals of 2½, 4½, and 9 years after operation callous duodenal ulcers were found unhealed on re-laparotomy. The same author again, in 1921,⁷ said that in 49 cases he had had very poor results from simple gastro-jejunostomy. Maier⁸ relates a case where on reopening the abdomen two years after the primary operation the two original duodenal ulcers were found unhealed, and there was a new one at the anastomotic margin. K. Borszeki,⁹ of Budapest, relates two cases who got relief for only 2 and 14 months, when pain and bleeding occurred in both, necessitating a new intervention. E. Nordman¹⁰ says the good results after simple gastro-jejunostomy are 70 per cent. J. Galpern¹¹ gives the end-results in 52 cases; 69.2 per cent. cured, 11.5 per cent. much improved. The bad results were 19.3 per cent. A. Wydler¹² asserts that the longer one follows up cases after operation, the smaller the percentage of cures will be, and P. Clairmont agrees with him in this.¹³ As has been mentioned, the experience of Sherren is quite different. Wydler's results from de Quervain's clinic are 69.6 per cent. cures in cases followed for 1-4 years, and 64.3 per cent. in those followed for 4-10 years. A most interesting report is made by D. Forsyth.¹⁴ His statistics are taken from a sickness insurance society whose members are all medical men. Of 33 cases, where the diagnosis was established by operation, no recurrence (1-12 years) took place in 58 per cent.

The reports quoted above emanate from clinics where, without exception, the level of surgical attainment is very high. It is certain, therefore, that there must be some obscure difference in the manner of evaluation of the results, which are obviously not strictly comparable. Under such circumstances it becomes necessary for each surgeon to inquire what results he can obtain under the conditions which are familiar to him in person. For this reason 29 patients who had had simple gastro-jejunostomy performed for duodenal ulcer during the years 1920-23 at St. Mary's Hospital were written to, and of these 26 replied. Eighteen of them (69.2 per cent.) are well, live ordinary lives, and eat ordinary food. A number of them wrote enthusiastically in favour of operative treatment.

There is no doubt that they derived immense benefit. Eight of them (30.8 per cent.) expressed themselves as dissatisfied with the result. One of them has died. He was a man of 44, who had had late pain after meals (1-2 hours) and vomiting with free intervals for five years. There had once been a hæmatemesis. At the operation there was an ulcer adherent to the gall-bladder. He only obtained very temporary relief from the gastro-jejunostomy, the pain recurring, though the vomiting was less. He went on like this for three years, when he had a hæmatemesis and melæna, from the effects of which he died. The others all have indigestion pains, and one of them has had a bleeding.

CASE 3.—The patient, a man aged 28, had no pain at all after meals, but suddenly, ten weeks before admission, fainted from a severe duodenal hæmorrhage. He was still very anæmic on admission. An X ray examination showed a hypertonic stomach, an 8-hour residue and an attenuated duodenal cap. At the operation on June 11th, 1923, there was found to be an ulcer of the first part of the duodenum anterior wall, ½ in. beyond the pylorus. Duodenectomy contra-indicated because of weak condition of patient. Posterior gastro-jejunostomy performed. His progress was satisfactory until Nov. 20th, 1924, when, without any previous pain, he had another severe hæmorrhage. He is still suffering from the resultant anæmia and is under medical treatment.

This series is a small one, but the cases were carefully recorded and in every instance the disturbing factor of indifferent technique can be definitely eliminated. The percentage of success agrees exactly with that recorded by Wydler in de Quervain's Clinic. A careful scrutiny of the clinical records does not give any assistance in selecting those cases which will and those which will not be cured by gastro-jejunostomy. It cannot be said, for example, that when an ulcer on the posterior wall is adherent to the pancreas it will refuse to heal by gastro-jejunostomy.

CASE 4.—A man, aged 26, had had four years' pain, occurring 1½ hours after food and vomiting. He only got relief for about two weeks at a time. The skiagram showed an asymmetrical pyloric canal, and an ulcer niche on the median side of the duodenal cap. At the operation there was an ulcer on the upper border of the bend of the duodenum, spreading backwards to the pylorus. Another larger ulcer, with a distinctly palpable crater, could be felt on the pancreatic wall of the second part of the duodenum. I considered duodenectomy to offer too much risk, because of the extent of the lesion and its surrounding fibrosis. A simple gastro-jejunostomy was performed. Now, 15 months later, he is quite well, has no pain, and can eat ordinary food.

On the other hand, it is probably true that the immobilised ulcers in this situation heal with greater difficulty than those on the anterior wall of the first part of the viscus.

Duodenectomy.

The experience recorded above is ample justification for a search for some other method of dealing with intractable duodenal ulcers surgically. Because gastrectomy had been shown to give such very much better results than gastro-jejunostomy in ulcers of the stomach, continental surgeons naturally turned their attention to the eradication of duodenal ulcers by excising the affected segment of the duodenum. This question was mooted at the 1914 German Surgical Congress in Berlin, but the general consensus of opinion was that the operation was too hazardous and impracticable. So the matter stood until 1916, when, curiously enough, in the midst of the stress of war, several surgeons attacked the problem and proved that duodenectomy above the entrance of the common bile and pancreatic ducts could, with care, be carried out, without too considerable risk to the patient. Finsterer, Haberer, and Clairmont were particularly associated with this work, and have published large series of cases.

Recently I¹⁵ have described the technique and recorded my first nine cases. The operation is a tedious one, is exacting of the time and patience of the operator, and has dangers of its own. The

first difficulty is the control of hæmorrhage. The duodenum is supplied by the pancreatoduodenal artery, whose trunk cannot be ligated, as the pancreatic circulation would be interfered with. It is therefore necessary to tie separately each short branch as it comes off the trunk and straightway enters the duodenal wall. This must be done exactly or the operative field will become obscured by blood. The next great difficulty is the very widespread fibrosis which occurs in the neighbourhood of a duodenal ulcer. It changes the lesser omentum into a thick callous mass, it glues the duodenal wall immovably to the similarly indurated pancreas, it renders the discovery of the whereabouts of the common bile-duct sometimes impossible. Withal it causes the duodenum to be shrunken up on itself and an approximation of the papilla of Vater to the pylorus to take place. On first inspection the operation frequently appears to be impracticable. The essential decision to make is whether normal duodenal wall can be reached at a point which is above the ampulla of Vater. E. Nowak declares that he has never seen a duodenal ulcer spread so far down as the opening of the ducts, and he was able in every one of 41 successive cases to excise the duodenum. But although it is exceptional, ulceration may sometimes extend as far down, and such unusual cases should be borne in mind. An injury to the pancreas may lead to fat-necrosis and sub-phrenic abscess. A great danger is injury to the common bile or pancreatic ducts. This question was studied by P. Clairmont.¹⁶ He collected cases where the accident happened. The result is often fatal, and recovery when it takes place occurs usually after a stormy convalescence and further surgical intervention. I have recorded one case where the accident occurred, but the patient recovered with very little disturbance. Seven months later this patient was in excellent health. The common bile and pancreatic ducts are drawn close to the duodenal wall by the surrounding cicatricial tissue. They can be avoided only by keeping the dissection close to the duodenal wall, and, where the ulcer floor is formed by the pancreas, incising around the margin of the ulcer, leaving the base untouched, in exactly the same way as a gastric ulcer often is separated from the same viscus. In completing the operation the stomach is cut across about 2 inches from the pylorus and the duodenum just beyond the ulcer-bearing area. A direct axial anastomosis is then made between stomach and duodenum, the larger lumen of the stomach being partly sutured to reduce its size to that of the duodenum. Sometimes it has seemed more advisable to close the duodenum and implant the cut end of the stomach laterally into the jejunum.

I have now performed duodenectomy 18 times, and have been able to do an axial anastomosis in 16 of them. The junction may be troublesome to effect, and in three cases so little duodenal stump was available that a simple continuous Connell suture alone was used on the posterior aspect.

The Results of Duodenectomy.

I have, perhaps, emphasised unduly the drawbacks and difficulties of following the direct method of attack in duodenal ulcer, but this is rather to be desired if it is proposed to substitute, as a routine, a procedure which is attended by greater danger than gastro-jejunostomy. Such advance in the treatment of the disease, if such it is, should be made with all caution. Obviously the matter must be settled, and it is held to be a function of the professorial units to undertake such work. With this object during 1923 and 1924, duodenectomy has been performed whenever it seemed a safe and proper procedure.

Thus, of 29 duodenal ulcers treated during this time, gastro-jejunostomy was performed in 11 and excision of the duodenum in 18. Gastro-jejunostomy was selected for two reasons: either because the lesion in the duodenum was not considered

extensive or serious enough to justify duodenectomy, or, on the other hand, the surrounding fibrosis was so great that doubt was felt of the possibility of obtaining unaltered duodenal wall for suture without encroaching upon the region of the papilla of Vater. That not simply the easy cases have been chosen for excision may be gathered from the fact that in the 11 cases in which gastro-jejunostomy was performed there was a posterior ulcer present in 4, whilst amongst the 18 duodenectomies there was a posterior ulcer present in 17, and in 12 of these 2 ulcers were found. Of the immediate results, it can be said that the post-operative course has been uniformly smooth as far as the abdominal condition is concerned.

There has been rather a high incidence in pulmonary conditions. Coughs have been somewhat frequent and very disturbing to the patient. This may be related with the length of the operation, for it takes about 2 hours to perform, and never under 1½ hours. On the other hand, the incidence of lung complications lately has been unusually high after all operations upon the upper abdomen. In one man whose case-history I have reported elsewhere, the common duct was accidentally divided. It was implanted with the severed pancreatic tissue into the open end of the duodenum. Jaundice occurred for a few days, but the patient soon recovered and was in the best of health seven months later. One patient died.

CASE 5.—A female, aged 47, had suffered from gastric trouble for over 20 years. She had attacks of sickness about every three weeks. There was but little pain, except actually when vomiting took place. She was an emaciated woman. The skiagram showed much delay in emptying of the stomach. Operation on May 21st, 1924. A bilobed ulcer was found on the posterior wall of the duodenum and an incompletely healed ulcer on the anterior wall. Duodenectomy was performed according to the usual technique. There was much fibrosis of the wall of the viscus, the lesser and the greater omenta. The duodenal stump was joined axially to the stomach, a single Connell's suture alone being employed behind. After the operation she suffered from rapid pulse and oedema of the legs, became very pale, so that it was supposed that internal hæmorrhage was occurring, though no confirmatory evidence was obtained. No abdominal signs. A blood transfusion was given, but the patient got weaker and died on the eleventh day after the operation. Post mortem the abdominal wound and the anastomosis had healed to naked-eye inspection, so that at first sight the stomach seemed to pass normally into the duodenum. There was a small acute ulcer 1 inch beyond the junction. The heart was small and atrophic, the myocardium pale and fatty. There were oedema of the legs and some clear fluid in each pleural cavity. Death was due to cardiac insufficiency. This is a mortality of 5.5 per cent. in the first 18 cases.

In considering the mortality of duodenectomy compared with gastro-jejunostomy, it must be remembered that not in all hands is that of the latter operation as low as 2 per cent. During the last three years I have had three deaths after simple gastro-jejunostomy, which may be recorded here.

CASE 6.—A male, aged 67, had gastro-jejunostomy performed for chronic duodenal ulcer on May 10th, 1922. The operation was not unusual in any way. The ulcer was a large one adherent to the pancreas. Very soon after the operation his lungs showed signs of broncho-pneumonia. On the 17th he had a sudden attack of dyspnoea, from which time he got progressively worse until the eleventh day after the operation, when he died. Post mortem: a small infarct of the left lung; broncho-pneumonia throughout both lungs. Anastomosis healed.

CASE 7.—A male, aged 42, had gastro-jejunostomy performed for pyloric obstruction and ulcer of lesser curvature on Oct. 26th, 1922. On the 29th he developed definite lobar pneumonia with signs on both sides. On the night of the 31st he became suddenly hemiplegic on the left side and died the next day—i.e., five days after operation. Post mortem: in the left lung there was extreme congestion of the upper lobe and grey hepatisation of the lower lobe; in the right lung there was congestion and oedema of the upper and middle lobes with grey hepatisation of the lower lobe. The stomach was hypertrophied, the pylorus thickened from fibrous tissue, a band of which connected it with the scar of an ulcer on the lesser curvature 1½ in. from the pylorus. The gastro-jejunostomy

was in normal process of healing. The brain and cord were covered by a thin layer of fibro-purulent material.

CASE 8.—A male, aged 60, on June 17th, 1924, had gastro-jejunostomy performed for a cicatrix of the pylorus following ulcer here. He had recently had severe pain and hæmatemesis. Convalescence proceeded quite smoothly until the twelfth day after the operation, when he suddenly sat up and died. Post mortem: there was a large ante-mortem clot coiled up in the pulmonary artery just at its bifurcation. There was a puckered scar at the pylorus and a large ulcer of the stomach which had been overlooked, situated in the cardiac region with one edge almost encroaching on the œsophagus.

Deaths such as these are extremely difficult to avoid in the present stage of knowledge, in spite of every care being taken in the preliminary examination, and the decision against operating should any signs of a lung affection be apparent. Deaths due to a fault in the technical abdominal procedure have been almost eliminated. It is fair to say, I think, from my own personal experience, that the mortality of duodenectomy will not in the long run prove very much greater than that of gastro-jejunostomy in skilled hands. V. Haberer¹⁷ reports 169 resections with a 3.5 per cent. mortality, and H. Finsterer¹⁸ had a 1.4 per cent. mortality only in his last 71 cases. This death-rate is about the same as the most favourable statistics of simple gastro-jejunostomy.

Of the late results I prefer to leave the consideration of my own cases until a further period of time has elapsed. The early after-history has been very favourable. Finsterer¹⁸ got 59 absolute cures after 3-5 years or longer in 63 cases (93.6 per cent.). In three other cases of this series the patients can eat anything, but occasionally get discomfort; one has heart-burn after heavy drinking, one has ventral hernia, and one lower abdominal pain of unexplained origin.

The future alone will show whether these very good early reports reflect what the result of the operation will be in the general surgeon's hands. Meanwhile, I think an open mind must be kept towards this subject. The operation appeals on physiological grounds, for there is less upset to anatomical relations and digestion if an axial union is performed.

Pyloric Exclusion for Irremovable Duodenal Ulcers.

There will always be some ulcers where the local conditions will forbid excision, the cases where, above all others, the operation is needed, where the ulcer is extremely large, unusually callous in nature, and deeply penetrating into the pancreas. It is such cases in which gastro-jejunostomy proves ineffective very often. V. Haberer could only obtain 37 per cent. cures by simple gastro-jejunostomy. Obstructing the pylorus at the same time (by cutting the stomach right across proximal to the pylorus, according to Von Eiselsberg's technique) has proved itself a satisfactory procedure in some cases and has given relief where a previous simple gastro-jejunostomy has proved ineffective. This combination of pyloric exclusion with simple gastro-jejunostomy has been carried out fairly extensively in some clinics, but the balance of opinion is against it, for a jejunal ulcer has been found to occur in 17 per cent. subsequently.

Such irremovable ulcers present, therefore, a very difficult surgical problem, and the only contribution to the subject is that of Finsterer, who asserts that pyloric exclusion with removal of half or two-thirds of the stomach is curative in these cases, and is not followed by jejunal ulceration. In 8 cases, 3-5 years, 7 remained cured, and 1 has had a subsequent cholecystectomy; of 15 cases, 1-3 years, 13 are absolutely well, 1 case has pain, and 1 has had a hæmorrhage. This subject requires further investigation.

Conclusions.

There can be no reasonable doubt that in the evolution of the treatment of duodenal ulceration

surgery is only a temporary expedient, but neither can it be denied that, in the present stage of knowledge, operative treatment is able to confer upon the sufferer that relief which medicine is unable to bestow. Gastro-jejunostomy is a method which effects a cure in about 70 per cent. of cases in the small series reported here. These results do not show the operation in as favourable a light as revealed by other statistics in this country and America, based on very large series, but they agree with those reported from continental clinics. The direct method of attack, as in the analogous gastric lesion, is likely to prove more effective in treatment if it can be carried out free from serious risk to the patient. In the cases of duodenectomy reported here the early results have been satisfactory, but the later clinical history of these patients remains for further study. This limited experience is favourable enough to justify a continued trial of duodenectomy in the treatment of duodenal ulcer.

I have to thank my colleagues on the staff of St. Mary's Hospital for their courtesy in allowing me to make use, for statistical purposes, of patients who have been under their care.

References.

1. Arch. f. Klin. Chir., 1923, cxxv., 92.
2. Gastric and Duodenal Ulcer. John Wright and Sons, Bristol, 1923.
3. THE LANCET, 1924, i., 477.
4. The Surgical Dyspepsias, London, 1923.
5. Jour. Amer. Med. Assoc., 1924, lxxxiii., 603.
6. Arch. f. Klin. Chir., 1915, cvi., 531.
7. Verhandl. d. zw. Tag. u. Verd.-und Stoffwechselkrankht., Berlin, 1921.
8. Deut. Zeitsch. f. Chir., 1922, clxxii., 116.
9. Zeit. f. Chir., 1921, xlviii., 104.
10. Arch. f. Klin. Chir., 1923, cxxv., 92.
11. Arch. f. Klin. Chir., 1923, cxxv., 86.
12. Mittell. a. d. Grenzgeb. d. Med. u. Chir., 1922, xxxv., 103.
13. Schw. Med. Woch., 1924, liv., 209.
14. THE LANCET, 1924, i., 780.
15. Brit. Jour. Surg., 1924, xii., 273.
16. Schweitz. Med. Woch., 1923, liii., 1; Deut. Zeitsch. f. Chir., 1920, cix., 251.
17. Deut. Zeitsch. f. Chir., 1922, clxxii., 1.
18. Wien. Klin. Woch., 1921, ii., 11.

GLYCOSURIA, THE SYMPTOM.*

By WALTER R. CAMPBELL, M.A., M.D. TORONTO,
DEPARTMENT OF MEDICINE, UNIVERSITY OF TORONTO,
AND TORONTO GENERAL HOSPITAL.

THOUGH diabetes was named and described by Aretæus the Cappadocian, about A.D. 70, and was known to the Chinese as the wasting-thirst disease many centuries ago, its striking symptoms must have been encountered long before the era of recorded medical knowledge. The sweet taste of diabetic urine was mentioned by the Indian physician, Susruta, about A.D. 500, and by the Persian, Avicenna, about A.D. 1000. In Europe, however, it appears to have escaped notice until recorded by Thomas Willis in 1679, though its significance as indicating the presence of a sugar was not pointed out till nearly a century later by another English physician, Matthew Dobson. He also discovered that the blood, as well as the urine, of diabetics was sweet, that the latter underwent alcoholic fermentation on standing with a disappearance of the sweet taste, and that on evaporation of a quantity of diabetic urine a white mass tasting like brown sugar remained. His observations on the urine were soon fully confirmed by others, among them the Edinburgh physician, Francis Home. Chevreul, in 1815, showed that the sugar of diabetic urine resembled that derived from starch, but it was not until the year 1838 that Peligot furnished definite proof to the members of the Académie des Sciences, Paris, that the sugar of diabetic urine, of grapes, of honey, and that from starch are one and the same substance, and the name glucose was proposed for it ($\gamma\lambda\epsilon\upsilon\chi\omicron\varsigma$ —unfermented wine).

* A paper read at the Academy of Medicine, Toronto.

Reducing Substances in Urine.

Since then remarkable advances have been made in our knowledge of diabetes, both from the laboratory and clinical aspects. Largely through the introduction and use of simple tests for glucose in the urine it has been found that the symptom is present in a number of conditions other than diabetes mellitus, and also that other substances occurring in the urine in abnormal amounts or under abnormal conditions react to some of the tests like glucose itself. Such facts have added to our difficulties in the diagnosis of diabetes and merit further consideration.

In small amounts glucose is a constituent of normal urine along with minute quantities of other carbohydrates, principally pentoses, dextrins, and other polysaccharides. The term glycosuria should be reserved to designate the condition in which abnormal amounts of glucose (above 10 mg. per kg. body-weight) appear in the urine. Glycosuria then takes on something of a quantitative character, but it is important to realise that the most commonly used tests for glycosuria, the reduction tests such as Nylander's, Trommer's, Fehling's, Haines's, and Benedict's, do not diagnose glycosuria per se, but merely indicate whether or not reduction of the heavy metal—usually copper—from a highly oxidised form to a lower plane of oxidation has taken place. Other substances in urine besides glucose may cause this reduction, and different testing solutions will respond in very different degrees both to glucose and to other reducing substances—creatinin, uric acid, &c.—while the addition of certain preservatives, such as formalin or chloroform, may result in a factitious reduction and lead to errors in diagnosis. Further, it is often not realised that the concentration of electrolytes and organic matter in the urine as well as the presence of other pathological constituents, such as bile and albumin, excessive amounts of urobilin or indican, play a part in the reduction reaction, some in a positive, others in a negative direction. While under most conditions small amounts of inorganic salts in the urine tend to increase the sensitivity of the reduction test, in other cases reduced copper oxide is not precipitated but remains dissolved in the liquid. Particularly is it important that specimens being tested are not alkaline in reaction, as ammonia and ammonium salts hold cuprous oxide in solution. Creatinin also dissolves cuprous oxide. It is sometimes thought that slight reduction of the test solution by a urine of a very high specific gravity is evidence of glycosuria, but this is untrue. Whenever the high specific gravity is due to glucose the reduction will be intense. On the other hand, urinary specific gravities of 1006 are not inconsistent with moderate glycosuria, especially if the patient is on starvation treatment or is receiving large quantities of fluids.

Benedict's Test.

Most of the tests mentioned above, combined with experience in their use, may be made to yield satisfactory results, but the simplest and most valuable qualitative test for sugar is that of Benedict's,¹ as with it the possibilities of error are reduced to a minimum. Benedict's solution is so adjusted that the normal amounts of sugar in a urine of medium specific gravity are missed. In its use it must be remembered that the development of complete opacity to light, and not colour change, is the evidence of pathological amounts of reducing substances. The directions for the test must be carefully observed. Eight drops of urine are boiled two minutes over a free flame

¹ Benedict, S. R.: Jour. A.M.A., 1911, lvii., 1193.

Formula: Recrystallised copper sulphate	.. 17.3 g.
Sodium or potassium citrate	.. 173 g.
Sodium carbonate, anhydrous	.. 100 g.
Distilled water to make	.. 1000 c.cm.

Dissolve the citrate and carbonate in 700 c.cm. of water with heat. Filter if necessary and add the copper sulphate (dissolved in 100 c.cm. water) slowly with constant stirring. Cool and add water to 1000 c.cm.

with 5 c.cm. of the solution² and then set aside to cool. If, when shaken, the cold solution blocks out the image of the window bars or the filaments of the electric light, sugar is, in all probability, present. Occasionally a grey-green opacity, due to phosphates, occurs with urines of high specific gravity and also when albumin is present, or with urines of low specific gravity the test may be excessively sensitive. In either case dilution of the urine with an equal quantity of water before testing results in a negative test. Any quantity of glucose missed by such dilution is negligible from a clinical point of view. When a patient with marked polyuria is on a low calorie diet glucose may occasionally cause a reduction to the deep red cuprous oxide without producing complete opacity. On examining such a solution by reflected rather than transmitted light, a reddish opalescence is seen. Considerable amounts of sugar may be present under such circumstances, and when an apparently negative test occurs the test-tube should always be examined for traces of adherent red or yellow cuprous oxide. The further possible sources of error, if one regards a reduction test as significant of glycosuria, are somewhat infrequent and are due to the presence of other abnormal substances in the urine, such as lactose, homogentisic acid, melanin, pentose, or of glycuronates, in cases where certain drugs such as morphine, chloral, and coal-tar compounds have been administered.

The Fermentation Test.

In a few cases it is beyond the resources of the average physician's laboratory completely to identify the substance causing the reduction, and such questions may be left to those with a broader chemical training and greater equipment. It is of considerable clinical importance, however, to demonstrate that the substance is or is not glucose. While the history of the case may provide a high degree of probability in one or other direction it is much strengthened by the results of a properly performed fermentation test. In performing a fermentation test there are several points which should be carefully observed. About 1/16 cake of fresh yeast should be rubbed up with somewhat more of the urine than is sufficient to fill the closed arm of the fermentation-tube. The latter should be filled, carefully removing all air bubbles, and the tube set in a warm place for one to 24 hours, preferably in an incubator. At least two controls should be set up at the same time—one with yeast and water instead of urine to determine whether gas is formed from the yeast, and the other with a dilute solution of glucose (corn syrup) to test whether the yeast will ferment glucose. If the first control shows no gas formation in the closed arm of the tube and the second shows considerable gas the result of the test on the urine may be considered. Gas formation will occur providing the yeast is active, due to the fermentation of glucose and of urea. It is advisable, on account of the latter, to consider a urine showing less than 1 in. of gas in 24 hours as being free from pathological amounts of glucose. Larger amounts of gas after 24 hours' standing, or definite gas formation within an hour or so, are fairly good evidence of the presence of glucose in the urine. Absence of fermentation in a urine which has reduced Benedict's solution indicates the presence of some other abnormal substance, which may or may not be of pathological significance, and special methods must be employed for its identification. The commonest of these substances are lactose and glycuronates, and these may usually be diagnosed from a history of late pregnancy or lactation in the first case, and of the use of drugs in the second case. It may be of value to remember, however, that the commonest sugar encountered during pregnancy is glucose, not lactose, and that this glycosuria may be an accident (alimentary or renal glycosuria), or a pathological symptom of considerable significance.

² The tube may be placed in a vessel of boiling water for five minutes instead.

Causes of Glycosuria.

When it has been established that glucose is present in the urine, one must endeavour to find the cause. The possible causes are very numerous and here nothing helps quite so much as a well-taken history to clear up the diagnosis. Glycosuria may result from excessive intake of sugar (the so-called alimentary glycosuria), but this may be determined from the history and from the fact that the excretion of glucose is but temporary. In the anæmias and the toxic goitres, during starvation and under emotional stress, temporary glycosuria may also occur at intervals, the quantities excreted never being very large. Similarly, with a cerebral accident, such as hæmorrhage, thrombosis, or embolism, or with intracranial tumours, pituitary disease or concussion and fracture of the skull, slight transitory glycosuria occurs. These are accidents of carbohydrate metabolism, but, as these conditions may be accompanied by a starvation acidosis with acetone bodies in the urine, a mistaken diagnosis of diabetic acidosis or coma is sometimes made.

During septic infections, cholecystitis, acute and chronic pancreatic disease, and after prolonged alcoholism, more or less transient glycosuria may also be present. Under these conditions the differentiation from true diabetes mellitus may be particularly difficult, as the condition may clear up entirely or progress slowly into true diabetes. Such cases are best regarded as temporary diabetes as they are probably due to a functional degeneration of the islet cells of the pancreas, and the principles of treatment should be those applicable to diabetes mellitus—namely, rest to the pancreas by restriction of diet until the need disappears.

True diabetes mellitus is characterised by recurrent glycosuria over long periods of time. There need not be, and in the milder cases there is not, continuous excretion of glucose throughout the day. The most intense glycosuria follows the meals. The urine secreted during the early morning hours is often sugar-free. It has been stated that the diabetic cannot eat two normal meals without showing glycosuria, and this is true as far as it goes. However, in the milder cases of diabetes mellitus there are no clinical symptoms, excepting glycosuria, and thus diabetes is sometimes confused with certain other less common conditions which show glycosuria on such a test. These are: the renal glycosuria of pregnancy; renal diabetes in Klemperer's sense (benign glycosuria in a nephritic); idiopathic renal glycosuria; toxic renal glycosuria; and a group of cases intermediate between true renal glycosuria and diabetes mellitus, which may be called diabetes innocens.

Diagnosis of True Diabetes Mellitus.

Resembling as these cases do the less severe cases of diabetes in many particulars, it is of considerable importance for the patient's future that they should be accurately differentiated from true diabetes mellitus. Careful investigation of all cases of recurrent glycosuria should be undertaken to sort out these patients, since their prognosis is good and is not in any way improved by dietary restrictions. Indeed, they may reasonably be grouped with Garrod's "Inborn Errors of Metabolism," or perhaps, since they are not necessarily congenital in origin, they may be better designated as the anomalies rather than the diseases of carbohydrate metabolism. However, until sufficient evidence has been accumulated to justify freeing him from the diabetic regimen, the individual showing this anomaly should be treated as a diabetic patient. Certain characteristics are common to this group which help to separate it from diabetes mellitus. First, they are symptomless apart from glycosuria unless, perchance, they have previously undergone an excessively rigid dietetic régime, resulting in weakness and emaciation; second, they are usually discovered accidentally during routine physical examination: third, the

glucose percentage and total excretion of glucose in 24 hours is small; fourth, the glucose is unaccompanied by acetone bodies unless there are other causes for their presence, such as pregnancy or starvation; fifth, increased carbohydrate intake does not produce a commensurate increase in the glycosuria; sixth, the respiratory quotients after glucose ingestion rise to values around 1, indicating the normal utilisation of the carbohydrate; seventh, the condition shows no tendency to progress even under dietary conditions highly unfavourable to the true diabetic. Probably the most significant differentiating point, however, is the fact that in such cases glycosuria can be repeatedly shown to be present while the blood taken at the same time shows a normal sugar content.

By indirection, then, we arrive at a diagnosis of diabetes mellitus from the symptom glycosuria. It should be emphasised, however, that the symptom itself is of little importance other than as a diagnostic clue to a possible serious metabolic defect. Clinical and laboratory investigation during the last 40 years, culminating in the recent work on insulin, has shown that diabetes mellitus is due pre-eminently to a failure of the islet tissue of the pancreas to function normally. Carbohydrate metabolism is thereby impaired, hyperglycæmia results, and glycosuria occurs when the blood-sugar reaches an excessively high level. Treatment for the condition is not to be directed to abolition of the glycosuria, though this is an incident when treatment is successful, but to the provision of adequate rest to the pancreas from over-work, the maintenance of a normal blood-sugar level, and, at the same time, provision of sufficient calories to restore to the individual the ability to do physical work.

In conclusion, then, one would emphasise the necessity of carefully differentiating glucose from other reducing substances in the urine, and when glucose is actually present the importance of distinguishing between the accidents and anomalies of carbohydrate metabolism and the disease diabetes mellitus.

Clinical and Laboratory Notes.

A CASE OF SNAKE-BITE.

AN UNUSUAL INCIDENT IN SANATORIUM TREATMENT.

By H. O. BLANFORD, M.B., B.S. LOND.,

MEDICAL SUPERINTENDENT, PRIOR PLACE, HEATHERSIDE, CAMBERLEY.

THE following case occurred at the King Edward VII. Sanatorium, Midhurst, in the exceptionally hot and early spring of 1921.

The patient was a naval officer who had been sent home from Hong-Kong in March with signs of slight infiltration at both apices. His general condition was exceptionally good and the temperature normal and regular. He was therefore able to begin a course of graduated walking exercise almost immediately, and on April 1st I met him near the entrance coming in from his walk at 11.25 A.M. He was grasping the neck of a living viper, about 2 feet long, which had just bitten him. He had been sitting on a bank, and hearing a rustle among the dead leaves put his hand in to investigate, with the result that the snake bit him. He showed me a minute scratch on the skin between the heads of the metacarpals of index and middle fingers of the right hand. I had not previously seen a case of snake-bite, but was under the impression that the bite of an English viper was not likely to cause any grave anxiety.

I proceeded to scarify the skin round the scratch and to rub in potassium permanganate. While I was doing so the patient felt faint and vomited, but it was only when I found the radial pulse almost imperceptible that I began to realise the seriousness of the situation. This was at 11.45 A.M., half an hour after he had been bitten. The patient was at once taken to bed and rapidly grew worse. Diarrhoea began soon afterwards, and by 2 P.M. signs of marked collapse were present, face pallid, radial pulse absent, and temperature

subnormal. At 4 P.M. he complained of severe pain in the hand and forearm, and there was oedema reaching to the elbow. On the following morning, April 2nd, the condition was improved. The diarrhoea had ceased and there had been only one attack of vomiting. Pulse 100. The oedema had increased and spread upwards to the shoulder, and there was diffuse ecchymosis on the inner and posterior surface of the forearm. In the afternoon his condition again became worse, the face was pallid, and the lips cyanosed, the heart beats at apex were 112, with a pause at every third beat. Radial pulse was 84 and weak. He was given rectal and intravenous injections of saline and strychnine hypodermically. Next day his condition appeared critical. The arm was swollen to a great size, and the oedema had spread upwards as far as the angle of the jaw. There was pain on swallowing and also across the right pectoral muscles and scapula.

Mr. David Ewart, hon. consulting surgeon to the Sanatorium, kindly came up to see the case and made two incisions on the dorsum of the hand under chloroform. Serum was evacuated but no pus. After the operation brandy, half an ounce two-hourly, and strychnine, hypodermically four-hourly, were administered. Pulse 112, very weak, tongue furred, face flushed. Urine contained a trace of albumin, no blood. On the following day the condition remained about the same. The painful oedema and ecchymosis continued to spread over the back. On April 7th improvement set in, but the oedema and ecchymosis had spread to the buttocks and left hip. By the 9th the condition was much improved. The incisions were discharging serum freely, and the oedema and ecchymosis were subsiding. He made an uninterrupted recovery, and the pulmonary condition seemed in no way adversely affected. He was subsequently able to leave the Sanatorium at the completion of his treatment and to return to his professional duties.

Apart from the comparative rarity of snake-bite in this country, the interest of the case was enhanced by the casual manner of its beginning, and the unexpected rapidity and severity of its development.

A CASE OF TRAUMATIC THROMBOSIS OF THE VENA CAVA SUPERIOR: RECOVERY.

BY DR. L. VAN DER HOEVEN,
THE HAGUE.

"COMPLETE obliteration of the vena cava superior with the establishment of collateral circulation is extremely rare" (Osler¹). Syphilis, tuberculosis, and malignant growths in the anterior mediastinum are the most common causes, and complete obliteration by aneurysm is very rare. Although traumatic thrombosis of the vena cava inferior has been observed at autopsy, I find no record of this occurrence in the vena cava superior. Schepelman² has published a case of traumatic thrombosis of the left subclavian vein caused by excessive effort on horse-back, but I find no record of any similar occurrence in the medical literature of the war.

In view of the rarity of the condition the following case deserves record:—

A military officer, aged 53, was thrown from his horse on Feb. 8th, 1915, alighting on his back on a hard road. He was rendered senseless for some minutes, and, on recovering, complained of severe pain in his back and chest, and of shortness and oppression in breathing. Next day, feeling his collar tight, he noticed his neck swollen, and by the following day his face, neck, and arms had become enormously swollen and livid, the ears and tongue cyanosed, the eyes protruding, and the veins of the neck and arms dilated. On April 15th, 1915, the cyanotic swelling of the face persisted, the jugular veins and those of the arms being greatly dilated, but those of the thoracic wall were unaffected. There was no jugular pulse, and no oedema of neck or arms. Some dullness over the manubrium sterni was observed, and the cardiac impulse was feeble, but no other abnormality was evident. Wassermann reaction was 100 per cent. positive. He denied syphilis, and I had been his doctor for 40 years and never observed any syphilitic manifestation.

All this pointed to an obstruction of the venous return through the vena cava superior—was the cause pressure by aneurysm or mediastinal blood clot, or was it thrombosis?

¹ Obliteration of Vena Cava Superior, Johns Hopkins Hosp. Bull., xiv., 148, 1903.
² Monatsschr. f. Unfallheilkund., No. 3, 1911.

Thrombosis of the vena cava superior has been found post mortem with syphilitic aneurysm of the aorta, mediastinal gumma, malignant growth, or tuberculous mediastinitis. These causes were all ruled out, as the symptoms immediately followed the accident, and there was no antecedent history of ill-health. The diagnosis of thrombosis was therefore adopted.

On August 16th, 1916, the heart was found normal, and Dr. van der Haer was able to exclude aneurysm or syphilitic aortitis. The cyanosis slowly decreased, and collateral circulation through the superficial veins of the thorax and abdominal wall had become established.

There had never been cyanosis of the thoracic wall, and it was probable that circulation by the vena azygos (which joins the vena cava superior just above the right auricle) was free. The blood from the thoracic wall could thus pass by way of the intercostal veins to the vena azygos major, and by way of the long thoracic, epi-, and hypo-gastric veins to the venae cavales.

January, 1917: The superficial veins of the arms and jugulars are still dilated, although in less degree. When erect there is but slight cyanosis, but on stooping it becomes apparent, and it is impossible for him to lie flat because of oppression in breathing. He sleeps in bed with the head elevated. There is some dullness over the manubrium and in the second right intercostal space. The heart dullness is enlarged to the right, and the apex beat is nearly in the nipple-line. There is a weak systolic murmur at the apex. The blood pressure is 200 maximum and 100 minimum. Auscultation of the aorta points to the presence of arteriosclerosis. The W.R. is still strong positive. The heart thus is enlarged, and there is probably a relative mitral incompetence.

October, 1923: The superficial veins are less prominent, but he cannot bend or lie without oppressed breathing and cyanosis. Bicycling or brisk walking against a wind induces dyspnoea. The X rays show an enlargement of the heart in both directions, and there is no shadow of aneurysm.

December, 1923: Heart sounds weaker. There is probably dilated and hypertrophied heart with commencing myocardial degeneration. W.R. and Sachs-Georgi reactions positive.

Jan. 12th, 1924: I examined him with Dr. Lankhout, and we thought there was commencing aortic insufficiency, there being a faint diastolic murmur but no aneurysm.

May 20th, 1924: At this examination I could not hear the diastolic murmur; otherwise the condition was unchanged.

Cases have been recorded by several observers where obliteration and thrombosis of the superior vena cava were due to syphilitic mediastinitis and phlebitis. Syphilis is doubtless the main cause of chronic obliteration of the superior vena cava. Is the present a pure traumatic case, or was the interior of the vein weakened by a previous chronic endophlebitis syphilitica? In any case it is one of traumatic obliteration. Two months after the accident the heart and thoracic aorta appeared normal, while two years later cardiac dilatation and hypertrophy developed. In this case, where an anatomical diagnosis was possible two days after the accident, a thrombectomy might have been performed; but the indications for this operation, which would be useless if the thrombus were organised, must be very exceptional.

A NOTE ON THE ASSOCIATION OF CANCER WITH TUBERCULOSIS.

BY CHARLES POWELL WHITE, M.D. CAMB.,
F.R.C.S. ENG.

(From the Christie Hospital, Manchester, and the Helen Swindells Laboratory, University of Manchester.)

In 180 consecutive autopsies on cancer patients at the Christie Hospital I have found 22 cases (over 12 per cent.) in which there was coincident tuberculosis. In this number are included only those in which the tuberculosis was recent and active, evidences of old tuberculosis, such as calcified nodules or fibroid lungs, being disregarded. The diagnosis of tuberculosis was in all cases based on the presence of active giant cell systems with or without caseation. Tubercle bacilli were found in the majority of cases, but in some they could not be demonstrated. A list of the cases is given in the accompanying table.

Table showing Cases of Cancer with Coincident Tuberculosis.

Case	Type of cancer.	Primary site of cancer.	Secondaries.	Tuberculosis.
1	Sq. carc.	Neck.	—	Lupus.
2	Sq. and col. carc.	Rectum.	Liver.	Rectum, glands.
3	Sq. carc.	Larynx.	Glands.	Larynx.
4	Col. carc.	Stomach.	Uterus, ovary, lungs, rectum.	Uterus and tube.
5a	Large R.C. sarc.	Testis.	—	Psoas abscess.
5b	Sq. carc.	Peritoneum.	Iliac glands.	—
6a	"	Mouth.	—	Adrenal.
6b	Col. carc.	Gall-bladder.	—	—
7	Sq. carc.	Uterus.	—	Lungs.
8	"	Mouth.	Glands.	"
9	"	"	"	"
10	"	Upper jaw.	Glands.	"
11	Carcinosarc.	Pharynx.	Glands, thyroid, lungs.	"
12	Sq. carc.	"	Glands.	"
13	"	Larynx.	Glands.	"
14	"	Esophagus.	Glands.	"
15	"	Pharynx.	Glands, liver.	"
16	"	Mouth.	Glands, liver, lungs.	Glands, lungs.
17	Col. carc.	Rectum.	Glands, liver, lungs.	Glands.
18	Sq. carc.	Mouth.	Glands.	Glands, spleen.
19	"	Ext. ear.	Glands, liver, lungs.	Glands.
20	"	Mouth.	Glands.	"
21	Col. carc.	Pancreas.	—	"
22	Sq. carc.	Vulva.	—	"

Sq. carc. = Squamous carcinoma. Col. = Columnar.
Sarc. = Sarcoma.

[Notes.—Case 2: Combined lesion in rectum. Case 3: Combined lesion. Case 4: Combined lesion in uterus. Case 5: Also hydatid cyst liver and elephantiasis. Case 16: One gland carcinoma and tuberculosis. Case 18: Also adenoma of liver. The glands referred to are in each case the regional lymph glands corresponding to the primary cancer.

Case 1 was a carcinoma arising in a patch of lupus, but in none of the other cases was the presence of tuberculosis suspected during life. In a few it was detected at the autopsy, but in most cases it was determined only on microscopical examination.

In Cases 2 and 3 the tuberculosis was present in the primary cancer forming a combined lesion. In Case 2 the site was high up in the rectum, and the carcinoma was columnar and mucoid with areas of the squamous type.

In Case 3 the tuberculosis was in an extensive carcinoma of the larynx.

In Case 4 there was a combined lesion of tuberculosis and columnar carcinoma in the uterus. In this case there was also carcinoma of the stomach and ovary, and it is not certain whether the uterine cancer was a metastasis or an independent primary growth.

Case 5 may perhaps be considered as doubtful as regards tuberculosis, since the only evidence of its presence was a psoas abscess. The patient had a large round-celled sarcoma of the testis and a primary carcinoma (squamous) of the peritoneum. He also had a hydatid cyst and cirrhosis of the liver, and elephantiasis of the thigh and scrotum.

In Case 6 there were also two primary tumours, in the mouth and gall-bladder, and tuberculosis of one adrenal.

In Case 7 tuberculosis of the lungs occurred together with carcinoma of the uterus.

In Cases 8–15 the primary cancer was in the mouth, pharynx, or esophagus, and the tuberculosis in the lungs.

In Case 16 the cancer was in the mouth and the tuberculosis in the regional lymph glands and lungs. In this case one of the glands showed overlapping lesions of cancer and tuberculosis, and the cancer was being destroyed by the tuberculosis.

In Cases 17–22 the tuberculosis was found in each case in the regional lymphatic glands corresponding to the primary cancer. Sometimes one gland of a group was tuberculous and the rest cancerous, and sometimes the tuberculous glands were the more numerous, and sometimes all were tuberculous, none being cancerous.

With one or two exceptions, then, the tuberculosis was found either in the primary lesion or in a situation closely connected with the primary cancer—the regional lymphatic glands or, in the cases of cancer of the mouth, &c., the lungs. The tuberculosis was obviously secondary to the cancer in most cases, but whether this was due to the entry of tubercle bacilli through the primary lesion or to the presence of cancer reducing the resistance of the body to bacilli already circulating in the system, could not be determined.

It would be interesting to have the experience of others on this association of cancer and tuberculosis.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF BALNEOLOGY AND CLIMATOLOGY, EPIDEMIOLOGY AND STATE MEDICINE, MEDICINE, AND THERAPEUTICS AND PHARMACOLOGY.

A COMBINED meeting of these Sections was held on March 4th, Dr. W. EDGECOMBE, President of the Section of Balneology and Climatology, being in the chair, when a discussion on the

NATURE, PREVENTION, AND TREATMENT OF FIBROSITIS

was opened by the PRESIDENT. He outlined the present state of our knowledge of the condition, and spoke of the very extensive incidence of "rheumatic" manifestations which constituted one-sixth of the diseases of insured persons and cost £2,000,000 per annum in sick benefit. Until recently the pathogenesis had been exclusively considered to lie in the realm of metabolism; latterly there had been a strong emphasis, perhaps an over-emphasis, on the infective factor. The sources of infection were the mouth, nose, bowel, bladder and kidneys, gall-bladder, uterus and appendages, and vermiform appendix. An encapsuled focus was more likely to set up fibrositis than one with free drainage. Was the pain due to the presence of bacteria in the capillaries and tissue spaces or to circulating toxins? There was no one specific organism; saprophytic bacteria might cause fibrositis when the resistance of the individual was lowered, but the commonest micro-organism found was the *Streptococcus viridans*. The question remained to what extent the onset was determined by the nature of the soil—was the soil rendered fertile by some underlying metabolic disturbance, or could this alone give rise to fibrositis without any infection? Occasionally cases would fail to improve until the soil was altered. Metabolic disturbances to be considered were of three kinds, the gouty, the dietetic, especially those of excessive carbohydrate intake with lack of exercise, and hyperglycemia, both glycosuric and diabetic. The immediate causes included damp, chills, cold, extremes of temperature, sedentary life, overfeeding, and over-exertion. He suggested that the discussion should centre around five questions—namely: (1) Is there a metabolic form of the condition? (2) What are the common sites of infection and the common bacteria? Is there any evidence for the existence of a specific organism or selective affinity between different organisms and types of tissue? (3) What is the value of vaccine treatment, either alone or combined with other methods? (In his experience this had been disappointing in most cases, though striking in a few.) (4) What measures could be adopted to reduce the incidence of the disease among the industrial population? In his opinion these should include improvement of housing conditions, abolition of damp cellar-dwellings, and increase of ventilation and sunlight; improvement of labour conditions, prevention of chills, provision of works-baths and drying-rooms, and the prevention of sepsis in the body from such sources as teeth and tonsils. Individual treatment should be directed both towards the metabolic derangement and the predisposing cause, as well as the detection and removal of septic foci. Local treatment must be varied with the case. He regarded spa treatment as helpful in its promotion of elimination and improvement of bodily nutrition via the circulation and the regulation of the diet. He suggested that the Ministry of Health should consider the extension of such treatment for insured persons.

Statistical Importance of Fibrositis.

Dr. J. A. GLOVER referred to the investigations compiled in 1922 by 49 doctors observing some

92,000 insured persons. Fibrositis alone was costing from £500,000 to £600,000 per annum. Of the 58,000 males 1100 suffered from lumbago, muscular rheumatism, sciatica, or brachial neuralgia. The incidence increased in geometric proportion according to the decade of life. Females suffered far more than males from muscular rheumatism, but the reverse was the case with sciatica and lumbago. The condition was particularly common in South Lancashire, being one of the indications of the premature senility revealed during the compilation of recruiting statistics in the north-west. Metal workers were especially liable on account of the heavy labour and exposure to chills. As the pain of fibrositis was evoked by movement, the factor of strain was likely to play a large part in aetiology. Dental sepsis, particularly apical, seemed to be especially associated with lumbago. Tonsillar infection was not of so much importance as in the case of acute or subacute rheumatism; 13 per cent. of cases of lead poisoning showed signs of fibrositis. Prevention lay along the lines of school inspection and housing. Dental hygiene should be preached to all, as much to the payer of supertax, with his gold crowns over dead roots, as to the poor. The immediate application of first-aid disinfection to cases of minor sepsis and the avoidance of chills in labour conditions would also help considerably.

Sir WILLIAM WILLCOX believed that in those cases where a focus of infection was not found it was because the search had not been sufficiently exhaustive, and pointed out that antrum infection and diverticulitis were two kinds sometimes overlooked. Focal infections were followed by secondary involvement of lymphoid tissues. He believed that the actual lesions were sterile because caused by the toxin, just as colloidal silica could produce fibrositic formations in the absence of any bacteria. Fibrositis was a gauge measuring the balance between virulence and resistance; both seed and soil must be considered. Factors not sufficiently realised to-day were: (1) Sensitisation, which accounted for the occasional failure of vaccine treatment; and (2) symbiosis. Certain diseases lowered the resistance of the individual to the organism of fibrositis—e.g., malaria. Fibrositis was mostly the evidence of a streptococcal septicaemia, of which other general manifestations could be found, such as anaemia, debility, dilatation of the heart, and a history of appendicitis, colitis, &c. Periodical medical inspection by persons skilled in detecting foci of sepsis was the best prevention. Skilled massage was the most valuable local measure, flushing the part with fresh lymph-bearing antibodies.

Dr. P. HAMILL urged the primary importance of establishing the diagnosis, so that cases of diabetes, for instance, should not be treated as fibrositis. He regarded the vast proportion of the cases as infective. The virulence of the infection was low but its chronicity great. In many cases there might be no symptoms, but a tonsil on being pulled forward would exude a milky fluid, although neither enlarged nor painful. Chronic pelvic inflammation in women was less often associated with fibrositis than might be expected. The rectum should be investigated for a hidden fistula. In many cases the infection was generalised and the whole subject must be treated. Removal of the focus was not enough; the residual infection had still to be combated. He had had satisfactory results with saline laxatives, but his success with the usual intestinal disinfectants had not been so great. The resistance must be raised by all hygienic measures, and spa treatment often helped patients whose recovery began to flag after awhile at home. Protein shock led to benefit, which was not lasting; it was suitable for early cases. Vaccine treatment was beneficial if judiciously carried out, at long intervals and in small doses. In the few cases where no focus was found a stock vaccine might be given in a test dose, and the cutaneous reactions should be tested. In the acute stages rest, with splints and extension if contractures were present; in the chronic stages massage and gentle movements should be applied. Patients were more tolerant to this after

diathermy, which produced relaxation and increased blood-supply. The psychological factor in spa treatment was one of great importance, the supineness of the patient being a serious bar to successful treatment.

Dr. R. ACKERLEY believed that any toxin, if retained in the body, was sufficient to cause a painless fibrosis, which became a painful fibrositis when the factor of stress was added. There was no specific organism. Few women over 40 were without fibrotic nodules, but these were painless because there were no circulating toxins, metabolic or bacterial. Metabolic toxins accumulated with age owing to defective elimination by lung, kidney, and skin, and the body stored them in tissues of the least vitality—i.e., fibrous tissue. They failed to be eliminated owing to defective oxidation associated with the imperfectly oxygenated conditions of modern life. This accounted for the increased severity of the pains in bad weather. The cause was rarely simple and all possible factors must be seen to. The failure of dental treatment was due to its incompleteness; every source of sepsis must be removed, and this must be followed up by every possible measure for the restoration of function.

Dr. W. J. MIDELTON deprecated the number of labels used in this connexion; the only one that seemed to be needed was "acute or chronic toxæmia." He believed that streptococci and staphylococci were always secondary to some specific infection such as typhoid or scarlet fever. He had had much success with P. W. Latham's method of continuous counter-irritation, with croton oil and cantharides.

Dr. A. ELMS expressed his belief in the metabolic type of fibrositis; some patients were no better for the removal of their septic foci and vaccine treatment; nor would the septic theory account for the different incidence in the two sexes. He regarded fibrositis as a biochemical condition activated by many causes, of which bacterial invasion was one and one only; two main groups could be distinguished, associated with errors of assimilation and elimination respectively. In the former group the patient was suffering from insufficient food and must be fed up; here there were more women than men. In the second group, the lumbagos and sciaticas, the basis was essentially an eliminative error, perhaps the result of living too well. With increasing age elimination became more and more deficient, hence the proportionate increase of these conditions. Bacterial invasion was not concerned at all in this group; the causal factor was overwork or overfeeding. The work of the late Prof. J. I. Hunter had shown that there were two types of muscle fibre, one concerned with movement and the other with maintenance of posture; it was the latter, innervated by the sympathetic, which was painful in these diseases; pain was not experienced until the movement was completed. There was invariably an increase in the magnesium output in the urine, the calcium remaining unaltered, showing the disturbance in the balance of metabolism. The assimilation-error cases must be treated with acid, acid phosphoric being the best; the result was early cessation of pain, especially at night, and alteration in the magnesium ratio. The second group must be treated with alkali, tribasic potash being the most successful, though it made members of the first group very ill. They must also be flushed out with water to assist the elimination.

Mr. J. McDONAGH pointed out that the condition was one of general involvement of the supporting tissues of the body; seldom was the fibrous tissue alone picked out. The most valuable therapeutic agent was sulphur. He referred to the associated conditions of induratio penis plastica, Dupuytren's contracture, and dermatomyositis. It was in cases of fibrositis occurring in women between 20 and 40 that focal infection played its chief rôle. Gonococcal fibrositis was often not ascribed to its true cause, owing to the difficulty of finding the coccus and its power of lying dormant for many years. In 90 per cent. of cases it was a local recurrence. Acute cases of this type were best treated by the symmetrical urea of meta-benzoyl-meta-amino-benzoyl-1-amino-8-naphthol-3-6-sodium sulphonate (or sum. 36 for

short); chronic cases by intramuscular injections of carbon bisulphide products of diethylamine or contramine. At the female climacteric a distinctive form was met, accompanied by arthritis in the knees and phalangeal joints of the fingers; this was metabolic in origin, corresponding with gout in the male, had a good prognosis and responded well to injections of thiol-histamine. The fibrositis of older people was never seen alone, being one of the clinical manifestations of a general fibrosis; the cause was not ascertainable, and the treatment rested between injections of contramine, insulin, and milk.

Dr. OLIVER HEATH described two personal experiences of lumbago, one following a gumboil, the other an injection of typhoid bacilli. The onset and course argued in favour of a bacteriological causation.

Dr. C. E. SUNDELL was of the opinion that the soil was of greater importance than the seed. The temperature on the whole was subnormal, the skin inactive, and the sweat, when induced, was strongly acid with lactic acid. Treatment should be directed towards flushing out the backwaters of the circulation where fibrositis was liable to occur; exposure to warm moist air for half an hour produced abundant sweating and the excretion of large quantities of acid. Relief was produced, but cure could not be pronounced until the sweat had been rendered neutral.

Dr. M. B. RAY said that during the war "fibrositis" had much the same connotation as "I.C.T.," "P.U.O.," and "N.Y.D." He described the chemical processes occurring in a contracting muscle when there was perfect harmony between nerve stimulation and muscular response. Fibrositis occurred when there was some clogging in the minute lymphatics of the fibrous connective tissue, the treatment was to stop this lymph stasis, and give the digestive system a chance to return to normal.

Dr. HIGGINS referred to the work of continental investigators, and remarked that their results were statistically as good as ours, although they paid little or no attention to focal sepsis. Among their methods were the surgical removal of perithec fat compressing the lumbar cord and the restoration of the lymphatic circulation, particularly in the region of the sacrosciatic foramen, by massage and calisthenics.

Dr. PARKES WEBER expressed his agreement with the observations of Sir William Willcox and Dr. Ellis, in which he saw no essential contradiction.

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on March 9th, Dr. EUSTACE M. CALLENDER, the President, being in the chair.

THE FUNDUS OCULI IN GENERAL MEDICINE.

Mr. ERNEST CLARKE opened a discussion on this subject. He said that ever since the ophthalmoscope was invented medical men had increasingly realised its help in diagnosis and treatment; and its use in medicine had been enormously advanced since the introduction of the luminous ophthalmoscope, which had brought ophthalmoscopy practically within the reach of all. As this instrument could be brought so near to the eye that it almost touched the cornea, it was not necessary for the examiner to have a darkened room, and the patient could be examined in any posture. In addition the reflection of light from the cornea was much lessened, enabling the observer, sometimes, to see through a pin-point pupil, and even inspect the macula. The normal fundus showed a great number of variations, hence it was only by much practice and by looking at every available fundus that the observer acquired the capacity of recognising an appearance which was abnormal. Otherwise he would become alarmed needlessly when he saw such gross changes as opaque nerve-fibres or colobomata, which were of no clinical significance, while he might miss the important fine changes which ushered in the onset of arteriosclerosis.

Picture Records of the Fundus.

Mr. Clarke said an important further advance in the subject had recently been made. At the suggestion of Dr. Rayner Batten, Messrs. Hamblin had recently opened a studio, staffed by trained artists, for making accurate colour-drawings of ocular fundi. The aim was to avoid wearying the patient and keeping the eyes lighted up too long, and therefore the artists had been trained to memorise what was rapidly seen until it had been drawn. At a few minutes notice a patient could be given an appointment and the picture taken while the eye was still under a mydriatic. A great advantage of this was that repeated pictures could be taken, so that a record of progress could be kept in a successful case; or if it were not favourable, the record showed in what direction the disease was advancing. Colour drawings possessed a great advantage over black-and-white ones.

Mr. Clarke showed a number of instructive pictures which had been made in the way described, and gave the histories of the conditions they illustrated. One was that of a woman, aged 42, who was being treated for rheumatism and pyorrhoea. Vision was hyper-normal, 6/5 in each eye. Papillitis and hæmorrhages were present in both eyes. There was swelling of the disc in the right eye to +2, and of that of the left +3. Her teeth were attended to, she was auto-inoculated, she gradually improved, and the manner in which the eyes indicated the progress was plainly shown by the pictures of the fundus. In contrast to this was the case of a man, aged 48, who had 6/9 vision in each eye, but it was recently becoming worse. He was suffering from pyorrhoea and intestinal toxæmia. Papillitis was present in both eyes, and a serious view of the case was taken. A few weeks later there were choked discs, but the man had no headache or sickness, though the fundus appearances pointed to brain tumour. After consultation with a physician, a decompression was decided upon, but the patient died on the table. Post mortem, a fairly large glioma was found on the right side at the junction of the occipital and temporal lobes. One of the large series of pictures he showed had reference to a case of veronal poisoning. A woman, aged 61, was much worried and suffered from insomnia. To secure sleep she took a very large dose of veronal. When the speaker saw her she had marked papillitis and retinitis, with hæmorrhages in both eyes, particularly the left. The appearances were such as to suggest cerebral tumour, but under treatment she gradually improved, and a month later the papillitis and hæmorrhages had disappeared, leaving only a slight post-neuritic blurring of the disc, and this subsequently ceased leaving both fundi normal. Another series showed gradual improvement of diabetic retinitis under insulin treatment.

In conclusion, Mr. Clarke said it would be generally agreed that a collection of fundus pictures, accurately drawn—many pictures referring to the same case—formed into a permanent library, would be of enormous use. Copies of these pictures and lantern slides of them could be obtained with the consent of the doctor, and they would be a great aid in educational work. As the names would never appear, the patient's consent was not necessary.

Discussion.

Dr. JAMES COLLIER said an ophthalmoscopic examination should be made in every case of illness, whatever its nature. It could be done very quickly and afforded valuable information. To the beginner every fundus was of interest, and he should practise on normal people, to enable him readily to detect the abnormal. In his own wards every student was obliged to use the ophthalmoscope on every patient, and he criticised what the students reported they saw. In this country much more attention seemed to be paid to ophthalmoscopic examinations than in America. In many diseases the first symptom might be ocular. Even more important than positive findings in general medicine were indications that the ocular fundi

were normal. In the presence of such symptoms as headache, giddiness, and transient blindness it was impossible, without an ophthalmoscopic examination, to treat the condition without a lurking suspicion that a serious organic condition underlay the symptoms. On two occasions he had been called to cases having severe symptoms and the patient expired almost immediately; yet the ophthalmoscope revealed intense papillitis and proved the existence of a cerebral tumour. But there had been no complaint of headache. Often examination of the fundus oculi settled the diagnosis in otherwise doubtful cases. In one case a little girl was admitted to hospital with urgent symptoms of meningitis; she was unconscious, and had head retraction and vomiting. Lumbar puncture resulted in a large quantity of blood-stained fluid being withdrawn. Twenty minutes later she was sitting up and playing with toys. After recovering from her unconsciousness she was found to have asteriognosis down the right side, showing the probability of a lesion in the parietal lobe. His diagnosis was that she had had a sub-arachnoid hæmorrhage, which had torn up part of the parietal lobe, probably arising from a congenital aneurysm. An alternative diagnosis of poliomyelitis was offered by a colleague, but in one eye, just round the disc, there were three small groups of fine superficial hæmorrhages, and these had never been reported in association with poliomyelitis, but were a frequent accompaniment of subarachnoid hæmorrhage.

Dr. PARKES WEBER referred to ophthalmoscopic appearance as a clinical sign of recent death. He said his attention was directed to the subject by chance when he was house physician in 1892, by a case in which the heart ceased to beat while he was examining the patient's optic disc with the ophthalmoscope. In the same year he was called to a patient just after death had occurred, and he found the columns of blood in the retinal blood-vessels interrupted by small spaces, looking like the segmentation which sometimes occurred in the mercury column of a manometer. He found that by exerting pressure on the chest these small spaces could be moved backwards and forwards. In one case a single spontaneous inspiration took place after he had found this ophthalmoscopic phenomenon of segmentation was already present. He gave references to observations of a similar nature which had since been made by others, both on the continent and in America. M. H. Kahn, in his most recent paper on the subject, 1924, entitled "A New Vascular Sign of Death," said that *in vitro* segmentary coagulation could be produced, but not without difficulty, and concluded that segmentation in the venules and arterioles was a definite sign of death and that it should rank equally with the other clinical signs of death. Dr. Weber said it should not be inferred, in the absence of this sign, that the person was not yet dead.

Dr. RAYNER D. BATTEN showed a series of consecutive drawings of fundi illustrative of the changes seen in association with various diseases, including the macular changes seen in mental degeneration. A record in words, he said, failed to convey a proper impression of the condition seen, and hence consecutive pictures were the only means to this end. He urged that medical men should be willing to supply a note of the clinical features of cases of which fundus drawings were made.

Fundus Changes in Toxicæmic States.

Sir WILLIAM WILLCOX agreed as to the great importance of ophthalmoscopic examinations in ordinary medical work. In every case the fundus ought to be examined, and if that were done more would be known about the relationship of the eye changes to general diseases, and diagnoses would be more accurate. He said he had recently been interested in the changes in the fundus oculi in association with toxicæmic cases. Until comparatively recently it was taught that fundus changes were either due to diabetes, or to Bright's disease, or to high blood

pressure. But it was quite common to find hæmorrhages and other changes in the fundus in cases showing no increased blood pressure and whose renal function was normal. In such cases it was most important to search for every avenue and channel of infection. When such were found and put right, it was surprising how soon the fundus changes cleared up. He usually included among the measures in such cases Plombières treatment, as there was often a secondary septic involvement of the colon. Some drugs seemed to show a special affinity for retinal tissue, and a good example of that was atoxyl; in certain people quinine had a similar special effect, and he related a case in which a large dose of quinine given mistakenly for malaria produced temporary blindness. With regard to veronal poisoning, he said a number of nervous symptoms were recurring to-day—usually attributed to other causes—which seemed to be a sequel of medicinal treatment by veronal at some previous date. He asked why certain patients with a focal infection had retinitis. Was it because retinal tissue was specially sensitive to the toxin? Or were the patients sensitised to the toxin, which was usually a streptococcal one? When retinal changes were present he thought special care should be exercised in the use of vaccines, and said that his own practice was to start with only 5000 or 10,000, instead of the usual millions because of this sensitisation, which was akin to asthma and angioneurotic oedema.

The PRESIDENT spoke of the value which a book consisting of a collection of pictures of fundus appearances associated with various diseases would be to the general practitioner, who had sufficient experience to recognise from what he saw that something was wrong, but often he was not familiar enough with the changes to base his diagnosis upon them.

Mr. CLARKE briefly replied.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on March 5th, Dr. E. F. MAYNARD, the President, being in the chair.

Mr. H. N. FLETCHER read a paper on some points in connexion with the

Painful Dyspepsias and their Diagnosis.

After remarking that the old view of hyper-acidity as the cause of pain had been discarded, except in so far as it might be so indirectly, he described the experiments of Hardt, Carlson and others, and their evidence that increased intragastric tension was the true cause. The recent views of A. F. Hurst as to how this increased tension was brought about by the reflex influence of diseased states within and without the stomach were referred to, and the need for further knowledge of the neuro-muscular apparatus of the stomach, the exact part played by the vagus and sympathetic nerves, and their possible control through Keith's nodes was emphasised. Mr. Fletcher then described in detail the salient characteristics of the common causes of painful dyspepsias, gastric and duodenal ulcer, gastric cancer, cholecystitis, chronic appendicitis, visceroptosis and "nervous" dyspepsia, and laid stress upon the paramount necessity of a detailed history and physical examination of the patient—the important differential points of which, in making a diagnosis, he described.

Discussion.

The PRESIDENT in his remarks agreed with Mr. Fletcher in his statement regarding the time incidence of pain, as a differentiation between gastric and duodenal ulcer. As regards vomiting, this is not at all characteristic of gastric ulcer. If, for instance, epigastric pains and vomiting are present one would think at once not of gastric ulcer but gall-bladder or duct. The pain in the gall-bladder radiates up to the right shoulder. We must not, he said, lose sight of the fact

that epigastric pain may be due to angina, pericarditis, or pleurisy. He considered that in neurasthenics there were almost as many cases of hypochlorhydria as hyperchlorhydria.

Mr. G. W. BERTSFORD considered that in neurasthenic subjects slight pain is exaggerated into severe pain. Excluding nervous dyspepsia, epigastric pain, he said, is due to organic lesion in the upper abdomen.

Dr. W. BROADBENT said that in his experience of duodenal ulcer there was seldom any previous history of dyspepsia. He referred to the diminution in the number of gastric ulcers of recent years and suggested that modern hygiene might account for this. Neurasthenic dyspeptics complain of very severe pain but absence of tenderness on palpation.

Dr. DONALD HALL drew attention to the great care Mr. Fletcher took in studying the clinical history and symptoms of his patients. He would like to support the statement Mr. Fletcher had made that X rays were not so reliable in duodenal as in gastric ulcer, and he quoted three cases. A medical man, aged 47, had symptoms of duodenal ulcer for seven years with typical time incidence, relief from the taking of food and alkalis, and with the characteristic remissions. By X rays a diagnosis was made of chronic duodenal ulcer, but the surgeon whom he consulted advised a course of strict Sippy diet for six months. On this régime the patient was free from symptoms, but before the six months had elapsed he had for the first time pain and tenderness in the right iliac fossa. He was operated on the same evening when the greater part of the appendix was found to be represented by a mere cord, while the proximal stump was acutely inflamed and would have gone on to perforation. That patient had had repeated mild attacks of obliterative inflammation without at any time pain or other symptoms in the region of the appendix, but in his case there was a possible fallacy because the surgeon did not feel justified at the laparotomy in exploring the upper abdomen, and there may have been a coexisting duodenal ulcer. He had, however, on ordinary diet, now been free from symptoms for 18 months. A middle-aged clergyman had suffered from painful dyspepsia for several years and had declined exploratory laparotomy. He had written to Dr. Hall stating that at last it was known what had been at fault; he had been X rayed and was found to have dropped colon for which he asked Dr. Hall to treat him. While reading the letter an urgent message came to see the patient. Dr. Hall found him in acute agony as from perforation. He was operated on that morning and a large tear found in a chronic ulcer of the duodenum. He died the following day. A retired lieutenant-colonel, aged 56, with a long history of dyspeptic troubles was X rayed in London. Lane's kink and visceroptosis were found, and after elaborate surgical operation he was sent down to Brighton to convalesce. Taken ill during lunch he was seen in the lift at his hotel and at first sight appeared to be dead. When later on it was possible to move him to his bedroom he was found to have fainted as a result of severe internal hæmorrhage. Melæna was present for days, and after medical treatment for several weeks gastro-enterostomy was performed and the clinical diagnosis of duodenal ulcer was confirmed. Dr. Hall stated that he was a firm believer in "appendix dyspepsia" as a clinical entity, but where local signs were wanting the mentality of the patient must be carefully studied before operation. Abdominal operations based solely upon subjective symptoms were to be deprecated.

Dr. W. BARRINGTON PROWSE said that too much must not be expected from X ray examinations and the result must always be taken in conjunction with the clinical evidence, but there is no doubt that X ray examinations are a very valuable help in doubtful cases. He considered that in supposed gastric cancer X ray is extremely valuable as a help in determining the question of operation.

Dr. H. M. GALT showed microscopical slides of sections of stomach through one of the rugæ; stomach with the vessels injected; small intestine and small intestine with the vessels doubly injected.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on March 5th, with Dr. PETER HOWIE, the President, in the chair.

Exhibition of Cases.

Dr. WILLIAM BROWN showed a case of *Hirschsprung's Disease* in a boy of 3 years, the youngest of a family of eight. There was no history of tubercle or syphilis in the family, and the patient's Wassermann reaction was negative. There was a history of attacks of diarrhoea during the past 18 months with swelling of the abdomen, visible peristalsis, and rumbling noises, which all disappeared temporarily when an aperient was given. There was no constipation. On admission to hospital there was visible peristalsis of the large bowel. Screen examination after a barium enema showed an enormous pelvic colon lying in the right iliac fossa and extending up to the liver with dilatation of the descending and transverse colon. Treatment consisted of lavage with saline solution, at first once, later twice, daily, with a weekly dose of castor oil; great improvement followed—peristalsis ceased, the abdomen decreased in size, and the tone of the wall improved. A recent barium enema showed a smaller calibre of the colon and better tone of its walls. The patient was not confined to bed. Photographs and tracings of the radiographic examinations were shown.

Mr. ALEXANDER MITCHELL showed a boy in which treatment of a *Streptococcal Arthritis of the knee* by Willems's method had resulted in a completely mobile joint. He emphasised the necessity of making the incisions the whole length of the joint, and of full active movement. Pain was an obstacle to movement, but by adopting Everidge's method of a back splint slung by an arrangement of weights and pulleys the effect of gravity could be almost entirely eliminated.

Dr. A. G. ANDERSON showed a boy who had sustained a *Fracture of the Skull* in a motor accident, where the signs and symptoms showed the presence of a right-sided cortical lesion. Immediate operation revealed a diffuse meningeal hæmorrhage, and decompression was followed by recovery, practically complete in two days. There were no sequelæ.

Mr. WILLIAM ANDERSON presented a tailor, aged 31, who complained of loss of power in extending the fingers of the right hand. It was found that the extensors communis digitorum and carpi ulnaris did not react to faradism. There were no sensory changes. X ray showed uniform thickening of the shaft of the radius, and the Wassermann reaction was strongly positive. All ordinary treatment by electro- and physio-therapy had proved useless.

Mr. G. H. COLT demonstrated a small loose bone removed from the upper end of the olecranon fossa in the elbow-joint, and showed radiograms. It was of interest to speculate as to the origin of the loose body—was it a chip off the epiphysis which had gone on growing, nourished by the synovial fluid, or did it represent an actual complete ossific centre?

STATE DISTRICT MEDICAL ASSOCIATION, U.S.A.—H.R.H. the Duke of York has signified his willingness to accept the honorary membership of the Inter-State Post-Graduate Assembly directed by the State District Medical Association. This will be conferred upon him at the inaugural ceremony on June 2nd at the Royal Society of Medicine, when the visit of the Association to this country commences. The following also will be made Honorary Members: Mr. Austen Chamberlain, Mr. Neville Chamberlain, Lord Desborough, Lord Dawson of Penn, Sir Humphry Rolleston, Sir John Bland-Sutton, Sir St. Clair Thomson, Sir Holburt J. Waring, Mr. Philip Franklin, and Sir John Y. W. MacAlister.

Reviews and Notices of Books.

PSYCHO-ANALYSIS.

Collected Papers. Vols. I. and II. By SIGM. FREUD, M.D., LL.D. Authorised translation under the supervision of JOAN RIVIERE. London: Hogarth Press. 1924. Pp. 359 and 404. 21s. each vol.

It is 32 years since Freud and Breuer published a joint article which became the starting-point of psycho-analytical practice and theory, and these volumes, the first instalment of a projected series of four, carry on the story of the growth of psycho-analysis from that beginning. Study of the development of a theory is not perhaps necessary to a practical understanding of it, but the order of development of this theory indicates the path that an investigator might follow who set out to test it by clinical experiment. The opening paper critically appraises the value of Charcot's work, and in the second, the joint article referred to above, the authors claim to have made a further step along the path which Charcot first opened up and describe the curative effect of the abreaction of accumulated stimuli arising from memories which are "not at the disposal of the patient in the way that his more commonplace memories are." This was the germ of Freud's theory of the unconscious, but the method was not yet that of psycho-analysis; it was that of the revival of memories in a hypnoidal state, which was freely used in the treatment of "shell-shock" during and after the late war. In the fourth paper, dated 1894, Freud describes the *defence neuro-psychoses* in which the affect—i.e., the emotional charge—of an unbearable idea becomes the source of symptoms, and he declared that the unbearable idea is always found associated with the sexual life. In separating the *anxiety neurosis* from "neurasthenia" he states as a principle of clinical medicine that the psyche "develops the neurosis of anxiety when it feels itself unequal to the task of mastering (sexual) excitation arising endogenously." Here Freud entered upon that period when, as he expresses it in another chapter, he settled down, like Robinson Crusoe, as comfortably as possible on his island. This isolation lasted ten years though, as he points out, he had advanced nothing new by suggesting the sexual aetiology of the neuroses, for undercurrents in medical literature acknowledging these facts had never been absent, though the official medicine of the schools has behaved as if it knew nothing about it.

A reply to Lowenfeld's criticism of the theory of this "actual" neurosis suggested that such factors as hard work, worry, or definite shock are operative only when sexual difficulties are present, but it is to be noted that in his "Introductory Lectures," written at a later date, Freud states that the "traumatic neuroses" cannot be correlated with his general scheme. He has also retraced his steps in regard to the influence of sexual trauma in the aetiology of hysteria, and describes his bewilderment (p. 299) when he found to be untrue some of the statements of hysterical patients concerning sexual experiences in early childhood. This led to the realisation that since these patients traced their symptoms to fictitious traumas, thus creating such scenes in phantasy, psychological reality must be taken into account as well as actual reality. An important principle is here established—that what the nervous patient believes, whether true or false, must be given validity in any scheme of psycho-pathology and itself be made the subject of analysis.

The final chapter of the first volume gives a history of the psycho-analytical movement with the controversies that led to the secession of Jung and Adler. The former has, according to Freud, bowed to the storm and abandoned the psycho-analytical position in an effort to placate opposition by eliminating the disagreeable, whilst Adler's secession is traced to

personal ambition. Freud himself certainly never trims his sails. The chapter, in the second volume, on sexual morality and nervousness will, perhaps, frighten the cautious with its observations that the double code of morality conceded to the male in our society is the plainest admission that society itself does not believe in the possibility of adherence to those precepts which it has enjoined on its members, whilst under the disappointments of matrimony women succumb to severe lifelong neurosis. But it should be studied in relation to the chapter on the future of psycho-analytic therapy, where are sketched the possible results of the general diffusion and acceptance of psycho-analytic doctrine. The countless numbers who take flight into neurosis "would have to be honest, own up to the instincts that are at work in them, face the conflict, fight for what they want or go without, and the tolerance from the community which is bound to ensue as a result of psycho-analytical knowledge would help them in their task." Alarming this may be, but it does not of necessity involve moral disaster to our civilisation. In an equally outspoken chapter on the transference-love Freud emphasises those obligations, the general observation of which has always permitted the confidential relation between physician and patient.

Freud wrote, in 1914 (Vol. I., p. 328), that he was either compared with Darwin and Kepler or was hooted at as a general paralytic. The gradual spread of his theories in the face of strenuous opposition points to a vitality that distinguishes them from a passing craze, and the possibility is emerging that his place may indeed be among the pioneers. These volumes may, then, be studied as a record of history in the making.

ACUTE INFECTIOUS DISEASES.

A Handbook for Practitioners and Students. By J. D. ROLLESTON, M.A., M.D. Oxf., Senior Assistant Medical Officer, Grove Fever Hospital, London. London: William Heinemann. 1925. Pp. 376. 12s. 6d.

MANY workers in fever hospitals must have cherished the hope that Dr. Rolleston would one day embody his exceptional experience of the infectious diseases and the literature concerning them in a manual such as this.

The handy volume before us contains an astonishing amount of information in its 376 pages. Much space has been saved by the complete omission of illustrations and temperature charts, the author holding that the bedside is the only place for the study of cutaneous lesions and the course of pyrexia. Admitting that many pictures are useless or even misleading, some may be really instructive, for instance, well-chosen photographs illustrating the differential diagnosis of small-pox and chicken-pox. As regards temperature charts, we believe that their omission is a mistake, especially in a book intended partly for students. In his description of the various fevers, moreover, the author does not always give a very clear idea of the course of the temperature, as, for example, in his chapters on scarlet fever and measles. The prodromal temperature of the latter especially is not described in such a way as to make a student realise the importance of the remission, which so often leads the medical attendant to the premature conclusion that the case is not going to be one of measles after all. In the same way no description can be quite as effective as the chart of an actual case showing the primary and secondary fevers of small-pox. For the practitioner with some knowledge of the subject, however, this defect, if it be one, is of little moment, and in any case it may be doubted whether the book is quite suitable for the student. It contains much more than is required for examination purposes, and, in particular, goes so fully into quite exceptional complications as to leave an exaggerated impression of their importance, though we must do Dr. Rolleston the justice of acknowledging

that he lays emphasis on their rarity. It is to those whose work lies in fever hospitals that the volume will be most valuable. It gives a quite admirable survey of the whole literature, and a very full bibliography is appended to each chapter. Even the most industrious readers will find much in it that is new to them and will be stimulated to be on the look-out for some of the more unusual complications of the various diseases.

A word of special praise is due to the brief historical notes with which each chapter opens, and which give just the information required. A little more space might have been given to the sections on differential diagnosis. Admitting the rarity of typhus in this country, its distinction from enteric fever deserves more space than that allotted to it, and the diagnosis of rubella from scarlet fever and measles is also treated somewhat scantily. A more serious defect is the total omission of the differentiation of chicken-pox from small-pox, the reader being referred from each chapter to the other only to find cross-references. It is curious that in a book so well up to date—an excellent account of the very recent work of Dr. and Mrs. Dick on scarlet fever is given—Dr. Rolleston has endorsed what we can only regard as the original error of Schulz and Charlton in their interpretation of their "extinction" test. As W. Mair pointed out a year ago, and as is now generally held, the blanching of a scarlet fever rash is not caused by a normal serum, but by the serum of either a convalescent from scarlet fever or of someone who has acquired an immunity to that disease either by having had an attack of it or in some other manner.

We have enjoyed those chapters in which the author has allowed his own experience and opinions to appear clearly; that on diphtheria is a good example. Other chapters of special interest are those on Vincent's angina, the paratyphoid fevers, and erythema infectiosum. Throughout the volume the statistical figures taken from the records of the Metropolitan Asylums Board will be found useful for reference and comparison by those in charge of hospitals. Dr. Rolleston's book will, we are assured, be of great use to many practitioners as well as to workers on fever.

PERNICIOUS ANEMIA AND APLASTIC ANEMIA.

A Contribution to the Study of Pernicious Anemia and Aplastic Anemia. By ARTHUR SHEARER, M.D. Bristol: John Wright and Sons, Ltd. 1924. Pp. 94. 7s.

IN this volume, a thesis presented for the degree of Doctor of Medicine in the University of Leeds, the author gives a clear and comprehensive account of all that is known and of much that is merely suggested in regard to pernicious anemia. Section I., which deals with this condition, is a model of what an essay on a medical subject should be and amply justifies the award of the degree "with distinction" which his thesis achieved for its author. Section II. deals with the aplastic anemias. Little new light is thrown upon this complex problem, but Dr. Shearer does good service merely in coming into the open with an expression of views upon a subject concerning which there is a very considerable amount of haziness in the minds of many medical men—laboratory workers and clinicians alike.

ELECTRICITY IN DIAGNOSIS AND THERAPEUTICS.

Leitfaden der Elektrodiagnostik und Elektrotherapie. Seventh edition. By Prof. Dr. TOBY COHN, Nervenarzt in Berlin. Berlin: S. Karger. 1924. Pp. 232. G.m.7.20.

THE seventh edition of this book, like those which have preceded it, deals at length with the subject of electro-diagnosis. Electrotherapy is considered in the second half of the volume. The first 107 pages are devoted to the study of the electrical reactions of muscle and nerve. After a brief description of apparatus, the author has written an account of that

part of the physiology of muscle and nerve which is relevant to the subject of reaction-testing. The reactions in health and disease and the methods of testing them by the faradic and galvanic currents are described in detail, and the meaning and clinical significance of the different reactions are discussed. In the present edition the author has added a note on the chronaxie and the work of L. Lapicque and L. Bourguignon. He refers to the lengthening or shortening of the chronaxie in various diseases, but does not discuss the possibility of gaining additional information of clinical value by means of the chronaximeter. In the second part of the book the therapeutic properties of the various electric currents are considered and instructions are given for the treatment of various diseases and morbid conditions by these currents. The faradic and galvanic currents are most fully considered. Short chapters on treatment by static electricity, sinusoidal currents, and condenser discharges are added. The chapter on high-frequency currents and diathermy is too brief in relation to the importance of these subjects.

This book is of value mainly for the complete accounts which it contains of the uses of the faradic and galvanic currents for diagnosis and treatment. The plates showing the positions of the motor points are among the clearest and most instructive that have been published. The superficial muscles are shown together with the nerve trunks where the latter are closest to the surface. Over each plate is placed a sheet of tissue paper. This partly obscures the drawings of the muscles, but shows the position of the motor points where the testing electrode should be placed. The tissue paper can be raised when desired, so that the operator can obtain a guide to the relationship of the muscles which he is testing.

REJUVENATION BY GRAFTING.

By Dr. SERGE VORONOFF. Translated by FRED. F. IMIANITOFF, B.A. Lond. London: George Allen and Unwin, Ltd. 1925. Pp. 224. 15s.

Dr. Voronoff's work is already well known in this country, although this is the first time that an official translation has appeared. The preliminary chapters are historical and deal with early experiments in grafting senile rams. A point of great interest, however, is the fact that according to the author a testicle taken from a six months ram and implanted into the scrotum of a senile ram continued progressively to develop, and to pass from the prepuberal stage to that of spermatogenesis. This, of course, means that not only did the graft preserve its vitality, but that it definitely completed its progressive development in its new surroundings, a claim that is considerably in advance of that made by other workers in the field of grafting. Dr. Voronoff then describes how his early successes amongst animals induced him to attempt a similar feat in the case of man, and he narrates how the work of Grunbaum, Bruch, Thorek, and others on the similarity of the serum reactions in man and the anthropoid apes led him to choose a chimpanzee as a source for his grafts. The results he obtained are given in detail in 44 case-sheets. Summarising these one may see that in the great majority of cases benefit to the general health, mental vigour, and muscular activity of the patients grafted appear to have taken place, whether the grafting were done for senility or for testicular insufficiency. In those cases, however, in which the operation was carried out for sexual neurosis and impotence, the results were generally negative. The book concludes with chapters by Dr. Edward Retterer on the structure of the chimpanzee's testicle, and on the histology of testicular hetero- and homo-grafts.

The book is written by an enthusiast and there are statements within its covers which cannot be accepted without reserve. However, it must be admitted that Dr. Voronoff has accumulated a great deal of material in support of his thesis, and for this reason his work merits attention.

A HANDBOOK OF MIDWIFERY.

Sixth edition, enlarged. By COMYNS BERKELEY, M.C., M.D. Cantab., F.R.C.P. Lond., Obstetric and Gynaecological Surgeon to the Middlesex Hospital. London: Cassell and Company, Ltd. 1924. With colour frontispiece and 74 illustrations in the text. Pp. 578. 8s.

A BOOK which has reached a sixth edition requires little testimony as to its usefulness or popularity. This little handbook, written mainly for candidates sitting for the Central Midwives Board examination, contains not only sufficient theory for that purpose, but also much practical information upon the hygiene of pregnancy and lactation. In cases where breast milk is deficient, as shown by test-meals, complementary rather than supplemental feeding is advocated. The section dealing with artificial methods of feeding is particularly good and includes various formulæ for the modification of cows' milk; these appear to be based upon the percentage system of Truby King. This edition has been thoroughly revised and, in places, rewritten.

PHARMACOLOGY AND THERAPEUTICS.

Medicamenta Recentia of Allen and Hanburys. Second edition. 1925.

THOUGH primarily concerned with the products of Messrs. Allen and Hanburys, this neat little book is something much more; it is an index of the drugs applicable to modern methods of treatment and helps to supply the gap, so often felt by the practitioner, between the new methods of treatment invented by scientific pioneers and used by specialists and the same methods as they can be applied in general practice. Apart from the full list of drugs there are short explanatory notes on medical matters which have been prominent in recent years. Chief among these is an excellent summary of the Dangerous Drugs Act, and we recommend that a similar summary on scheduled poisons should be inserted in the next edition. Other subjects annotated are the recent advances in diet, Graham's method, Allen's method, dietetic control and insulin, and the Lenhart diet. Blank pages are included at the end for the medical man's personal notes on his cases, and we may suggest that if these periodical observations were made by any large group of practitioners carefully and with dates, a compilation of them should be of high practical value, especially if any following-up of the cases of interest were pursued.

ORGANIC MEDICAMENTS AND THEIR PREPARATION.

English edition. By ERNEST FOURNEAU, Head of Laboratory for Therapeutic Chemistry in the Pasteur Institute; Member of the Academy of Medicine; formerly Director of the Poulenc Laboratories. Authorised translation by W. A. SILVESTER. With prefaces by EMILE ROUX and GEORGE BARGER. London: J. and A. Churchill. 1925. With 22 illustrations. Pp. 262. 15s.

THIS book consists of a series of lectures on the composition and chemical preparation of a number of substances in use in therapeutics. Dr. Fournéau begins with guaiacol and phenacetin, explaining first the principles and then the detail of their formation from phenol; he then deals in a similar manner with some of the antipyretics, hypnotics, local anaesthetics and antiseptics, organic compounds of arsenic and mercury, and the first part is completed by a consideration of the structure of adrenalin and the phosphatides. The second part consists of practical directions for the preparation in the laboratory of about 30 of the substances discussed. The book ought to have considerable effect in arousing interest among young organic chemists in chemo-therapeutic research; it is both terse and simple, and in it is

revealed the outlook of one who combines a first-rate practical sense with imagination and enthusiasm. There are many suggestions of problems needing attack. Dr. Roux, Director of the Institut Pasteur, who has written a preface to the original French edition, describes the book as being above all a programme, and a call to his countrymen to enter a field of important research which they have largely neglected.

The appearance of the book in English, as well as in French, may have important consequences; it is said, for example, that recent brilliant developments of physiology in America have been in some measure due to the influence of Bayliss's "Principles of General Physiology." Fournéau's book may well have similar effects, and it is to be hoped that teachers of pharmacology and organic chemistry will not fail to introduce the book to their more promising pupils.

BOOKS FOR NURSES.

(1) *Applied Chemistry for Nurses.* With Laboratory Experiments. By JOSEPH L. ROSENHOLTZ, Ph.D., Assistant Professor of Geology in the Reusseler Polytechnic Institute, New York, &c. London and Philadelphia: W. B. Saunders Company. 1924. Pp. 220. 10s. 6d.

(2) *Fundamentals of Chemistry.* A Text-book for Nurses and other Students of Applied Chemistry. By L. JEAN BOGERT, Ph.D., Research Chemist, Obstetrical Department, Henry Ford Hospital, Detroit, &c. W. B. Saunders Company. 1924. Pp. 324. 14s.

Prof. Rosenholtz's book consists of two parts, the first dealing with the theory of chemistry and the second with experiment. The former attempts to give a complete elementary view of chemistry from a medical aspect. The descriptions are not well balanced, swaying between extreme simplicity and complexity. On the one hand we have a warning about not writing the second letters of an element like Sn in capital form, whilst on the other we have a proposed graphic formula for morphine, occupying about half a page. The experiments are in the most case pointless.

The nurses of America must indeed be remarkable, for, according to the author, in a course of 20 hours, for both theory and practice, they are taught the whole of chemistry. The following questions, taken at random from the author's tests at the end of his chapters, are among those which they are apparently supposed to be qualified to answer: Discuss the size of the protein molecule. How are ptomaines formed? Discuss the various steps in the formation of coal. Discuss the use of radium, and What is steel? Compared with this the claims of certain "Language Institutes" to teach one to speak foreign tongues without a master in 24 hours are as naught.

Exactly the same reflection occurs to the mind in reading Dr. Bogert's treatise, which is a far better book. He attempts to give a complete general account of chemistry, organic, inorganic, physical, and physiological, within the space of 324 pages. A preliminary glance at the table of contents would give the impression that he has set himself an impossible task. On reading through the book, however, one is impressed with the extraordinary thoroughness of the descriptions, and when the last page is reached it is realised that the author has achieved his object. The first 15 chapters are devoted to inorganic chemistry, together with a few references to physical chemistry. Chapter XVI. deals with the physiological importance of inorganic salts and their use in the body. The author points out that although inorganic salts have no food value, they are of the greatest importance in maintaining osmotic pressure, constant reaction, and normal growth and development. A series of photographs shows the effect of calcium and iodine starvation upon the growth of cattle. The remaining eight chapters

are devoted to organic and biological chemistry. The concluding chapter deals with urine and faecal analysis. In his introduction, the author states that he intends the book for general students, but particularly for nurses. Although the book itself is excellent, we cannot help but comment upon its value to nurses. Surely there are much more important points for nurses to study than many of the sections contained in this volume. Those engaged in routine hospital work, in this country at least, know that the average nurse requires much training in measurement before she can be trusted to collecting an accurate 24 hours' specimen of urine, and it would seem rather ill-advised to attempt to teach her the ins and outs of the periodic law, or the theory of the action of indicators. A series of questions is appended to each chapter. One wonders what the answer of a qualified English nurse would be to a request to "Enumerate the main assumptions or hypotheses which make up the ionic theory."

Elementary Science for Nurses. By W. F. LLOYD, B.A., M.B. Camb. With a Preface by Sir D'ARCY POWER, K.B.E., F.R.C.S. London: J. and A. Churchill. 1925. Pp. 95. 3s. 6d.

IN this little book the author deals with those aspects of physics and chemistry of interest to nurses. The treatment is adequate and concise. One of the most commendable points is that he gives a detailed account of the metric system. Although elementary, this is very necessary, since the majority of nurses find it difficult to translate minims and inches into metric units. Sir D'Arcy Power adds a charming introduction, in which he outlines the history of the nursing profession. The book should have a wide circulation.

MARTIN ARROWSMITH.

By SINCLAIR LEWIS. London: Jonathan Cape. 1925. Pp. 480. 7s. 6d.

Martin Arrowsmith, student and later doctor of medicine, spends most of the earlier years of an adventurous life restlessly seeking to satisfy the conflicting needs of a mind too responsive to environment. It takes him nearly all the pages of Mr. Sinclair Lewis's great story to learn with pain that even for imperious youth, bred from pioneer stock, it is impossible to serve several gods and retain sanity. The story of his career, of the ideals he follows, examines, and discards, of the master he worships and twice betrays, must stir the memory of every medical man, for none can entirely have escaped such experiences.

Martin Arrowsmith divides his time no more neatly between work, drink, and love, than do certain of the more mediocre students of his year until he is inspired by the personality of Max Gottlieb, professor of bacteriology, with a bewildered enthusiasm for science. Gottlieb is a teacher worthy of adoration, as whose assistant, until other interests are allowed to encroach on his work, Martin tastes the delights of original research. A careless blunder—and perhaps a too severe rebuke—drives him in his touchy pride towards the clinical side of medicine, for which he is temperamentally unfitted. Partly out of pique, mainly to enable him to support as his wife a girl whose habit of giving inarticulate sympathy and demanding almost nothing in return enables her to endure him without unhappiness, he enters general practice, and boasts loudly that nothing could draw him from a life devoted to healing the sick to the dry monotony of a laboratory. Unfortunately, he lacks tact, discretion, and even judgment at crucial moments, as when he travels 50 vain miles to fetch antitoxin instead of doing a tracheotomy. It is obvious even to his arrogant youth that he is not making a success of his work. Fired by a new hero—at nearly every stage of his career, if no real hero is about Martin finds it necessary to invent one—he pursues with zest for a time the career of assistant

medical officer of health. So long as his propagandist chief is about all goes reasonably well, but when the latter is translated to political life Martin fails to make good as his successor. He offends vested interests by hunting out carriers, annoys local practitioners by increasing the number of free clinics, and all the while his own lack of sobriety—this was before the days of prohibition—make him an easy prey to his enemies. Martin is favoured above ordinary men, for he gets a second chance to return, under Gottlieb, to the laboratory work which for years he has affected to despise. In this atmosphere neither his personal popularity nor his private life are of much moment, so long as his curiosity remains keen and he is able to test new hypotheses without bias. He works steadily for a period and takes well the disappointment of losing priority of a discovery of some importance. With an epidemic of bubonic plague in the West Indies comes the opportunity to test the curative power of a bacteriophage, the principle of which he had discovered independently of d'Herelle. With him travels his patient wife and one Sondelius, world-famed as a successful fighter against epidemics. In St. Hubert, the stricken island, comes the crucial test which Martin fails to pass. His creed bids him proceed, in the face of pity for the individual or care for the community, with the critical experiment sternly planned before his departure—to separate the afflicted into two batches, of which one only is to be given the phage. But when, after the death of Sondelius, who refuses treatment for himself because it is not freely offered to every sufferer, Martin's wife fails him for the first time by succumbing to the disease in his absence, he in turn fails to force himself to continue the experiment or to take any further interest in its progress. The plague subsides, and the expedition returns home to adulation carefully fostered by the institute which had financed it. Martin begs for a statistical investigation of his ill-kept notes before any conclusions are drawn, but his plea is suppressed and he has to bear congratulation on what he knows to have been a double betrayal. This is the crisis of his career. His subsequent marriage to a rich, charming widow and his ultimate abandonment of wife and child to embrace a secluded laboratory life appear almost an anti-climax. We cannot see him as a man who has at last learnt to know himself, but only as one who is too many-sided to find permanent satisfaction in any way of life open to him.

In an outline of the plan on which this, the best of Mr. Lewis's novels, is framed it is not attempted to do justice to the characters to whom he gives life. The tragic figure of Max Gottlieb is cast in a more heroic mould than Martin and is chiselled with a sure touch out of the essential rock of which men of science are made. Other studies are less finished, but all show an observation which penetrates through a man's spoken words to the thoughts which they are meant to hide. That these thoughts are often unworthy is not Mr. Lewis's fault; he must note what he sees, and those who fear to see it with him should avoid his books, for therein there is no escape. Relentlessly he analyses all that comes his way, gives few explanations, but allows his people to expose the conflicts from which they suffer in quick change from boastful self-satisfaction to humiliated confession. Mr. Lewis's own work has all the balance which his hero lacks; the scales are held fairly. The votaries of each branch of medical work, for example, are subjected on occasion to equally bitter if subtle criticism. If the men who hasten to claim therapeutic value for a new drug in the absence of adequate controls are held up to scorn, the pitiless inhumanity that will withhold from a sick person a remedy in order that a clean experiment may be recorded receives scant praise. Faked propaganda accompanying a "health week" is shown to be despicable enough, but life in a research institute is not pictured by contrast as a haven free from jealousy or importunity to premature publication. But if criticism is acute, appreciation is not lacking. The creeds of the healer,

of the propagandist, and of the searcher after truth are sacred in Mr. Lewis's otherwise ruthless hands, and the faithful who in the stress of life have lost a little confidence will be fortified by reading his book.

ISLANDS: WEST INDIAN AND ÆGEAN.

By Sir ARTHUR SHIPLEY, F.R.S., Master of Christ's College, Cambridge. London: Martin Hopkinson and Co. 1924. Pp. 139. 6s.

Sir Arthur Shipley, who is chairman of the governing body of the Imperial College of Tropical Agriculture in Trinidad, went out in 1923 to help to lay the foundation-stone of that institution. The College and its work form a considerable part of the material for the early half of the book, but, as Sir Arthur Shipley says, "it deserves to be prominent, as it is the first attempt to found an institution devoted to teaching and research in tropical agriculture." Anyone who reads Sir Arthur Shipley's lecture on tropical agriculture, given at p. 18 in his book, will realise the importance of the subject. The lecture was delivered at Georgetown, British Guiana. It will be news to many of us that the value of the annual yield of diamonds in the colony is about £1,000,000. We are also glad to note that the Hoatzin "must not be shot," for that singularly interesting survival of the reptilian age is a bird well worth preserving. His work done, Sir Arthur Shipley took his ease in Mr. J. Pierpoint Morgan's yacht in the Ægean, and gives a pleasant account of what must have been a pleasant cruise. Santorini in particular must be a fascinating

place, especially as vampires are abundant. We think that Sir Arthur Shipley is not quite just to the vampire, for he says that they have the power of bringing the dead to life and sending them forth to devour the living. According to the best authorities, a vampire has its origin from the suicide of a wicked man who forthwith becomes a vampire, rests in his grave by day, and comes out at night seeking victims who also die (apparently) but really become vampires in their turn. The burying the corpse of a suicide at the cross roads with a stake through the body, had its origin in the desire to prevent the birth of a vampire.

TROPICAL DISEASES BULLETIN. Vol. XXII., Nos. 1 and 2. 1925.—The first two numbers of this journal for 1925 contain an interesting series of communications. The January number of the *Bulletin* is mainly concerned with recent literature on dysentery, amœbiasis, and malaria. The two former subjects, comprising 62 papers, are summarised by P. H. Manson-Bahr, while Clayton Lane has reviewed an almost equal number of references to malaria. A. D. Bigland contributes a section upon native dietaries, and A. G. Bagshawe reviews papers on miscellaneous subjects.—The February number contains the third instalment of a review on Medical Helminthology by R. T. Leiper. Other subjects—beri-beri, scurvy, undulant and abortus fevers, Rocky Mountain fever, Japanese river fever, sandfly, dengue, and other fevers—are summarised by P. W. Bassett-Smith. The sleeping sickness section, by Warrington Yorke, completes the number.

NEW LUNACY ORDERS.

UNDER the title of "Statutory Rules and Orders, 1925, Lunacy, England," two important documents have recently been issued by the Commissioners of the Board of Control. The first of these consists of certain rules under the Lunacy Acts of 1890 to 1911, and is principally concerned with the way in which all books and records are to be kept. Details are set out with regard to the register of deaths, of discharges and transfers, of mechanical restraint and seclusion, and of boarders, along with the form in which nurses' reports and clinical records are to be kept. It is quite definitely set out who is to keep the various registers and who is responsible for the sending out of the notices on reception and on certain subsequent occasions. The periodical returns required by the Board of Control are also clearly specified, and the principal regulations with regard to licences, alteration in premises, plans of mental hospitals, &c., are described. The greater part of this publication,¹ however, consists of a schedule containing 30 forms indicating the manner in which the various registers are to be kept and skeleton designs for the report books and notice forms. The second of these two documents is a regulation, dated Jan. 7th, 1925, and deals with the mechanical restraint of lunatics.² Under Section 40 of the Lunacy Act of 1890 it is laid down that "mechanical means of bodily restraint shall not be applied to any lunatic unless the restraint is necessary for purposes of surgical and medical treatment, or to prevent the lunatic from injuring himself or others." Other clauses in this section refer to the records which must be kept of such restraint, and it is stated that "in the application of this section 'mechanical means' shall be such instruments and appliances as the Commissioners may, by regulations to be made from time to time, determine." This new regulation sets out the various instruments and appliances which may be used for this purpose. These are as follows.

(1) A jacket or dress, made of strong linen or some other strong material (a) laced or buttoned down the back having long outside sleeves fastened to the dress only at the shoulders, with closed ends to which tapes may be attached for tying behind the back when the arms have been folded across the chest; or (b) of some other pattern approved under the seal of the Board, a sample bearing the seal of the Board being in this case kept at the institution or workhouse for inspection.

2. Gloves without fingers, so fastened at the wrists that they cannot be removed by the wearer, and made of linen, leather (chamois or other), or some strong material padded or otherwise.

3. Sheets or towels, when tied and fastened to the sides or ends of a bed or to other objects.

4. If, in the opinion of the medical officer or medical practitioner who gives the certificate required by this section, some other mechanical means of bodily restraint is necessary in a particular case where the circumstances are exceptional, such means may be used with the previous sanction of the Board for such period as they may authorise.

It is pointed out that special supervision will be required in all these cases save in the form 2. The regulation goes on to describe certain procedures which are not to be considered as mechanical means of restraint but of which records must be kept. These include the continuous bath, the dry and wet pack, splints and bandages "used in accordance with recognised surgical practice," gloves so fastened as to be removable by the wearer, sheets or towels merely held and not fastened, trays or rails fastened in front of the chairs used by idiot children or the crippled and infirm. The Board are very anxious to make it clear in the concluding paragraphs of this regulation that they have by no means "given any greater countenance to the employment of this form of treatment than they have hitherto shown," and they urge that "the application of mechanical restraint should always be restricted within the narrowest possible limits, that it should not be long continued without intermission, and that it should be dispensed with immediately it has effected the purpose for which it was employed." This regulation comes into force on April 1st, 1925, and supersedes a regulation dated June 25th, 1913.

¹ Statutory Rules and Orders, 1925, No. 75. H.M. Stationery Office. 8d.
² Statutory Rules and Orders, 1925, No. 76. H.M. Stationery Office. 1d.

THE LANCET.

LONDON: SATURDAY, MARCH 14, 1925.

HEALTH STATISTICS IN THE MERCANTILE MARINE.

RECENTLY the President of the Board of Trade was asked in Parliament, by Mr. B. SMITH, whether he was in a position to prepare and supply statistics regarding health, as apart from mortality, in the Mercantile Marine service; whether there was a medical officer in his office and a special department dealing with problems of health and diseases in the service; whether the classification of diseases causing death issued by the Board of Trade could be brought into line with the more scientific classification adopted in the Royal Navy, and whether further information could be given regarding the population concerned, so that death-rates might be calculated. Sir PHILIP CUNLIFFE-LISTER replied that questions relating to the health and diseases of merchant seamen are dealt with by the Mercantile Marine Department of the Board of Trade in consultation with the Ministry of Health; that the Mercantile Marine Department has a staff of qualified medical officers; and that the question of modifying the classification of diseases in the statistics of the deaths of seamen issued by the Board of Trade is under consideration. As regards the preparation of statistics relating to the health, apart from the mortality, of merchant seamen, if the kind of statistics required were more precisely indicated, he would consider whether anything could be done. The Prime Minister, asked whether he would consider the transfer from the Board of Trade to the Ministry of Health of all questions affecting the health of seamen, said that the change would require legislation; he did not think the proposal necessary or desirable, since the Board of Trade was in close touch with the Ministry of Health on all matters affecting the health of seamen.

The answers of the President of the Board of Trade showed little appreciation of the complaints made against his department. If questions concerning the health of merchant seamen are dealt with by the Mercantile Marine Department of the Board of Trade in consultation with the Ministry of Health, are we to consider that the Ministry of Health approves of the grouping together, in the list of deaths, of tubercle and cancer as "constitutional diseases"? Again, though the Mercantile Marine Department may have a staff of qualified medical officers (including medical emigration inspectors), it does not follow that they are concerned with the health of seamen; no published evidence of the work of such officers appears. It is, at any rate, satisfactory to learn that the department is in close touch with the Ministry of Health, for this association should in future years increase our knowledge of the health of merchant seamen. What information we have at present on this subject comes from Part II. of the Supplement to the Sixty-fifth Annual Report of the Registrar-General, issued in 1908. Here, on p. 28, is a statement of the deaths of "occupied" merchant seamen in the three years 1900-02, by groups of ages, with a calculation of the death-rates for each age-group. For reasons stated in the supplement, no death-rate for the whole industry appears, but comparative mortality figures show that

for every 100 deaths among "occupied males" in England and Wales, there were 167 among merchant seamen, the figures for phthisis being 100 to 142, for pneumonia 100 to 153, and for accidents 100 to 458. No further table of this description has since been published, but unless conditions have greatly changed it would appear that to become a merchant seaman is to join one of the most unhealthy of occupations. Apart from the annual report of the Chief Medical Officer of the Ministry of Health, whose notes on the diseases of merchant seamen mostly discuss those diseases which are of international importance, we must go to the Board of Trade for what information there is to be had. In the annual "Return of Shipping Casualties to Seamen and Deaths on Vessels Registered in the U.K.," there is given in Table VI. the deaths by accidents, and in Table VII. the deaths by disease which have been reported during the year. The causes of death are not in every case certified by medical practitioners, but no other figures are available, and they are, we admit, useful for comparison with each other, since the errors may be presumed to work in the same direction from year to year. The records are by no means complete; it is not stated among how many seamen the deaths have occurred, and there is no figure in the returns by the help of which anyone could find out, however roughly, whether seamen had been, in any year, more or less healthy than in earlier years. 1921 was a Census year, and a Census of merchant seamen in British ships, at home and abroad, was taken on June 19th, showing: British 96,072, foreign 11,598, Lascars 44,241, total 151,911. The Board of Trade published these figures in 1923; but they are not included in the return for 1921, issued in 1924. Indeed, the returns seem to be designed on no definite plan, and to be compiled without any idea of what a useful medical return should be. In future it would surely be desirable, when the Board of Trade has collected from all over the world the figures of deaths, to forward them at once to the Registrar-General for publication; under Section 5 of the Census Act, 1920, new legislation would hardly seem to be necessary. The Registrar-General would group the diseases according to current methods instead of using a classification obsolete in all other Government departments except the Board of Trade.

The present inadequate presentation of the only statistics we have of the health of merchant seamen is, to say the least, unkind to the men of the merchant service. It is of urgent importance that more attention should be given to the deaths in this service. It employs some hundred thousand British seamen, most of them under 30, for the most part without any doctor to watch for and correct unfavourable conditions in their working lives. It is unseemly that the well-being of a group of men on whose activities our Empire so largely depends should be thus neglected.

THE SANOCRYLIN TREATMENT OF TUBERCULOSIS.

In a recent issue we dealt, from a biochemical aspect, with the salt sodium aurothiosulphate, isolated by Prof. MOLLGAARD and now being used in the treatment of pulmonary tuberculosis. The March number of *Tubercle* contains an original article on the clinical aspect of this treatment by Dr. J. GRAVESEN, medical superintendent of Vejlebjerg Sanatorium, Denmark. The article in question consists of a discussion of the toxicity and action of the substance, with the special indications for the selection of cases,

a description of complications met with, and some preliminary clinical results. With regard to toxicity, Dr. GRAVESEN is careful to point out that there may be difficulty in distinguishing between those clinical signs and symptoms which are due to the metallic poisoning of the salt and those which are due to circulating toxins liberated by the supposed bactericidal action of the gold salt on the tubercle bacillus. This difficulty of interpreting the signs of toxicity of the salt is apparently a real one, and while admitting that some of the earlier signs are probably "biotoxic," to use his own phrase, the author is careful to point out that the later appearance of albuminuria, digestive disturbance, metallic taste in the mouth, and desquamative dermatitis and stomatitis are to be credited to the metallic poison action of the salt. Dr. GRAVESEN has, however, no doubt that sanocrysin exerts a specific action upon tuberculous subjects in therapeutic doses, though we are not quite clear in what sense he uses the word specific. As an antidote against toxæmia an anti-serum is used, prepared from animals immunised with diaplyte tubercle vaccine. It is here that one of the serious difficulties of the treatment would appear to arise, for although the serum is stated by Dr. GRAVESEN to have certain protecting power it does not adequately neutralise the toxæmia, and as he points out, much more work is necessary on this side of the question before sanocrysin can be generally applied to the treatment of tuberculosis. Anti-sera in this disease have never been found satisfactory from a clinical point of view. At least three different anti-sera appear, so far, to have been used in connexion with sanocrysin experiments—namely, the serum of a spontaneously infected animal, the serum of an animal immunised with dead bacilli, and, finally, a serum of an animal immunised with defatted bacilli. In some cases the administration of an anti-serum has been tried before sanocrysin treatment. A further difficulty arising from the danger of toxæmia is found in the choice of suitable cases. In discussing this matter the writer makes use of the classification of RANKE, which is not commonly used in clinical medicine in this country. Thus, he divides his cases into exudative and proliferative. The former are acute toxic cases in which the pathological picture is presumed to be that of acute exudation and tissue destruction; the latter are chronic cases with new-formed tuberculous granulomata and chronic proliferation of fibrous tissue. The recent exudative types are considered much more suitable for sanocrysin treatment than the chronic proliferative cases. In other words, the more fibrosis the less the probability of effecting a good result. From this it would appear, clinically, that the chronic case with large thick-walled cavity, which is a common type of case met with, does not react well to treatment. Cachexia also is a contra-indication. Pyrexia, on the other hand, is not necessarily so, since it may be merely an outward and visible sign of what Dr. GRAVESEN calls "the recent exudative type."

As is customary with all new remedies of this kind, the question of dosage is difficult to determine, and Dr. GRAVESEN considers that no general rule can be laid down, but that each case must be judged on its merits. This is an obviously sound old rule. In serious cases the initial dose used has been as low as 12.5 cg., whilst the maximum dose in favourable cases has been 150 cg. The interval between doses varies from two to six days according to the general condition of the patient and the effect of the drug, the ultimate aim being the administration of a full dose without recourse to the protective action of serum. The complications noted are: general reactions of fever,

anorexia, nausea, diarrhoea, albuminuria, and focal reactions leading to temporary or permanent reactivation of the lesion. Glands also may temporarily increase in size and tenderness, and the author records one case which was followed by abdominal tuberculosis and a pleural effusion. Some of these disturbing reactions appear to be not unlike those which we used to get in the early days of the tuberculin era when large doses were given. To these must be added signs of metallic poisoning, which may be counteracted by careful attention to the mouth and teeth, and the omission of any drugs such as bromides or arsenic leading to harmful combination with the salt. It is apparent, then, that the treatment can only be used with great care and watchfulness, especially in view of the difficulty in deciding whether the toxic symptoms produced are due to the effect of liberated toxins or to metallic poisoning. At this early stage Dr. GRAVESEN is guarded in his estimate of results. He gives a short table summarising these in 44 cases. Of these, 22 he considers negative, the patients having remained stationary, become worse, or died; and 22 he regards as positive, with apparent cure, much improvement, or improvement. He further suggests that the treatment may offer some scope in combination with other special forms of treatment, such as artificial pneumothorax or thoracoplasty. To quote his own words, the writer sums up by saying: "I am convinced that we have in sanocrysin a real chemospecific with an action, hitherto unknown in tuberculosis, upon certain suitably selected cases." The italics are our own, since they appear to us to qualify materially the use of the word chemospecific.

It is interesting to compare these results with those given in the book recently published by MOLLGAARD and his co-workers on the Chemotherapy of Tuberculosis. Here G. E. PERMIN reported 15 cases of pulmonary tuberculosis, of whom six died; whilst of the remaining nine, five were unchanged and four seemed to be undoubtedly improved. K. SECHER recorded 15 cases of tuberculous pleurisy, 14 of whom did well, whilst the fifteenth subsequently died of tuberculous peritonitis. He also gave details of two cases of tuberculous peritonitis, one of whom did well and the other died. In children V. BIE, K. SECHER, and C. H. WÜRTZEN reported six cases of tuberculous adenitis, all of whom became free of symptoms; and 16 cases of pulmonary tuberculosis, 12 becoming free of symptoms, 1 improved, 2 unimproved, and 1 worse. OLE CHIEVITZ recorded a series of cases of surgical tuberculosis with the following results: 35 cases were treated; 3 were healed, 3 improved, 27 unimproved, and 2 became worse. K. SECHER collected a series of cases of pulmonary tuberculosis. Of these, 9 early cases without bacilli and 3 early cases with bacilli all improved. Two more advanced cases became free from symptoms and 7 improved. In 10 cases treatment was abandoned, whilst of three cases of miliary tuberculosis of the lungs one was reported as well, the second improved, and the third abandoned. Nine pulmonary cases were reported as having died after treatment. Finally, there was an extensive series of cases by C. H. WÜRTZEN, the results of which were not tabulated, though the cases were reported in full. Throughout the book the large numbers of cases recorded were quoted in the fullest and frankest manner, but the analysis of results is not always easy to follow, presumably because the authors were anxious, at this early stage, to present plain facts rather than hasty deductions.

It is clear that there are many issues raised by sanocrysin treatment which need to be cleared up before a final judgment can be offered, and it is

important that the treatment should not be boomed as a cure for tuberculosis until these issues have been carefully worked out. In the first place, the question of toxicity is a complicated one. Some of the toxic symptoms produced are certainly those of metallic poisoning; others which are claimed to be a result of liberation of tubercle toxin are perhaps more difficult to explain, whilst there is yet a third factor in toxicity—namely, the so-called tuberculin shock which has been described in a few cases. Careful experiments are also needed on such questions as the accumulation of the drug in the tissues, especially in such organs as the liver, spleen, kidneys, and lungs. It has been found, for example, in previous gold salt experiments, that this accumulation may take place far in excess of the concentration needed to destroy the tubercle bacillus in vitro, without satisfactory clinical results being achieved. Side by side with these considerations there is the question of the rate of elimination of the drug by the usual channels. All these questions must have an important bearing on dosage and the spacing of doses. Finally, the protective use of an anti-serum involves us in a whole set of new problems. Bacteriologists have hitherto been profoundly dissatisfied with the anti-sera advocated in the treatment of tuberculosis, and the possibility of combining an anti-serum with a chemo-therapeutic inoculation is certain to provoke much discussion and experiment. From the evidence so far published we do not feel prepared to agree with Dr. GRAVESEN in speaking of sanocrysin as a chemo-specific for the treatment of tuberculosis, though we are well aware that this term possesses many shades of meaning; perhaps for this very reason it would be better at the present stage to avoid the use of the term.

DOMESTIC HELP AND NATIONAL WELFARE.

IN a complex society such as that in which we have our being it is difficult to forecast the reverberations which may be aroused elsewhere by a sudden alteration in any one part of the economic fabric. When the principle of relief in money to the unemployed was established to meet the conditions produced by the trade depression of 1919, few could have foreseen that such a step would have any but beneficial results upon the present health and future well-being of the nation as a whole. As matters are now shaping the reverse promises to be the case. According to the most recently published figures from the Ministry of Labour, some 230,000 women and 50,000 girls are at present in receipt of the "dole." That is to say, over a quarter of a million women, many of whom under other conditions would cheerfully be lending their aid to the housewives of the nation, are now definitely withdrawn from the labour market in so far as domestic service is concerned. That such a state of affairs should result in a deficiency of domestic help is obviously inevitable. That this should react upon the present health and future well-being of the nation is not so immediately obvious—in fact, by some of the more short-sighted Members of the late Parliament it was publicly pronounced to be a matter for gratulation that the mothers and wives of this country were now having to fend for themselves. Two immediate effects, however, are resulting from this shortage of domestic help, both so plainly and so universally evident in the life of the people that the tendency has been

rather to refer them to that peculiar category of phenomena known as "signs of the times" than to seek for their obvious explanations. The two domestic activities most consuming of time and labour are the bearing and nurture of children and the preparation of food; in the absence of domestic help it is in these two directions that that portion of the population which is accustomed to depend upon its own efforts for its subsistence has had to curtail its activities.

The fall in the birth-rate of what may be spoken of as the self-supporting class in contradistinction to the State-aided, is a phenomenon so striking that it has attracted the attention of sociologists and moralists alike. Many factors are undoubtedly at work to produce it, but five minutes intimate conversation with any young married couple of the self-supporting class will reveal the fact that one very definite reason for this curtailment of the size of the family is the difficulty, under present conditions, of securing that domestic help which is necessary for the care of a large family of young children. There is a feeling among a certain class of doctrinaires that the family is a unit and should in a properly organised state of society be entirely self-contained. Oddly enough, the holders of this individualistic dogma are to be found among those most favourable to communal effort in other directions. It is sufficient to point out that the "family," consisting of husband, wife, and children, never has, and never in the nature of things can be, an entirely independent unit. The bearing of a child may roughly be regarded as removing a woman for six months from the efficient performance of other domestic activities; the plunging of the mother into the full tide of household life at an earlier date can only result in harm to herself or her offspring. In that primitive state of society which may roughly be described as patriarchal, the influence of which even in the industrialised portions of the world still persists, the child-bearing woman had the assistance of a numerous retinue of aunts, sisters, and other more distant female relatives not immediately concerned in the same business, not to mention in an earlier world slaves and other female retainers bond and free. With the gradual disappearance of the patriarchal system and the establishment of the custom of an immediate departure from the parental roof of the newly-married couple reliance had come to be placed upon paid servants. Now that these are not forthcoming the only solution that has so far presented itself is severe limitation of the size of the family. The inevitable decrease in the self-supporting portion of the population, with an accompanying proportional increase of that section accustomed to look to the State for maintenance, is a prospect hardly to be faced with equanimity. Intimately connected also with the shortage of domestic help is the problem of combating the harm done by the adulteration of food. Attention has recently been drawn to the danger of preservatives in food. From no standpoint save that of economy of time and labour can any form of preserved food be regarded as equal in value to the freshly prepared article, and presumably no one would eat it in preference to fresh food. None the less, the consumption of preserved comestibles of all sorts shows a steady increase. It is hard to believe that this increase is due to any large extent to a gross growth of laziness in the general population; there can be little doubt but that the principal factor is the difficulty of procuring help in the kitchen.

The process of adaptation to the new social conditions has yet hardly commenced and it is difficult to see in what direction it will proceed. The obvious solution would appear to be a relaxation of the bonds of individualism and the development of a communal system of welfare centres, creches, kitchens, and so forth, for the benefit of those who are able and willing to pay for them, on similar lines to the system now at the disposal of those who are served gratuitously.

Annotations.

"Ne quid nimis."

THE SALARY OF A SCHOOL MEDICAL OFFICER.

THE West Riding County Council are advertising in the daily newspapers for assistant school medical officers at a commencing salary of £500 per annum. The terms are below those arrived at by the British Medical Association and the Society of Medical Officers of Health, at whose instance, supported by THE LANCET, local authorities have been advised for some time that the commencing salary for a whole-time assistant medical officer in a public health department should be £600. Recently, by invitation of the Ministry of Health, representatives of the B.M.A. and of the Society of M.O.H.'s met delegates from the bodies representing local authorities to discuss the matter of salaries in the public health service. As one outcome of the negotiations, the Ministry advised the County Councils Association, the Association of Municipal Corporations and kindred bodies that the £600 minimum might be accepted as not unreasonable for assistant medical officers with adequate qualifications and experience, and it has been postulated that candidates for these posts should have had at least three years' practical experience. Seeing that over 80 appointments have been filled on the £600 basis during the last 12 months, it was thought that there would be no further dispute in regard to appointments in this category. The West Riding advertisement states that the school medical officers appointed at £500 will receive annual increments of £25 up to £650, but this method of advancement has not the practical advantages that it wears, for having reached the maximum the medical officer will have only remote prospects of promotion, there being but few administrative posts in the school medical service. Candidates who may be tempted to accept these appointments for the sake of their immediate convenience should look ahead, visaging a time when they may be in a less favourable position for choosing a more profitable branch of practice, and when their domestic obligations may be increased. We hope that it is not too late for the West Riding County Council to revise the terms of their advertisement, so that medical men and women of good standing and varied experience may feel justified in applying for the posts, for they must realise the importance of securing school medical officers who can command the confidence, not only of the education authority, but of the private practitioners with whom their work brings them in daily contact.

AVIATION AND MEDICINE.

At a meeting of the Royal Aeronautical Society on Thursday, March 5th, Lieut.-Colonel C. B. Heald, Medical Adviser to the Department of Civil Aviation, delivered a lecture on Some Medical Aspects of Air Transport. He pointed out that the medical questions of aviation were of interest not only to those directly concerned with flying—pilots, insurance companies, and the air-travelling public, and to the whole medical profession—but to physicists generally; for in aviation, he said, we are dealing for the first time, so far as the history of mankind reveals, with life and work in three dimensions, and we are learning previously unknown facts about the mental and physical make-up of people subjected to strain and stress in a new environment. The medical work of civil aviation is not confined to the routine examination of pilots, although this naturally forms an important part of such work, but it has to take into consideration all matters concerning the general life of those associated with civil air transport, and all the general questions of hygiene and health organisation that help to build up comfortable and efficient

services. Colonel Heald gave a detailed description, illustrated by lantern slides, of tests employed on the medical examination of the pilot, and dealt at some length with the more general aspects of the career of the airman and the factors which influence his health and lasting powers. From these considerations some important facts emerge, showing that the estimation of complete fitness in flying men has given to clinical medicine a new viewpoint. And at this point the lecturer concluded that the measurement of physical conditions, as distinct from the detection of disease, demands a new technique, when results of a value as yet unreckoned may be clear. Colonel Heald believes that this new technique for estimating physical efficiency—in what manner each system of a particular individual will endure and function under stress and strain for that individual—will come, directly or indirectly, from our improving knowledge of electrical phenomena and the ultimate composition of matter, the outstanding features in the progress of medicine to-day being chiefly electrical. Colonel Heald's prophetic vision will not be dismissed as a baseless flight of fancy because a recent demonstration before two sections of the Royal Society of Medicine made clear only one thing—namely, that the subject was unready yet to leave the physical laboratory. Medicine, grappling with the problem of deciding the fitness of a man to adapt himself to a new element, has found that the criterions of health may not lie wholly in the stethoscope and sphygmomanometer, and Colonel Heald is logical when he says: "It would surely, therefore, be fitting if through this new science of aviation we should find our feet set on a new pathway, leading possibly to a definite understanding of those forces that Sir Oliver Lodge, Prof. Richet, and the late Sir James Mackenzie have already sensed."

BONE METASTASES IN CARCINOMA OF THE BREAST.

THE vagaries of the dissemination of carcinoma are difficult to explain on any simple hypothesis, and it would seem that almost necessarily there must exist a number of causal agents for malignant disease. Secondary growths in bone are fairly common when the primary lesion is in the breast, the prostate, or the thyroid, but very rare when for instance it affects the tongue. Again, one case of breast cancer will produce widespread secondary nodules in its neighbourhood and in the axillary glands, whilst another remaining quite small itself will give rise to numerous remote metastases. Sir George T. Beatson, in the current number of the *British Journal of Surgery* (1925, xii., 473), reports a case of carcinoma of the breast in which there were multiple bone lesions. The woman lived for six years with the carcinoma before symptoms sufficiently severe to worry her appeared. Then she began to suffer from pain in one leg and a loss of power of the arm on the affected side. Pathological fracture of the clavicle, femur, and humerus occurred before her death about one year later. Post mortem were found metastases in all the long bones of the limbs, the clavicles, and certain of the ribs and vertebrae. There were numerous growths in the phalanges of the hands and also in one of the metatarsal bones. The interest in the case lies in the demonstrated likelihood that these secondary growths were conveyed from the breast by the blood-stream, for permeation of the lymphatics could scarcely be invoked to account for the metastases in the foot. Another curious feature was the fact that the sternum in the direct permeation path was quite free from growth. Additional evidence of blood-stream infection was the state of the lungs through which of necessity all emboli must pass to reach the systemic circulation, for they were found to be studded all over with small metastases. It was also observed that the growths in the liver seemed to have originated in the deep parts of that organ and not in the periphery, as the permeation hypothesis of spread would demand. Union of the

fractured clavicle occurred, but this is not real evidence of repair in a malignant growth. Patients who have suffered a pathological fracture of the femur secondary to breast cancer have even been known to get union and walk for a time. The simplest explanation is that only a portion of the thickness of the bone was destroyed by the growth. The remaining unaffected area, after fracture, was able to throw out so much callus as to form a support of weight bearing capacity. It has been frequently observed that bone metastases occur in cases where the original growth is quite small, so it would be of great practical importance to be able to ascertain whether the bones are affected or not when the patient seeks surgical aid. According to A. Piney¹ certain characteristic blood changes occur when the growth invades the bone-marrow, by which this invasion can be recognised. Whilst this statement is true in some cases, it does not seem to be so invariably; the characteristic blood picture was absent in the case under discussion. It is, however, important on occasion to make the blood examination, for positive evidence might show that operative interference would be useless.

THE PRESENT POSITION OF THE DENTAL PROFESSION IN ITALY.

WE have received from Dr. F. Montuschi, dental surgeon to the Italian Hospital, a report on the recent legislation in Italy to regulate the practice of dentistry. The Royal Decree of Oct. 16th, 1924, made the possession of a degree in medicine and surgery compulsory for the practice of dentistry. This compulsion dates back 34 years from the Boselli decree, but subsequently all those who had practised dentistry by virtue of minor diplomas granted by various universities continued to do so and, as is the case now in England, many who had practised without a diploma were allowed to continue after an examination in the subject. The Boselli decree did not become law until 1912 with the concurrence of both branches of the legislature. There was, however, in Italy an absence of good schools for the teaching of dentistry and such medical men as wished to practise it conscientiously were obliged to go abroad. Many of them came to our Royal Dental Hospital until the foundation of three dental institutes at Milan, Bologna, and Florence, each of which has a curriculum of one year's duration. In Rome a small but influential group continued to ask for a doctorate in dentistry independent of medicine and surgery, somewhat after the type of the American D.D.S. They wanted the medical student after his fourth year to relinquish his studies and join the school of dentistry and dental mechanics which was to be established in Rome, and after a curriculum of two years to pass an examination which would confer on him a doctorate in dentistry and dental prosthesis. These ideas found sympathy from the Minister of Public Instruction in Signor Mussolini's Cabinet, who, owing to the full powers conceded by Parliament, secured at the end of 1923 the approval of the Council of Ministers for a decree establishing a national school of dentistry and dental mechanics in Rome; this meant the institution of a degree in these subjects at the end of the prescribed course of study and the passing of a special examination. This decree aroused violent opposition, as medical opinion had pronounced in favour of a compulsory degree in medicine and surgery for dentists. Augusto Murri wrote expressing his views as to the indivisibility of dentistry and general medicine and advocating that the former must be considered as belonging to the same category as other medical specialties, and a few months later the Minister who had approved of the decree was replaced by Senator Casati; then the Mussolini Cabinet rescinded the decree and substituted a new one which re-affirmed the principle of a compulsory degree in medicine and surgery for the practice of

dentistry. The new decree stiffens the statute of March 31st, 1912, since it not only requires all dentists to be previously qualified in medicine and surgery, but enjoins upon all future medical practitioners the undergoing of a practical test in dentistry and mechanics to enable them to practise the art of medicine. It is not that the medical graduates of the universities, to which the new statute allows freedom in regulating their special studies, will all be finished dentists, but they will at least know enough to guide them in investigating each case and adopting proper treatment, especially in rural districts where there is no expert dentist.

In Italy the future medical practitioner will have a knowledge of the fundamentals of dental science, as he has of ophthalmology and dermatology. For dentists in the future—i.e., medical specialists in dentistry and prosthesis—the general university reform actuated by Gentile efficiently provides in the same way as it does for all other specialists. This measure enjoins that no one can arrogate to himself the title of "specialist" in any branch of medicine without having acquired the relative diploma granted by each university. Anyone who does not conform to this rule will be suspended from practising, so that in the near future the public will be able to distinguish the true from the false specialist. In fact, this same reform allows each university to establish special post-graduate schools in any subject, equipped for granting, after examination, specialists' diplomas. As far as dentistry is concerned, there already exist in Italy the three dental schools of Milan, Bologna, and Florence with a yearly curriculum; and now, in order to march with the times, these have profited by the present didactic legislation and have biennial courses, while other schools will of necessity spring up. Italy will thus be the first among progressive nations to require all medical practitioners to know at least the principles of dentistry and dental mechanics and to insist that all who practise other medico-surgical specialties shall, after having obtained their degree, pass a special examination which will be proof of a real knowledge of the specialty they intend to practise.

THE EYES IN HOT CLIMATES.

IN a paper on Ophthalmology in Egypt, read at a recent meeting of the Section of Tropical Medicine of the Royal Society of Medicine, Mr. A. F. MacCallan, at one time Director of the Egyptian Government Ophthalmic Hospitals, gave some valuable instruction on the care of the eyes in hot climates. While fatigue, ill-health, and worry bring out latent defects in the eyes in any country, a hot climate causes greater fatigue than a temperate one, and this fatigue, he pointed out, may lead to fatigue-indigestion with resulting physical depression. Worry, whether of official or of private origin, similarly may cause ill-health. Under these conditions he found that trifling errors of refraction, or slight degrees of heterophoria, exerted effects quite out of proportion to their actual severity, and he emphasised the importance of careful correction of these errors, generally under a cycloplegic such as homatropine. In a highly sensitive patient, whose nerves were constantly being jarred by physical or mental discomforts, the correction of a very small degree of astigmatism might make all the difference between happiness and misery. In a country such as Egypt, the healthy emmetropic eye of the European becomes painfully affected by the sun's glare in the summer when motoring or riding along dusty roads or over the desert. It is the heat rays from the red end of the spectrum which cause this. To prevent the effects of glare, Mr. MacCallan advises the wearing of protective goggles of Crookes B or B2 material; but if discomfort is complained of the refraction of the patient should be verified under a cycloplegic. There are, he states, other varieties of protective glasses, which theoretically are more absorbent of the heat rays than Crookes glasses, such as peacock

¹ Brit. Jour. Surg., 1922, x., 235.

blue, Fieuzal, and amber, but in his own experience of a large number of cases he found that ordinary glass in which was included, if necessary, a very small ametropic correction, was all that was required. Sun, dust, and wind might also cause pinguecula and pterygium. In dusty seasons it is most advisable to wash from the eyelids the dust which collects there and which may contain septic material. This should be done three times a day. In many cases he found this simple precaution sufficient to prevent constantly recurring attacks of conjunctivitis.

SURGICAL TREATMENT CENTRES.

THE medical profession and the lay public are alike apt to associate the Ministry of Pensions with medical boards and claims and awards rather than with any idea of treatment of war disabilities. The article which we publish in another column by Dr. C. V. Mackay and Mr. D. D. Pinnock on the treatment of war injuries at special surgical clinics, dealing with this lesser known but very important side of the Ministry's activities, shows that valuable work is still being done up and down the country in the treatment of those disabling effects of the war which in so many cases continued for a long time after the crippled men left the services. The organisation and work of these special clinics are clearly set out. It will be seen that the whole scheme is closely linked up with the surgical hospitals of the Ministry of Pensions and with the centres for the provision of surgical appliances and artificial limbs. Existing facilities at civil hospitals have also been utilised, and it will be seen that every encouragement is given to pensioners to make use of the treatment thus offered by the payment of travelling expenses and of allowances for time lost from work on account of treatment. Apart from the clinics at civil and Ministry hospitals, surgical treatment centres have been established in various parts of the country at the following places:—

Northern Region.—Bishop Auckland, Bradford, Carlisle, Hull, Stockton, Sunderland.
North-Western Region.—Birkenhead, Manchester.
Midlands Region.—Birmingham, Coventry, Nottingham.
South-Western Region.—Bristol, Exeter.
London Region.—Brighton, Westminster, Camberwell, Tooting, Portsmouth, Reading, Southampton.
Scotland Region.—Aberdeen, Dundee, Edinburgh, Glasgow, Kirkcaldy, Stirling.
Wales Region.—Bridgend, Pontypridd, Wrexham.

The majority of these clinics deal also with the supply of surgical boots and appliances. In addition to these centres, the British Red Cross Society has also established "Curative Posts," for the benefit of ex-Servicemen, which are recognised by the Ministry of Pensions. For example, in the county of Surrey alone five were established by the county branch of the British Red Cross in 1919. The posts are fully equipped with electrical apparatus, and in some cases X ray photographs can be taken. The voluntary staff consists of an officer in charge, an almoner, registrar and treasurer, and V.A.D. helpers. The professional staff consists of a medical officer, one or more trained nurses, and a varying number of masseurs and masseuses according to the number of cases on the books. Since the diminution in the number of ex-Service patients the posts have been used for civilians, to the great benefit of the inhabitants of the various towns and villages concerned. The payments from civilian patients are supposed to vary from 2s. 6d. to 10s. 6d., the latter for several treatments combined, but unfortunately all patients are not able to afford even the minimum charge, and in these cases various expedients have to be resorted to; under certain conditions the funds of the branch are used to supplement the payments. Two of the posts, Woking and Kingston, have also opened orthopaedic clinics for children under the care of an orthopaedic surgeon from a London hospital who makes periodical visits. These are said to be a great success, and the medical officer of health reports that the Surrey

County Council consider it to be one of the most satisfactory services in the county. A good number of children from the London hospitals are treated in the Surrey posts, some of these attending their own surgeons at the London hospitals. The County of London branch established similar clinics in 1919 and at one time there were 13 such treatment centres for disabled ex-Service men in various parts of London. With the decrease in the number of men requiring treatment certain of these centres have been closed and only five remained at the end of 1924. In February, 1922, a civilian clinic was opened in Kensington to meet the needs of those who are unable to afford the full fees obtaining for massage and electrical treatment. A maximum fee of 5s. per treatment is charged, the fees graduating down to 1s. 3d. per treatment. Towards the end of 1924 a similar clinic was opened in Hackney. From this brief summary it will be seen that the treatment aspect of war disabilities is receiving the consideration it warrants from both voluntary and official bodies, and the extension of the Red Cross Society's activities to civilian patients forms an important and interesting development.

THE ANATOMY OF TWINS.

TWIN bodies of the uniovular type do not often come to the anatomist for examination. Hence not much is known with certainty or conclusive definiteness about the relations existing between the twins of this form, and the views advanced from time to time about the cause of twinning are little more than assumptions adopted to fill the void of ignorance on the subject. The theory of polyspermy as a cause is an example of such assumption; it is probably quite unsound and untenable from the nuclear and cytological point of view, and it can be pointed out that, in animals in which polyspermy normally or frequently occurs, the additional spermatozoa are non-effective to all appearance, while in a case like that of the armadillo, in which normally more than one embryo is formed from a single ovum, there does not seem to be polyspermy. All that can be said with certainty is that the uniovular twin is an end-product of the process of dichotomy affecting the embryonic contents of the developing ovum, and the cause of its occurrence will be known when the explanation and meaning of dichotomy is understood. The result of dichotomy may be incomplete or complete division, and, in its axial form, ranges from the parasitic foetus and other monstrosities, through the partially attached individuals to the completely separated twins. In this last case the embryonic division may stop at this point, leaving the amnion undivided, or may even involve this, so that each individual possesses his or her own amnion. It is theoretically conceivable that the dichotomous process, beginning at the earliest possible moment, might lead to complete division of the whole ovum, so that each foetus would have its own chorion and placenta; but the occurrence of such a condition has never suggested itself to any observer, and a single chorion and placenta may thus be considered a proper accompaniment of uniovular twins. This, in fact, seems to be the most valuable criterion, in practice, in deciding on the nature of twin births. Those of opposite sex are not uniovular; when of the same sex they may or may not be so, but when they are enclosed in a common chorion, or—the same thing—have a common placenta, they are uniovular. When such details as these are lacking in the birth history, it is not possible to give more than the negative pronouncement that twins of different sex are not uniovular. The subject of twins is always fascinating, and Prof. G. R. Murray, in a presidential address published in this issue of THE LANCET, has ranged far afield and gathered many little-known items of information on the subject. Prof. Murray refers to one matter, the occurrence of *situs inversus* in certain individuals, which, in the past, has perhaps had more value attributed to it than is justifiable. It has been

found in some twin monsters, occasionally in separate twins, and on this the theory has been broached that this condition, when found in an ordinary individual, probably points to his being the surviving member of a twin formation, the other member having failed to develop, or having disappeared in some other way. On this theory a sort of imaginary vicious circle was easily established, and many believed that *situs inversus* in one of the twins was the normal thing. This is not so, though we cannot say how often or under what conditions it may occur. There is a tendency, more marked in other countries than England, to refer such happenings to variations in axial and other gradients, which are, in one sense, matters of metabolism. For those who see in such gradients evidences of cause rather than a complicated expression of process the explanation of morphological differences appears fairly easy, but in any case more data are required about the percentage occurrences of these differences. Moreover, the theoretical possibility hinted at above, that a still more complete division of the ovum might lead to formations apparently not uniovular, should not be ignored. Those who do many post-mortem examinations on women do not, we believe, hold the usual views about the frequency of ovulation, and, if the complete division of the ovum could be established, the frequency of twin formations would come more into line with the apparent frequency of ovulation. Skilled observation of numerous specimens of twin formations is required, however, and practitioners able to furnish such specimens—preferably complete, but at any rate with details of birth history—would be doing good work if they were to send them to an anatomist; nothing is gained by sending them to the pathologist, for they are normal developmental specimens, and the anatomist only wants material to enable him to furnish data on which more reliable hypotheses than those at present current may be founded.

WE regret to announce the death of John Cleland, F.R.S., M.D. Edin., emeritus professor of anatomy in the University of Glasgow, in his ninetieth year, at Moorcroft, Lidsing, Chatham, on March 5th. Prof. Cleland held the chair of anatomy in Glasgow from 1877 until his retirement in 1909.

ON the recommendation of the Secretary of State for Scotland, the King has approved the appointment of Mr. John Fraser, M.C., to be Regius Professor of clinical surgery in the University of Edinburgh, in room of Sir Harold J. Stiles, whose resignation takes effect on March 21st. Mr. Fraser graduated with honours at the University of Edinburgh in 1907, gained the Ch.M. with honours in 1910, and was awarded a gold medal for his M.D. thesis in 1912. Among other appointments he holds is at present that of assistant surgeon at the Royal Infirmary, and surgeon to the Royal Hospital for Sick Children, Edinburgh. He is also a university lecturer on diseases of children, and lecturer in systematic surgery to the School of Medicine of the Royal College of Physicians and Surgeons of Edinburgh.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twentieth meeting of the Commission was held at the Home Office, Whitehall, on March 5th, Sir Andrew Duncan in the chair. The National Conference of Friendly Societies, represented by Mr. J. W. Shaw, Mr. Alfred Saunders, and Mr. William Marlow, gave evidence on the question of a public medical service to replace the medical and other treatment benefits given under the insurance scheme. Evidence was given on behalf of the Royal Insurance Officials Benevolent Association by Mr. Duncan Fraser and Mr. E. Syder relating to the general work of the Society and in particular to the application of surplus. Thereafter the Incorporated Dental Society, Ltd., represented by Mr. W. F. Bowen and Mr. F. Butterfield, was heard on the question of making dental treatment a universal benefit, and the scope, administration, and cost of such a benefit. Proof copies of the oral evidence and the relative statements submitted at the meeting of Feb. 19th are now on sale at H.M. Stationery Office (2s. 3d.).

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXIII.

THE TREATMENT OF MISPLACEMENTS OF THE UTERUS.

UTERINE displacements fall naturally into two large classes according as the displacement is backwards or downwards, though it must be remembered that the two are often coexistent. It is not within the scope of this article to discuss the causation of these abnormal positions of the uterus, but rather to indicate the modern ideas of the means best suited to remedy them. These means may be educative, mechanical, or surgical, and there are certain indications for the employment of each of these methods. Again, the treatment may be palliative or curative, according to the general condition or the wish of the patient herself. In this article it is proposed to consider: (a) backward displacements—either retroversion or retroflexion, or both combined; (b) simple prolapse; and (c) prolapse together with retroversion. Common to all three is the principle that treatment is only indicated when the symptoms complained of can be definitely ascribed to the malposition present. There is undoubtedly a tendency to assume that a displacement of the uterus is giving rise to symptoms, when in fact it has no part in the production of the clinical picture presented. Very careful consideration must be given to the individual case in order that the relation between the abnormality discovered and the symptoms complained of may be properly determined. An example which might be cited is the comparative frequency with which menopausal symptoms are ascribed to uterine misplacements, with subsequent disappointment when measures for the relief of the misplacement are not followed by any mitigation of the symptoms.

Backward Displacements.

Controversy rages around every aspect of the treatment of these conditions, and it is difficult to present a succinct and reasoned view of the present position. In my opinion congenital backward displacement is but rarely accompanied by symptoms which call for treatment.

Congenital Backward Displacement.—When such symptoms do occur in congenital cases, it is reasonable to attempt to satisfy oneself that a correct position of the uterus would cure them; therefore a trial should be made of replacement, if necessary under anaesthesia, and the use of some form of pessary. If by these means the symptoms are relieved, it is legitimate to suggest that some permanent steps should be taken to keep the uterus in a normal position. It has frequently happened in my experience that a retroversion, probably congenital, has been found in cases of sterility or of repeated early abortions. In such cases I suggest that replacement and a pessary be tried before any further line of treatment is advocated. Particularly is the risk of early miscarriage minimised if the retroverted uterus be gently replaced as soon as pregnancy is known to have occurred, and a soft rubber pessary be worn for the first three or four months.

Backward Displacement of Acquired Origin.—These cases usually date from a confinement, though one has seen cases in which a traumatic origin has been probable. The routine examination of patients six or eight weeks after confinement should make it possible for a number of these acquired cases to be recognised and treated early, and it is probable that many of them could be cured by simple means. When discovered in retro-position the uterus should be replaced and a pessary of appropriate shape inserted. The patient should then be carefully

instructed as to three points: (1) the regular emptying of the bladder; (2) the prevention of constipation; and (3) the efficacy of lying on the face for a time every day. At the end of three months the pessary is removed and in a fair number of cases no further symptom develops.

In cases of longer standing in which the symptoms call for treatment, the effect of replacement and a pessary should also be tried, and operation reserved for those cases in which the uterus cannot be replaced or in which the pessary and the replacement have been followed by a definite relief of symptoms. When operation has been decided upon an essential point is to leave the uterus in an approximately normal position, and in my opinion a curettage does not fulfil the conditions for a cure. The relief experienced after dilatation and curettage does not last, and many patients suffer a return of their symptoms after a shorter or longer interval.

As to the operation to be practised for the permanent replacement of a retroverted or flexed uterus it is difficult to be dogmatic. Numberless varieties of operative technique have been devised, falling into groups: (a) Suspending the uterus from the parietal peritoneum; (b) fixing the lower part of the anterior wall of the uterus to the anterior abdominal wall; or (c) sing the round ligaments as a means of slinging the uterus in its normal position. The second and third varieties alone have claims to serious consideration, the second in spite of M. Dartigues' recent dictum that it should be eliminated from the operative methods. It is so simple, so effective, and so free from danger should pregnancy supervene that it seems worthy of continued use. The third group of operations has almost an infinity of modifications according to the predilections of the operator, and within the limits of a short article it is impossible even to enumerate them. A reflection born of experience is, that before using the round ligaments to keep the uterus in position, it were well to investigate the condition of those ligaments in the particular case. It is no uncommon experience to find such thin, ill-developed ligaments that to trust to them for maintaining a proper uterine position would be unwarrantable optimism. A second may be added—namely, that care should be taken to avoid strangulating the round ligament during the operation, as persistent pain has often been noticed over the area where the ligament has been drawn through the fascia.

My personal experiences of the after-results of both direct fixation and of various methods of shortening the round ligaments have been uniformly good, but of the two there have been fewer complications after the plain fixation.

Simple Prolapse of the Uterus.

The treatment of this condition when causing symptoms resolves itself into either supporting the uterus by some form of pessary, or devising such reparative operative procedures as will permanently maintain the uterus in its proper position. It is a growing conviction of the writer that the symptoms of prolapse are less dependent upon the actual position of the uterus than they are upon the concomitant prolapse of the vaginal walls. Early stages of prolapse may undoubtedly be cured by careful attention soon after childbirth by the insertion for a few months of a suitable pessary and by the institution of regular muscular exercises, not the least important being those which have for their object the re-education of the vaginal muscles themselves. In more advanced cases the question arises as to whether the condition is to be palliated or cured. Comfort can be secured by pessaries, but at the cost of several minor troubles and with the need of constant supervision. In some cases the general health, age, or considered choice of the patient may preclude any other method of treatment, or she may be at a time of life where repeated pregnancies are to be

anticipated. In any of these instances the palliative treatment must be considered, but, in general, curative treatment by operation is the method of choice. In any given case the operation must be most carefully considered and so planned in its scope and details as to restore the cervix and vaginal walls as nearly as possible to their original condition. The orthopaedic rule that it is wise to over-correct a deformity is equally true in carrying out operations for the cure of prolapse. In a simple case of prolapse it is hardly ever necessary to open the abdomen, while, however advanced the condition is, the uterus should on no account be removed unless there be some other condition making the course imperative.

In patients past the menopause, with marked cystocele and prolapse, the operation of interposing the uterus between the bladder and the vaginal wall has a certain though limited usefulness. My own experiences of it have been uniformly good. Lastly, in appropriate cases Le Fort's operation (uniting anterior and posterior vaginal walls along the middle line) is easy of accomplishment and gives very good results.

Prolapse Associated with Retroversion.

Prolapse associated with retroversion is commoner than simple prolapse. The treatment follows closely the lines indicated for the last-named condition but with this important difference, that a constant aim in the operative technique should be to leave the uterus in the normal position of anteversion. This position may be obtained during the vaginal procedures, but should it be found on the completion of these manipulations that the uterus is still retroverted or flexed, the abdomen should be opened and a ventral fixation done. The round ligaments are not to be relied upon in the operative treatment of prolapse with retroversion.

J. BRIGHT BANISTER, M.D. Camb., M.R.C.P. Lond.,
F.R.C.S. Edin.,

Consulting Obstetric Surgeon, Queen Charlotte's
Lying-in Hospital; Assistant Obstetric
Physician, Charing Cross Hospital.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and a list of contributions appeared in the last issue. We have received additional contributions as follows:—

	£	s.	d.
Amount already received and acknowledged	314	10	6
Dr. L. G. Glover	5	5	0
Lancashire and General Ass., Co., Ltd. ..	5	5	0
Dr. W. C. Humphreys	5	0	0
Dr. Miles H. Phillips	3	3	0
Mrs. M. M. Brewer	2	2	0
Anonymous	1	1	0
Mr. Harold Barwell	1	1	0
F. J. B.	1	1	0
Mr. J. H. Brannigan	1	1	0
Dr. J. Charles	1	1	0
Dr. Arthur Crook	1	1	0
Dr. C. H. Dodd	1	1	0
Dr. Chas. J. Girling	1	1	0
Dr. Geo. Morgan	1	1	0
Dr. V. Tighe	1	1	0
Dr. Leslie B. C. Trotter	1	1	0
Mr. H. B. Walker	1	1	0
Dr. Waller	1	0	0
Dr. S. A. Lane	1	0	0
Dr. James Melvin	1	0	0
Trained Nurse	1	0	0
Dr. John Murray	10	6	
Dr. R. W. Payne	10	6	
Dr. John Armitage	10	0	
Dr. Arthur Burton	5	0	

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C.2, and made payable to the "Bateman Fund Account."

¹ La Chirurgie Illustrée "Pauchet," Paris, 1924.

Special Articles.

TREATMENT OF WAR INJURIES AT SPECIAL SURGICAL CLINICS.

BY CHARLES MACKAY, M.D., B.S. MELB.,
LATE LIEUT.-COLONEL, R.A.M.C.; MEDICAL OFFICER IN CHARGE
ORTHOPÆDIC CLINICS, MINISTRY OF PENSIONS;

AND

D. DENHAM PINNOCK, F.R.C.S. ENG.,
ASSISTANT SURGEON, TEMPERANCE HOSPITAL; MEDICAL
OFFICER IN CHARGE ORTHOPÆDIC CLINICS,
MINISTRY OF PENSIONS.

AMONG the many forms of disability which were incurred by all ranks through service in the late war, of which the disabling effects continued in a more or less high degree after leaving the Service, a larger proportion falls within the purview of the surgeon rather than of the physician. The number of such cases was so great that the Ministry of Pensions found it necessary to make special arrangements for dealing with them. The establishment of Special Surgical Clinics was an important part of these arrangements.

A Special Surgical Clinic is in essentials an out-patient orthopædic treatment centre. It consists of treatment rooms, surgeon's examination room, waiting room for patients, and suitable accommodation for massage staff. In establishing Special Surgical Clinics every endeavour was made to utilise the facilities at existing civil institutions, these facilities being in many instances expanded to meet the special need. Even with this expansion, however, the civil hospital facilities fell short of requirements, and further facilities were rendered available through the agency of the British Red Cross Society, who acquired suitable premises and opened clinics under the administration of a commandant. Over and above these, the Ministry itself established a number of clinics staffed and administered by the department.

These Surgical Clinics have two main functions: (1) The examination of pensioners suffering from war injury for the purpose of determining the need for treatment, surgical appliances, &c.; and (2) the provision of such treatment as can suitably be undertaken at the clinic.

In the general scheme of the Ministry for dealing with surgical cases, the Special Surgical Clinics are linked up with the surgical hospitals, and with the centres for the provision of surgical appliances and artificial limbs. They may refer cases to hospitals for in-patient treatment, or to the Appliances and Limb Centres to be provided with appliances or limbs. They may have referred to them cases from hospital for the purpose of carrying on or supplementing the surgical work which has been done while the man was an in-patient. They may have cases referred to them from the Appliances or Limb Centres, for an opinion as to the man's precise needs, or for a report as to whether an appliance or limb already provided is entirely suitable. In addition to these sources of supply, many cases are referred to the clinics from the various local offices set up by the Ministry throughout the country for the performance of the local work of the department. When a man is referred to the clinic, there is sent at the same time a dossier containing documents summarising the man's medical history as known to the Ministry. This history consists of medical notes made at the time of previous examinations by medical boards and other medical officers. In addition, it includes the records as to the results of any previous courses of treatment. At the outset, therefore, the surgeon at the clinic, is not dependent for his knowledge of the case upon what he himself can ascertain by the present examination. Where the man is provided with treatment at the clinic, the surgeon, on the man's discharge from treatment, continues the history

records by adding his own notes, and incorporating the case-sheet and any pathological reports or X ray films, &c., in the treatment dossier, for the information of medical officers who may have to deal with the case in future.

Before proceeding to describe the more professional aspect of the work at these clinics it may be remarked, in illustration of the encouragement to pensioners to avail themselves of such treatment as may be considered to be necessary, that the pensioner's travelling expenses between his home and the clinic are paid by the Ministry, whether in respect of a single attendance for the purpose of medical examination, or the more frequent attendances which are involved in a course of treatment. In addition, if the man's attendance will necessitate his absents himself from work on one or more occasions during the week, he is paid an allowance in respect of loss of remunerative time. Further, if the circumstances of his course of treatment are such as to necessitate his absents himself from work entirely, either because of the frequency of his attendances or because it is an essential part of his treatment that he should not work, he is granted, in lieu of any pension which he may be drawing, an allowance in respect of himself at a rate equivalent to pension for total disablement, together with allowances at corresponding rates in respect of his wife and children. No pensioner need therefore be deterred from accepting a course of treatment on account of financial considerations, and pensioners are consequently much more favourably placed in this connexion than is the average civilian.

Types of Case Treated.

The treatment provided at a clinic is necessarily somewhat limited in scope, but is of considerable variety. Such remedial agents as surgical dressings, massage, electricity, heat, passive and active movements, Swedish exercises of remedial character, and exercises for muscle re-education are extensively employed. The types of case in which clinic treatment is undertaken fall into the following classes:—

- (1) *Nerve Injuries*.—Mainly those cases which have had nerve suture performed at a comparatively recent date, or other nerve injuries which are slowly recovering, and require treatment by massage, electricity, and muscle re-education.
- (2) *Old Joint Injuries* with varying degrees of limitation of movement.
- (3) *Extensive Wound Scarrings* with considerable muscle weakness and wasting of limbs.
- (4) *Old Bone Injuries* with recent or old sinuses requiring dressing and supervision, also recent bone grafts.
- (5) *Organic Injuries* of various kinds, with functional paralysis of varying degree super-added, and requiring both physical and psychical re-education.
- (6) *Amputation Stumps* requiring dressings or treatment for pain, &c.
- (7) Various forms of arthritis.

The cases which have responded best to treatment are the severe wounds with extensive scarring, much muscle weakness, wasting of limbs, and joint stiffness. Under treatment with varying applications of massage, heat, faradic electricity, graduated exercises, much has been done to restore these limbs to a high degree of usefulness. Partial injuries to nerves and tendon transplantations for drop-wrist have also been very successfully dealt with. On the whole, it has been somewhat disappointing to see the final results of many nerve suture operations, especially those on the sciatic nerve, external popliteal nerve, and median and ulnar nerves. After months and years of continuous treatment some of these cases show little response in the direction of increased movement or power in the foot and hand, the foot remaining partially inverted and dropped in spite of treatment. Although disappointing from the point of view of return of movement, nerve suture with after-treatment has probably been of very definite physiological value to the limb, in preserving a better blood-supply with less liability to trophic disturbances. The most encouraging of these nerve cases have been those of musculo-spiral suture, and this experience has been common to many observers. In the case of the lower

limbs, operations on the knee-joint have necessitated a large amount of after-treatment. Where the injury for which the operation has been done has occurred several years before, the wasting of the thigh, especially of the vastus internus muscle, requires much treatment to bring it up to anything approaching normal. Injuries of the shoulder, either of the joint itself or in the neighbourhood of joint, are the cause of severe disablement. Very often the pensioner comes to the clinic unable to abduct and to elevate his arm as far as a right angle. Much improvement may be effected in these cases by treating patients in the lying-down position. By this means the weight of the arm is taken off the weakened muscles, and after the application of massage and heat the pensioner is often able to raise his arm much further in this position than he had previously thought possible. Carefully graduated exercise in the lying-down position is essential for the recovery of movement at the shoulder. By means of pillows the patient can be gradually raised to a sitting-up position, and movements which were at first impossible become comparatively simple and easy. To begin the attempt to obtain movement in the region of a damaged shoulder-joint in the standing or sitting-up position is to invite pain and consequent reluctance to attempt movement on the part of the pensioner. In the lying-down position his confidence is easily obtained, and he adjusts his movements to his own feelings. No attempt is made to force the arm above the position at which he feels pain. The cardinal idea is that the movements should be voluntary and supervised. It is well to remember that an arm and hand are useless unless the thumb can be opposed to the fingers. This is the supremely essential movement to be striven for in the upper limb.

Function, no matter how obtained, whether by so-called trick movements or otherwise, is the aim of treatment at the clinics. With all forms of injury, it is recognised that movement is the ultimate goal, and that active movement should be encouraged by every means possible.

Re-education.

The old conception that the more one did for the patient the better, is gradually being improved into that of encouraging and supervising the patient to do as much as possible for himself. It is even yet very difficult to get masseuses to recognise that what the patient does for himself is of infinitely more value than what is done for him. The tendency to take up too great a proportion of the treatment time in applying massage and electricity requires to be counteracted by the surgeon. Muscle re-education, in the sense of getting the pensioner to concentrate his attention on his own supervised attempt to recover power in weak or partially paralysed muscles, always working to this end with the aid of gravity, and in the positions where the muscles can work at the best advantage, is regarded as the most important part of the modern treatment of these conditions, and is extensively used at the clinics. It may be remarked that experience at these clinics lends strong confirmation to the opinion that in all forms of physical treatment a certain amount of psychical treatment is also necessary. It has not always been easy to get the individual pensioner into a frame of mind where he is inclined voluntarily to assist with his own treatment. The tendency to do little for himself can only be counteracted by the surgeon in charge taking a personal interest in the individual, and showing him how much to his own future advantage it is to assist in his own treatment. The atmosphere thus created is a great help to the individual and to the clinic generally. Re-education in walking has formed an important part of the advanced treatment of many cases of severe injury of the lower limbs. As an essential part of treatment the provision of various types of orthopaedic appliance should be mentioned, as well as that of surgical boots and shoes.

Apart from purely surgical cases there are also treated at these clinics many medical conditions, such

as rheumatism, myalgia, sciatica, and various forms of arthritis. These are treated by means of heat, massage, ionisation, and so forth. The chronic cases of arthritis are necessarily the most obstinate in responding to treatment, and it is often very difficult to decide when treatment should be discontinued, especially in the elderly pensioner. In many instances all that can be done is to attempt to relieve severe pain, and as pain is a purely subjective phenomenon, the question as to whether any definite improvement in the condition can be accomplished by treatment requires very careful investigation and consideration.

In conclusion, we beg to express our indebtedness to the Director-General of Medical Services of the Ministry of Pensions for his kind permission to publish this article.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 509.)

THE APPROVED SOCIETIES AND THE MONEY BENEFITS.

The Controller's Evidence.

(App. A. 56.) The ordinary benefits of the National Health Insurance Act are four in number—namely, medical benefit, sickness benefit, disablement benefit, and maternity benefit. The official evidence in regard to medical benefit has been summarised. So far as this benefit is concerned, the only duty devolving upon Approved Societies is that of keeping the Insurance Committees informed of the persons who are entitled to medical benefit, and of those who cease to be so entitled. For all but a relatively small part of the insured population the other three benefits (collectively known as the money or cash benefits) are administered by Approved Societies.

Rates of Sickness Benefit.

(App. A. 57-8.) Sickness benefit consists of money payments made after the third day of incapacity, at the following rates: (a) After 104 weeks in insurance and payment of 104 weekly contributions: for men, 15s.; for women, 12s. (b) After 26 weeks in insurance and the payment of 26 weekly contributions, but before completion of the conditions indicated at (a): for men, 9s.; for women, 7s. 6d. Disablement benefit is a continuation of sickness benefit after 26 weeks of payment have been made and is at the rate of 7s. 6d. a week for both men and women.

Conditions Attaching to these Benefits.

(App. A. 60-3.) In general, claims to sickness and disablement benefits are based upon the medical certificates required to be furnished by the insurance practitioners. The member must send notice of incapacity within three days if he wishes to avoid some loss of benefit. The onus of giving notice of illness is placed upon the member himself, and there is nothing in the Acts to suggest that this duty devolves upon relatives or friends of the member, or upon the medical attendant, even in cases where the member is obviously incapable of attending to the matter himself—e.g., in cases of mental derangement. Mere ignorance of the requirements of the Acts or of the society's rules regarding the prompt notification of illness is not accepted by societies as a sufficient ground in itself for delay in giving notice

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8); The Provision of Medical Benefit (Feb. 7th, pp. 301-3; Feb. 14th, pp. 355-6; Feb. 21st, pp. 403-5); Financial Provisions of the Act (Feb. 28th, pp. 454-7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508-9).

References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

of illness. In practice, however, societies are prepared to give relief from the usual consequences of late notification of incapacity in cases where they are satisfied that substantial grounds can be shown for the member's delay.

(App. A. 64.) Cases in which sickness or disablement benefit is claimed on the ground of pregnancy occasion a considerable amount of difficulty to societies on the ground that the performance of full household duties may not unreasonably be regarded as an alternative occupation in the case of a married woman. Where, however, the claim is not made until a comparatively late stage, it would be much more likely to receive favourable consideration inasmuch as societies in general are prepared to recognise the inherent probability of incapacity during the weeks immediately before confinement.

Supervision of Claims.

(App. A. 68.) All societies are required to include in their rules a provision in the form prescribed by the Ministry regarding the behaviour of members during sickness—e.g., the patient must obey the instructions of his doctor, must not be absent from home between certain stated hours, and must not go away without the society's consent.

In general, the arrangements made by societies for supervision are of two kinds—namely: (1) Sick visitation. (2) The reference of the member for examination by a Regional Medical Officer or some other independent doctor in any case where the continuance of incapacity is thought to be in doubt. The work of the sick visitor is in no way concerned with the medical treatment of members who are incapable of work, but he has to see that the rules as to behaviour during sickness are observed and he may bring to notice circumstances which would seem to raise doubt as to the continuance of incapacity.

(Q. 313-4.) As the change from what is called sickness benefit to what is called disablement benefit may appear to open up the possibility of a long period of payments, a number of societies are inclined to referee automatically every case when 26 weeks benefit has been paid. The Department, said the Controller, object to this.

Maternity Benefit.

(App. A. 74-6.) Maternity benefit consists of a payment of 40s. on the confinement of the wife (or where the child is a posthumous child, of the widow) of an insured man, or on the confinement of an insured woman; where the woman is married and is herself insured, two payments of this amount are made. This benefit is in all cases required to be applied in the interest of the mother and child and may be administered, in the discretion of the society, either in cash or in kind. A few societies, instead of paying over the full amount of the benefit to the woman in cash, make provision for her confinement either by providing the services of a doctor or midwife or by arranging for her admission to a maternity home. In general, however, the benefit is administered as a payment in cash. The Controller was asked—

(Q. 354.) Have you any indication of the extent to which the maternity benefit is entirely absorbed by the doctor's fees?—Yes. I think the increasing tendency is that the doctor endeavours to get the whole amount of the maternity benefit. When originally 30s. was paid as maternity benefit the doctor took 30s. as his fee. Now that we pay 40s. his fee very frequently is 40s.

Arrears and Disputes.

(App. A. 103-4.) Contributions are not payable during weeks of notified sickness, and a member is also allowed four weeks of unemployment in a year without falling into arrear. Beyond this point the rates of sickness and disablement benefits are reduced in accordance with a sliding scale until they reach a point (under 26 contributions) where all benefits are suspended. Reduction of rate or suspension can be avoided by the payment of arrears penalties.

(App. A. 111.) As to disputes in regard to a claim to benefit, societies are required to make due provision in their rules. There is no prescribed form of procedure for the determination of disputes between societies and their members; there is in fact much divergence of practice among societies in this respect. A considerable majority of societies have, however, adopted the Department's model rules. After a dispute has passed through the procedure laid down in the society's rules, either party to a dispute may apply to the Minister of Health for leave to appeal.

(Q. 454.) Are you satisfied that the present arrangements afford sufficient protection to an insured person who thinks he has been unfairly treated?—On the whole the arrangements work fairly well. . . . We still have difficulties. The rules of some societies are still too cumbrous; insured persons do not understand them. In some societies insured persons have to appear before two, and possibly three, separate tribunals before their case is finally disposed of. In a few cases societies still continue to charge what we regard as rather onerous deposits payable by the insured person as a condition precedent to his appeal being heard, and I am inclined to think that in certain societies insured persons, when their benefit claim is refused, are not informed of their rights and of the procedure which they ought to follow as fully as they should be.

The Controller indicated that in this matter the powers of the Department appeared to be inadequate.

(To be continued.)

MEDICINE AND THE LAW.

CASE DECIDED ON MEDICAL EVIDENCE.

AT a recent inquest at Hungerton in Leicestershire it was proved that the vicar, the Rev. W. G. C. Bettison, had shot himself with a gun when suffering from the effect of mental depression, blowing away his cheek and part of his upper jaw. His sister had gone to him after an interval, as was proved by witnesses, and while she was alone in the room with him a shot had been heard which she afterwards declared that she had fired at his request to put him out of his pain. Owing to her mental state she had to be removed at once to a mental hospital. The grave question therefore arose as to whether the sister had been guilty of murder or whether the deceased had committed suicide. As to this Dr. E. Williams gave evidence to the effect that the wound in the head described above must have proved fatal within an hour, and had, without doubt, been self-inflicted. The second wound had blown away half of the heart and the left lung. It was questionable whether Miss Bettison could have known whether her brother was dead or alive when the second shot was fired. He did not think it possible that Mr. Bettison could have said anything coherent after the first wound had been inflicted, although he might have made a noise. This had reference to Miss Bettison's statement that her brother had asked her to kill him, with reference to which evidence had been given by a person who had been in the passage outside the room that he had heard no conversation. It had also been shown that time had elapsed between the first and second shot, during which Miss Bettison had been summoning assistance. Dr. Williams was of opinion that, owing to her mental condition, Miss Bettison might easily have imagined that she had been asked to fire the second shot. The coroner, in addressing the jury, pointed out that no one was justified in putting an end to the life of another to save him from suffering, but added that owing to the medical evidence this question did not arise. He invited the jury accordingly to return a verdict of suicide while of unsound mind, and this was done. In comment it is to be observed that the verdict was right according to the evidence. No jury at an assize would have found Miss Bettison guilty of murder without proof that her brother was alive when she fired the second shot, as probably she did, particularly as her statement that she had been asked to fire it, made in the condition in which she was, was negatived by the conditions due to the wound inflicted on himself by the deceased.

ACTION FOR ALLEGED NEGLIGENCE IN ADMINISTERING AN ANÆSTHETIC.

In the case of *Murdock v. Holmes and Taylor*, recently tried at Leicester Assizes, damages were claimed by the plaintiff for the loss of the sight of one eye, on the ground that this had been caused by the negligent administration of an anæsthetic during a prolonged operation. The case for the defence was that the injury to the eye, if caused by the anæsthetic, was not due to any negligence in administering it, but to septic conditions in the plaintiff at the time when it was administered. This case presented some problems interesting particularly to anæsthetists and ophthalmologists. The medical facts appear to have been briefly these. A laparotomy was performed to find and remove the cause of an obstruction of the bowels from which the patient had obviously been suffering for some days. An anæsthetic, consisting of two parts of ether to one of chloroform, was administered on an open mask, a Gamgee pad being placed on the face. It appeared in the evidence that twice this pad had become so wet with the anæsthetic that the anæsthetist changed it. On the day after operation the patient complained of violent pain in the left eye and he was seen soon after by an ophthalmic surgeon, who found a condition of the eye "not inconsistent with some anæsthetic having got into it." There was swelling of the corneal epithelium, but no abrasion, and the eye was acutely inflamed. Eventually a dense scar formed across the middle of the cornea. The defence rested on the fact that the patient's state was highly toxic, the bowels were opened only with great difficulty during the days after the operation, and that a damage so slight as to be easily recovered from in the normal subject led in this poisoned subject to the serious keratitis resulting in scar. It was admitted by some of the experts giving evidence for the defence that this damage was probably caused by drops of liquid anæsthetic, but others maintained that the vapour itself would have been enough, in the patient's condition, to set up the corneal damage. This appears an interesting and important point, for no care, however meticulous, can prevent anæsthetic vapour reaching the eye. There is, we believe, no evidence, clinical or experimental, to support the contention that in an unhealthy subject the normal engorgement caused by inhalation of the anæsthetic could have caused the lesion. There is, however, good evidence to show that even considerable amounts of the anæsthetic employed can be dropped into a normal eye and lead to no serious consequences.

The jury after a prolonged hearing were unable to agree as to a verdict and were accordingly discharged.

DYSON v. MEYRICK: JUDGMENT.

The Lord Chief Justice gave judgment for Dr. Meyrick on his claim for the sum of £98 4s. 6d. (the sum to which the original sum sued for had been reduced by the finding of the jury as to the agreement for weekly payments) and allowed him the "appropriate costs." He gave judgment for Mr. Dyson on the counterclaim for 20s., with the costs of the counterclaim.

In delivering judgment Lord Hewart said that the finding of the jury that Herber. Dyson was confined in a locked room at times was an exceedingly grave matter, and as to it the evidence was overwhelming. It was impossible not to sympathise with the patient as well as with those having care of him, but it was tolerably obvious that the case was not one suitable for Dr. Meyrick's house, hence, perhaps, the seclusion and the concealment of it. On behalf of the defendant it had been contended that this breach of duty went to the root of the whole matter, and constituted a defence to the entire claim. For some reason or other, however, the jury had found that the only damages suffered by Mr. Dyson through the seclusion of his son were to be assessed at 20s. Whatever his Lordship's own opinion might be about the matter, it was his duty loyally to observe the verdict of the jury, and for that reason he was unable to say that Dr. Meyrick's breach of duty could be said to go to

the root of the contract, although he was clearly of opinion that it invited the attention of the Board of Control. In the circumstances he gave judgment to the effect above stated.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The "Haff Disease."

Prof. Lentz, of the German Health Office, recently read a paper before the Berlin Medical Society on the causes of the peculiar disease among fishermen of the Kurisches Haff, a bay in Eastern Prussia, which was described in one of my previous letters (see THE LANCET, 1924, ii., 774). He said that the disease had spread since last autumn, so that the number of cases now totalled 600, with three deaths. As regards symptoms, the pains in the muscles had sometimes been so severe that the fishermen were unable to steer their boats. The urine was scanty and contained much albumin and granulated casts, which were sometimes present after three weeks. Many of the fishermen became ill on successive occasions, several of them up to six times, when they put to sea on the bay. At the post-mortem examination of a fisherman marked parenchymatous degeneration of the kidneys was found. Prof. Lentz was successful in ascertaining the cause of the disease. To find out whether it was caused by an infection one of his assistants injected into himself a quantity of blood of a man who had just become ill. The assistant showed no symptoms. But 1 c.cm. of the water of the bay injected into a fisherman who had already had the disease produced a fresh attack with typical symptoms. It could thus be concluded that the agent of the disease was contained in the water. Further investigations proved that the water from the cellulose factories by which the water of the bay was contaminated contained 28 mg. of arsenic to the litre, and in the blood, urine, and various organs of men and animals who died from the disease arsenic was found. The poison in the water is taken up by the algæ of the bay and thus developed into arseniuretted hydrogen, which is inhaled by the fishermen. The cellulose factories have been working for many years, and to account for the fact that their waste waters had not formerly developed a poisonous action two reasons are put forward: (1) that owing to the water of the river Nogat being dammed up, the water of the bay had been in a more stagnant condition than formerly; and (2) that the factories had since the outbreak of the war used Rio Tinto pyrites, which contain arsenic, instead of the Cyprus pyrites. The latter raw material is now in use again and the disease has disappeared. To assist the indigent fisher population the Government has set aside a large sum.

An Action for Damages.

Before the Berlin law courts a member of the medical staff of the municipal Friedrichshain Hospital brought an action against the city of Berlin for the payment of 600 marks (£30) monthly to defray the costs of a sojourn in a southern climate, rendered necessary through his having become incapacitated by tuberculosis during his hospital service. The plaintiff stated before the court that he had been in charge of the tuberculosis ward of the hospital in 1922 and 1923 and that the hygienic conditions then were very bad, and owing to the general poverty tuberculosis had so increased that the wards were overcrowded. The plaintiff stated that he had never been ill before he had been appointed to the tuberculosis ward, and that three other medical men and several of the nurses had also caught the disease there. The statements of the plaintiff were confirmed by witnesses. Counsel for the plaintiff alleged that although things had now become normal the hygienic state of the hospitals had been very bad for a time, as owing to the depreciation of the currency the city of Berlin had scarcely the necessary means to run the hospitals at all; further, that the plaintiff had

caught the germs of the disease during the war at the front; and that independently of its hygienic condition every tuberculosis ward was a danger to the medical and nursing staff who were compelled to live there. The court finally pronounced judgment in favour of the plaintiff, and ordered the city of Berlin authorities to pay the plaintiff £30 per month for six months during the latter's stay at the health resort.

Death of Prof. Julius Hirschberg.

The death is announced of the ophthalmologist Prof. Hirschberg, a doyen of the Berlin medical profession, at the advanced age of 82 years. When assistant to the great ophthalmologist Prof. von Gräfe of Berlin, Hirschberg carried out research work on cancer of the retina and later extended his work widely in his own specialty. He was the first to recommend the use of the electro-magnet for the extraction of iron splinters from the eye (1885). His work "Introduction to Ophthalmology," published in 1892, was translated into several languages. He was not only a distinguished ophthalmologist, but a distinguished philologist and historian as well. He published an historical work in several volumes on the ancient Greek, Roman, and Arabian ophthalmologists. Apart from these more professional studies, he wrote essays on Homer and Aristophanes. All his life Hirschberg was one of the most energetic members of the Berlin Medical Society, and even in his latter years, notwithstanding his age, he was seldom absent from a meeting. He bequeathed his well-known library to the State.

Conviction of a Christian Scientist.

In the city of Lübeck recently a boy received a severe abdominal wound with prolapse of the intestine through falling on a paling. Although his suffering was great no medical man was consulted at the time of the accident, but the parents approached a Christian Scientist, who, it was alleged, had successfully cured a fistula in a relative of the family some time previously. The "scientist," a woman, first refused to deal with the case because the parents did not belong to the sect, but finally came to the house of the patient and prayed with the family. She declined to see the wound, because she said that would prejudice the effect of the prayer. The boy's condition grew steadily worse, with the result that the parents after two days conveyed him to a hospital. He was then operated on, but could not be saved as severe peritonitis had already developed. The "scientist" was then prosecuted for manslaughter through neglect. Witnesses for the defence gave evidence that they had in numerous instances seen grave diseases cured by Christian Science. A medical witness for the prosecution stated that in the above case an operation performed within six hours after the injury would very likely have saved the life of the boy. The jury gave a verdict of "Guilty," and the defendant was sentenced to one year's imprisonment.

Statistics of German Students.

The number of students in the German universities has decreased steadily during the last three years; for the years 1922, 1923, and 1924 respectively, 12,296, 10,290, and 7728 students matriculated. The reason of this diminution is that through depreciation of the currency the financial condition of those classes whence the majority of the students were formerly recruited—the liberal professions, Government officials, and the middle classes in general—could not bear the cost of study. Many of the students had to interrupt their studies and to enter into business, and even take to manual work, to earn a livelihood. Now that the currency has become stable again and the fees of study considerably reduced, the number of students has increased to 8313. But the number of medical students is only 1810, against 1967 last winter, women numbering 331 and 315 respectively. The repeated warnings against medical study because of the cheerless outlook in the medical profession has obviously produced these figures.

Correspondence.

"Audi alteram partem."

THE BATEMAN APPEAL FUND.

To the Editor of THE LANCET.

SIR,—In enclosing a small contribution towards the Bateman Appeal Fund, may I add my surprise that during the trial no reference was made to a paper on post-partum avulsion of the uterus, with a case, followed by recovery, which is fully recorded by Mr. Hopkins Walters in the Transactions of the Obstetrical Society of 1884, p. 233. In the discussion that followed the late Dr. G. E. Herman said that "a great value of Mr. Hopkins Walters's paper was in this: that in any future case of the kind in which evidence on the subject might be required in a law court, those whose duty it was to form an opinion would find all available facts bearing on the subject brought together in Mr. Walters's paper."

I am, Sir, yours faithfully,
MILES H. PHILLIPS.

Sheffield, March 9th, 1925.

THE FUTURE OF MEDICINE IN INDIA.

To the Editor of THE LANCET.

SIR,—In an editorial article contained in your issue of Feb. 28th on this subject I am credited with giving a benediction to the Lee Commission's proposed R.A.M.C. (India). You correctly quote me as stating in *THE LANCET*, Sept. 20th, 1924: "... it may confidently be expected that a number of well-qualified young men of the home medical schools desiring an Indian career will join this service with a view to obtaining professional work in the provinces, and when political opinion has settled down they will have a full and useful career." But I would like to state that this was written under the impression that the strength of the War Reserve, transferred from military to the civil side, would remain approximately the same as it was before the war. My idea was that the proposed change would simply mean a resurrection of the I.M.S. under another name, and that the traditions of that service would be carried on uninterruptedly in the R.A.M.C. (India). I had overlooked the footnote on p. 12 of the Lee Commission's Report which runs: "On this point (War Reserve transferred to civil) we have proceeded upon the assumption that the quota of military medical officers from civil employ required for the Reserve will not exceed the total (122) specified in the D.M.S.'s memorandum of 2nd July, 1922, attached to Government of India Despatch No. 1 of 1923." This very seriously reduces the chances of officers joining the R.A.M.C. (India) obtaining civil employment.

The real attractions of the I.M.S. have always been that its officers held H.M. Commission, had opportunities for field service, and the prospects of work on the civil side. The combined strength of the R.A.M.C. and I.M.S. before the war was well over 1000. The proposed R.A.M.C. (India) would have to provide medical officers for both the British and troops, the curtailed War Reserve, political and other branches. Assuming that its strength would be 800, acceptance of the Lee Commission's proposals would mean that only 15.25 per cent. could hope for civil employment—that is, about 1 in 7, and of these a certain (unknown) proportion would be Indians.

In the real circumstances I do not think that the proposed R.A.M.C. (India) would be popular with the best young men of the home medical schools. At least six-sevenths of them would spend all their service in military employ, and men wishing for a military medical career would certainly prefer joining that splendid service, the R.A.M.C. I am also disposed to consider that the majority of senior I.M.S. officers would discourage young men at home competing for the R.A.M.C. (India). I doubt if the

proposed provincial medical service will attract any candidates. As one predicted, a certain number of men will doubtless seek employment under special contract; time alone will indicate how far these appointments fill satisfactorily the positions previously held by I.M.S. officers, and whether these contract men will be happy in their work.

I am, Sir, yours faithfully,

P. HEHIR,
Major-General, I.M.S. (ret.)

Westward Ho! Feb. 28th, 1925.

PRESERVATIVES IN FOOD: DRAFT REGULATIONS, 1925.

To the Editor of THE LANCET.

SIR,—These Regulations are certainly to be commended, and carry out largely the recommendations of the Departmental Committee, but in one respect they seem to be retrograde (I take it through some inadvertence)—that is, food sold in hotels, restaurants, &c. (see Part 2, Section 4, subsection (2), last sentence)—“provided that this provision shall not apply where the article of food is sold in any hotel, restaurant or other such place for consumption on the premises.”

At the present time the sale of preserved cream if sold for consumption on the premises requires a notice to be placed in a conspicuous position in the room, or a statement on the bill of fare or some other adequate means of similar intimation. (See “Milk and Cream Regulations, 1912,” Section V.) These Regulations are, however, to be revoked by Section 15 of the proposed new Order. The result is that any food, including cream, may have excessive preservative added.

Considering the large number of persons whose work necessitates their taking their meals in restaurants, it would appear that the proposed regulations still need some further modification for the protection of the public who use restaurants in order to prevent excessive quantities of preservative being added to food. Surely if it is desired to make some special provision in the case of restaurants, for example, as regards colouring matter or even preservatives, some limitations should be enacted, and not merely exemption of such premises.

A pleasing feature of the Regulations is that power is now sought (see Section V. (2)) to get over a difficulty to which I drew attention in 1922, when we found colouring matter being openly sold at the Dairy Show recommended for addition to milk, although the sale of milk with it or any preservative is illegal.

I am, Sir, yours faithfully,

G. CLARK TROTTER, M.D.,
Medical Officer of Health, Islington.

London, N., March 9th, 1925.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—In his letter to THE LANCET of Feb. 28th Dr. A. Whitfield has written: “Dr. Semon, since the publication of the paper in which he was associated with Dr. Barber, has published another recommending X rays for acne, a disease which I am sure Dr. Barber will agree with me in regarding as lying on a foundation of seborrhoea; so that apparently Dr. Semon has not found the alkaline treatment alone sufficient. . . .” The implication would seem to be that I had used alkalis by the mouth in the treatment of acne, and found it of little or no effect.

May I be allowed to assure Dr. Whitfield that I have never prescribed bicarbonate of soda or any other alkali for that condition? My opinion of the value of “alkalisation” in acute seborrhoeic conditions, such as Dr. Barber and I had to treat at a base hospital in France, remains unshaken by my civilian experi-

ences since the war. There is, after all, nothing very novel in our conceptions. It has been long known that all inflamed mucous membranes are soothed by the oral administration of solutions of the alkaline salts, and, long before salicylates were introduced, that treatment was accepted and practised for the synovitis of rheumatic fever. If these structures are thus influenced, then why not the acutely catarrhal skin? In chronic cases of seborrhoeic type I have been less successful, and my results have seemed to vary inversely with the chronicity of the affection treated. In agreement with Dr. Barber I believe that the secondary infections with common organisms such as the staphylococci and the acne bacillus, which, as Dr. Whitfield maintains, will flourish on a seborrhoeic terrain, produce a local alteration, a sensitisation (to use a modern term), which is not so easily influenced by alkalisation as are the acute manifestations. It seems to me significant that it is just in this type that applications of tar ointments, &c., and X rays, are so valuable an adjunct to the general measures. It may be, on the other hand, as Dr. Doble claims, that “too much alkali (with a pH value of the urine as low as 7.2 to 8) will, as in his Case 1, cause the lesions to reappear.” I may therefore have overdosed my chronic and less-alkali-tolerant cases, none of which were submitted to the careful tests recorded in Dr. Doble’s paper; for, like Dr. Whitfield, I have hitherto employed only litmus as the reaction indicator.

The solution of the problem and the explanation of the failures seem to me a matter for prolonged biochemical investigation, in which a clinician like myself can play only a subsidiary part.

I am, Sir, yours faithfully,

HENRY C. SEMON.

Queen Anne-street, W., March 7th, 1925.

THE EFFECTS OF AN ANTISERUM UPON CANCER CELLS IN VITRO.

To the Editor of THE LANCET.

SIR,—I have read with great interest the observations by Dr. Thomas Lumsden under the above title published in THE LANCET of Feb. 21st. He concludes that antibodies more or less specific to cancer can be produced by its repeated inoculation into an animal of another species. That is, in his experiments, in vitro cultures of mouse tumour do not survive in the serum of rats and rabbits repeatedly inoculated with mouse tumour.

There is, however, another aspect. In 1912, the late Dr. G. Carrington Purvis¹ (Grahamstown) suggested treatment in cancer by injections of serum obtained from sheep after several inoculations with prepared human cancerous tissue. His object was to prepare “a cytolytic serum or a serum which would kill the cells of cancer occurring in a human being.” I examined some of the serum which he gave me, and I inoculated rats with mouse tumour, as well as the rabbit, sheep, and goat repeatedly with fresh human cancer tissue, and with cancer serum. The results obtained were given in a paper entitled *Some Reactions of the Blood After Cancer Inoculation*, read at the Seventeenth International Congress of Medicine (Therapeutics; Sub-Sect. Chem. Pathol.), London, 1913. In all cases the reactions of the blood were found to run parallel with reactions I had previously obtained with anti-iphtheritic serum and other immune sera. In August, 1924, I repeated the experiments in the sheep, in the Brown Institution, with results which fully confirmed the earlier ones. In no case did the grafts grow. A direct cytolytic effect on the serum in vitro was not investigated, as at the time the stimulation of protective substances or enzyme activity in vivo was aimed at. The clinical side from this point of view has still to be investigated. In only three cases has the serum been employed—

¹ Proc. Scottish Med. Soc., 1912, vol. vi., p. 43.

two by Purvis and one by myself. The condition of the patients, however, was too advanced for any definite conclusion. There is one point which needs consideration. The response to produce an effect was found to vary in the different animals. The sheep was more responsive than the rat, rabbit, and goat. The question arises whether the horse might be more suitable.

I am, Sir, yours faithfully,

J. A. SHAW-MACKENZIE, M.D. Lond.

London, March 5th, 1925.

DISLOCATION OF THE SEMILUNAR BONE

To the Editor of THE LANCET.

SIR,—MR. C. Noon's article on this subject in THE LANCET of Feb. 28th stimulates me to record a similar case which came under my care in the Northampton General Hospital last July. The patient was a man aged 28. He stated that while starting a car the handle became locked with the shaft and threw him over. He was referred to me by the house surgeon a few days after the accident. He was suffering from very severe pain in wrist and hand and was unable to move the fingers. There was general swelling of the wrist. An X ray plate which had been taken from the dorsal aspect showed nothing beyond a slight irregularity of the proximal row of carpal bones. A lateral view of the joint was obtained and this showed forward dislocation of the semilunar bone with rotation of the inferior articular surface to the palmar aspect. Manipulation under anaesthesia failing to reduce the dislocation, an open operation was performed one week after the accident. An incision was made just to the radial side of the tendon of the flexor carpi radialis, avoiding the median nerve, and the dislocation reduced without much difficulty. The wrist was put up on a splint in a slightly flexed position to prevent redislocation. He was encouraged to move his fingers from the first and no splint was used after a fortnight. An excellent functional result was obtained, but three months after the accident flexion and extension movements at the wrist joint were still somewhat limited.—I am, Sir, yours faithfully,

C. COLGATE HOLMAN.

Northampton, March 3rd, 1925.

BISMUTH THERAPY IN SYPHILIS.

To the Editor of THE LANCET.

SIR,—In the leading article upon this subject in THE LANCET of March 7th with reference to my review in the first number of *The British Journal of Venereal Diseases* you mention the omission from the bibliography of Levaditi and Nicolau's paper in the *Annales de l'Institut Pasteur*. The explanation is, that when the bibliography was compiled, it had to be kept within small compass on account of considerations of space. As it turned out, however, it might have been extended. The reference to Levaditi's Harben Lecture (*Journal of State Medicine*, 1924, xxxii., 62) was considered sufficient, and that it would be more easily accessible. In that lecture Levaditi explains the details of the bismoxyl experiments, and also gives a reference to his joint paper with Nicolau (*Compt. rend. Acad. des Sc.*, 1923, clxxvi., 1189). On account of the immense literature on bismuth therapy, a rather rigorous selection had to be made, otherwise the bibliography would have been of greater length than the review. I do not think, however, that anything essential was omitted.

In the next issue of the *B.J.V.D.* there will be found a brief résumé of the main experimental and clinical reasons which compel me to take a different view from Lomholt as to the therapeutic value of mercury.

I am, Sir, yours faithfully,

Manchester, March 7th, 1925.

E. T. BURKE.

THE FULL RESOUNDING LINE.*

To the Editor of THE LANCET.

SIR,—The day before I read, with the most sincere regret, of Sir Clifford Allbutt's death, I had occasion to seek out his Cavendish lecture from my archives. The passage I was in search of was in the middle of the pamphlet, but my eye fell upon the opening paragraphs, and I devoured them as if entranced by the magic of the wording. It is no wonder, I said to myself, that he was accounted a master of graceful and scholarly exposition. Lest your readers should have forgotten, as I had forgotten, the grace and charm with which this courtly old gentleman (and he was such a gentleman) was capable of investing the severest of subjects, I append the passage—"for Delight," as Bacon says of Studies, "for Ornament and for Ability."

"In a little tract of the brain, one so small that an infant might grasp it, lies the engine of all that makes life worth living; and but a few inches below it, where brain and spine unite, is a still smaller tract, where lies the knot of life itself. The upper tract has its times of energy and of repose, by sleep its ravelled sleeve is knitted up; but the knot of life itself knows no pause, no quiescence; let its vigilance be at fault for a few seconds, and the busy frame it governs will drop into silence. Save as a lesson in physiology, these are strange parts to us; yet there is another unsleeping minister of life, our familiar, of whose pulses Harvey was rapt into saying that they 'are of the spirit of the blood acting superiorly to the powers of the elements . . . and that the soul in this spirit and blood is identical with the essence of the stars.' When the pulses of this instrument beat in harmony we feel within us that all is well; when they are jangled and out of tune we are dismayed. Often when in the still night I hear, as I lie, the calm and continual rhythm of my familiar spirit ever winnowing boon from bane, I am lost in wonder at the long procession of these notes of human time, at this perpetual beat of the manifold tides of life. As I listen to its notes they seem to fall into the burden:—

'So schaff' ich am sausen den Webstuhl der Zeit,
Und wirke der Gottheit lebendiges Kleid.'

Sixty times a minute, at least; 3600 times an hour, 86,400 times a day, for us heedful and heedless, does this shuttle of life throb to and fro; for us in tireless periods this pendulum of man's gravitation tells the seconds which can never return."

I am, Sir, yours faithfully,

Harley House, N.W., Feb. 28th. LEONARD WILLIAMS.

* Pope's reference to Dryden in his *Imitations of Horace*:—
"The full resounding line,
The long majestic march, and energy divine."

HEXYL RESORCINOL.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 28th you refer to the new synthetic compound hexyl resorcinol which, when administered by the mouth, renders the urine highly bactericidal, and you refer also to the desirability of obtaining clinical evidence as to the effectiveness of the use of this new drug in the treatment of infections of the genito-urinary tract.

The references made to this discovery in your journal and in other medical journals have brought to us so many request for supplies of this new drug that we have deemed it desirable at once to make some hexyl resorcinol in our laboratories, and this we have now done. While we feel it premature to offer this medicament for sale without further evidence as to its clinical value, we write to say that we shall be pleased to supply it in limited quantity to any medical men who are interested in trying this new remedy.

We are, Sir, yours faithfully,

THE BRITISH DRUG HOUSES, LTD.

16-30, Graham-street, City-road, London, N. 1.

March 4th, 1925.

RED CROSS LIBRARY GIFTS.—The Library Committee of the British Red Cross Society report that during the year ending on Sept. 30th last, 1443 hospitals and kindred institutions were supplied with libraries. Sir Arthur Lawley's wireless appeal brought in over 48,000 books and magazines, and 379,000 were distributed during the year.

Obituary.

JOSEPH ARDERNE ORMEROD, M.D. OXF.,
F.R.C.P. LOND.,

CONSULTING PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL AND
NATIONAL HOSPITAL FOR PARALYSIS AND EPILEPSY;
REGISTRAR, ROYAL COLLEGE OF PHYSICIANS
OF LONDON.

DEATH has removed from our ranks a distinguished physician and scholar in the person of Dr. J. A. Ormerod, the Registrar of the Royal College of Physicians of London.

Dr. Ormerod, who was born in 1848, was the eldest surviving son of the Venerable T. J. Ormerod, Archdeacon of Suffolk, and brother of the late Miss Eleanor Ormerod, the well-known agricultural entomologist. He was educated at Rugby under Dr. Temple, and entered Oxford as a classical scholar at Corpus Christi College, where he won many classical distinctions, including the Chancellor's Prize for Latin verse. Being elected a Fellow of Jesus College, he decided to take up natural science and obtained a first class in the Natural Science Tripos in 1871. He then entered the medical school of St. Bartholomew's Hospital, where he qualified, taking also the M.B. Oxf. in 1875. He was appointed medical registrar to the hospital, took the M.R.C.P. in 1877, and was elected assistant physician in 1893, his tenure of the post of medical registrar being marked by the issue under his authorship of the medical statistics in connexion with St. Bartholomew's Hospital for the five years 1887-92. The period was one in which neurological researches in connexion with clinical medicine were proving particularly fruitful, and the famous work of Hughlings Jackson, David Ferrier, and Victor Horsley was revolutionising both accepted views and actual practice. Ormerod decided to specialise in the study of diseases of the nervous system and was elected physician to the National Hospital for Paralysis and Epilepsy. At this period the staff of the hospital comprised all those just mentioned, while Bastian and Buzzard were also among the consultants.

Both at St. Bartholomew's Hospital and at the National Hospital he displayed the same qualities of quiet acumen, correlating symptoms of all his cases with the other factors, and never fearing to give reasons for the opinions at which he arrived. His accuracy of diagnosis was very high, and those who have attended his demonstrations at the National Hospital will remember many occasions on which his methods of approaching a case, his judgment of the facts, and his prognostications of the probabilities proved a revelation to them, teaching them never forgotten lessons. An epitome of this side of Ormerod's work will be found in his *Guide to the Diseases of the Nervous System*, published now over 30 years ago. Elected a Fellow of the Royal College of Physicians in 1885, he was marked out by his learning and qualities for appointment to examinerships and official lectureships. He examined for the University of Oxford and for the Royal College of Physicians of London, delivered the Harveian Oration and Lumleian Lectures at the Royal College of Physicians of London, and was also a President of the Neurological Section of the Royal Society of Medicine. In the Harveian Oration he followed the usual custom of paying tribute to Harvey and then introducing to the notice of the audience a subject of general medical interest. He took up the vast subject of heredity in relation to disease. There has been much detailed work done along these lines during the 17 years which have elapsed since Ormerod delivered his message, but many of the questions which he then asked remain to be settled, while no better introduction to the work in this direction of Galton, Karl Pearson, Mendel, and Bateson can be found. Similarly a scholar's treatment of the great and difficult subject of hysteria marked Ormerod's Lumleian Lectures. In those

lectures he concentrated attention on the developments associated with the work of Janet and Freud, and while the researches of the former appealed more strongly to him, he did due justice to the latter's profound investigations into the problems involved. His critical spirit led him to outline, however, various objections to which Freud's theories were and are open, and beneath the polish of the essays, imposed upon him by his scholarship, it is not difficult to detect impatience with certain Freudian exuberances.

In 1909 his term of active office at St. Bartholomew's Hospital closed with his election as Registrar of the Royal College of Physicians of London, on the resignation of the late Dr. Edward Liveing. During the 15 years that have elapsed many changes and developments occurred in medical education and in every department of the work of the College, and with them came continually increasing demands on the Registrar. Ormerod never stinted himself in his devotion to his duties; his industry was unwearying and the claims of hospital and private practice were allowed to give way to the calls of his duties as Registrar, when he was appointed consulting physician to both the great hospitals where his clinical work had been done.

One of his colleagues at the College writes: "Ormerod had a full and intimate knowledge of all matters relating to the medical curriculum, and to College laws and traditions, and there was no one of the Presidents who reigned in turn during Ormerod's tenure of office, who was not glad to avail himself of his good judgment and advice. He was for many years, and up to the time of his death, a member of the Committee of Management of the Conjoint Examination Board, and at one time its chairman. And although he was of a non-assertive and retiring disposition, he never failed to form a well-thought-out and decided opinion on any College matter that came before him, and was tenacious in holding to his judgment; when he felt it his duty to do so he urged his views and opinion in the most conciliatory manner. When a decision was come to he set out at once to carry it into practice with the same ready loyalty whether or no it was in conformity with his own wishes. His amiable disposition and his kindly nature made friends of all who knew him and endeared him to those colleagues who were most closely connected with him in carrying on the business of the College. The time and labour he gave to College work is known only to them—he spared no pains and no efforts. During part of the year 1923 his health prevented him from giving his usual daily attendance at the College, but he managed to get through such part of his routine as was possible at his home and came back to regular work in November last, since which time he carried out his full duties with his usual energy and was at work till four days before his death. The influence of Dr. Ormerod's work was much more than was apparent, and his loss will be long felt and will be difficult to replace."

For so learned a man and so competent a writer Ormerod was not a profuse author, but he contributed articles on epidemic cerebro-spinal meningitis, tabes dorsalis, and hysteria to Allbutt and Rolleston's "System of Medicine," and a comparatively small number of clinical articles to THE LANCET and other medical journals. In all that he wrote he appeared as one of the leading neurologists of the country. It is significant that, when authority or support is required by writers for a statement of their own, the reference is frequently to one of Ormerod's papers.

Dr. Ormerod married, in 1878, Mary Ellen, daughter of Edward Milner, F.L.S., of Dulwich, who died at the beginning of the year. By her he had four sons and four daughters. One of his sons is Chief Constable of Sussex, and one is Professor of Greek in the University of Leeds. One of his daughters married Dr. J. B. Christopherson.

J. J. GRAHAM BROWN, M.D., F.R.C.P. EDIN.

By the death on Feb. 28th of Dr. J. J. Graham Brown, consulting physician to the Royal Infirmary, at his residence in Edinburgh, another link between the old school of medicine and the new is severed. Graham Brown was born in Edinburgh in 1853 and was a son of the Rev. Thomas Brown, D.D., who is still remembered in Scotland by his work, "The Annals of the Disruption." He was educated at the Edinburgh Academy, afterwards proceeding to Edinburgh University, where he graduated M.B., C.M. in 1875. After holding the usual hospital appointments, together with the office of Senior President of the Royal Medical Society, he went abroad and studied in the Universities of Berlin, Vienna, and Prague. On his return in 1880 he settled down in practice as a physician in Edinburgh. In 1882 he was elected a Fellow of the Royal College of Physicians of Edinburgh. During an epidemic of cholera prevailing in Spain in 1885 Dr. Graham Brown was selected as a member of the commission of investigation appointed by the Royal Society, and with Prof. Charles Sherrington and Prof. C. S. Roy carried out valuable research work on the spot. Later he collaborated with Prof. Roy in the study of the capillary blood pressure. In 1897 he was appointed assistant physician to the Royal Infirmary, Edinburgh, and in 1912 became full physician in charge of wards; this post he occupied till 1919, when he was appointed to the consultant staff. During a great part of his time at the Royal Infirmary he was medical attendant to the nursing staff of the hospital, and for the long period of 44 years he held the post as principal medical officer of the Scottish Life Assurance Company.

Dr. Graham Brown was a successful and experienced teacher of clinical medicine, and his lectures will be remembered by his students for the comprehensive detail with which they were furnished. He was also for many years University lecturer in neurology. His contributions to medical literature were considerable. Amongst them are: "A Manual of Clinical Methods," a treatise which reached its fourth edition in 1897, and "The Treatment of Nervous Diseases" (1905). In this book the author endeavoured—and his endeavour was successful—to stimulate independent thought concerning rational treatment of nervous disease. The basis of this treatment was the author's belief that the physiological function of the particular part of the nervous system which in each individual case happened to be affected determined the variety of treatment required. Contributions to journals include "The Therapeutics of Diphtheria, an Experimental Enquiry," "On Change in the Circulation Produced by Rise of Temperature," "The Perigraph, an Instrument for Delineating the Shape of the Thorax," and "Ataxia: a Symptom." In addition his non-medical writings were many and varied. He acted as President of the Royal College of Physicians of Edinburgh from the years 1912 to 1914 and in 1912 and 1918 delivered the Morison lectures to the College, and was a Fellow of the Royal Society of Edinburgh. He was at all times essentially a skilful physician of sound judgment and common sense. In manner he was modest and unassuming, and his work was at all times characterised by earnestness and accuracy.

He is survived by three sons and one daughter, the eldest son being Prof. T. Graham Brown, of the Welsh National Medical School.

THOMAS LOWE BUNTING, M.D. EDIN.,
B.H.Y., D.P.H. DURH.

Dr. Thomas Lowe Bunting, honorary physician in charge of the X ray department at the Sick Children's Hospital, Newcastle-on-Tyne, died recently from angina pectoris at the age of 57. Born at Heanor in Derbyshire, he graduated M.B., C.M. at Edinburgh University in 1889, and after a short period as asylum medical officer near Buxton he

settled down in general practice in Newcastle. In 1904 he proceeded to the M.D., gaining a gold medal for a thesis on the Histology of the Lymphatic Glands, which was the fruit of a comparative investigation over a very wide field in the animal kingdom, and his work won for him, in addition to University honours, the Fellowship of the Royal Society of Edinburgh. In 1911 he took the degree of Bachelor of Hygiene and the Diploma of Public Health, both with honours, at the University of Durham, and shortly afterwards turned from general practice to the study of radiology. Just before the outbreak of the war he had become radiologist to the Sick Children's Hospital at Newcastle. In the autumn of 1914 he was appointed radiologist to the Northumberland War Hospital, where he developed and maintained the efficient service of the department in his charge. His contributions to radiological journals on radiological methods of treatment and diagnosis of disease demonstrated both his scientific skill and his powers of deductive reasoning. Dr. Bunting was also interested in social questions, an interest which dated from his student days when he was associated with Prof. Patrick Geddes's work in founding the Town and Gown Association, for promoting students' sympathies in the welfare of the poor of Edinburgh.

In medical politics he was a leading figure in North-Eastern England, and of this branch of his activities a colleague writes: "Dr. Bunting was first interested in medico-political matters through his being on the old Northumberland Contract Committee before it was taken over by the British Medical Association. The agitation in 1912 over the National Health Insurance Act came to him as a call for work on behalf of the profession. This led to his devoting an increasing amount of thought and time to medical politics. He became secretary of the Newcastle Panel Committee and one of the elected medical representatives on the Newcastle Insurance Committee and secretary of the North-Eastern group of panel committees. In Newcastle he was the guide and adviser of the panel committee in general and of many individual doctors in particular."

ALFRED JOHN SMITH, M.B., CH.B. R.U.I.,
F.R.C.S. IREL.

THE death of Dr. Alfred Smith, professor of midwifery in University College, Dublin, occurred on Feb. 20th in Dublin after a very brief illness at the age of 59. For some years he had been much troubled with a painful and crippling form of arthritis, but his general health remained good. Two days before his death he was struck down by pneumonia, and he rapidly succumbed. A native of Co. Cavan, Alfred Smith was educated at the Cecilia-street School of Medicine in Dublin, and he also studied at Vienna, Berlin, and Leipzig. In 1884 he graduated in medicine and surgery in the Royal University of Ireland, and became M.A.O. the following year. Shortly after qualification he served for three years as assistant Master in the Rotunda Hospital under the late Sir Arthur Macan. In 1891 he was appointed professor of midwifery in the Cecilia-street School of Medicine, and since 1908 he has held the chair of midwifery in the School of University College. He was for many years gynaecologist to St. Vincent's Hospital and only retired from that post last year. He had been more than once President of the Section of Obstetrics of the Royal Academy of Medicine in Ireland, and while his health allowed he rarely missed one of its meetings. He also contributed many papers to its Proceedings, and wrote widely on his specialty in gynaecological and medical journals. A man of much vigour and originality of thought, Alfred Smith was a skilful and bold surgeon and a very successful teacher. In spite of severe physical disability in recent years he continued to perform as much of his work as was possible, and maintained a cheerful courage which commanded admiration.

CLAUDE BUCHANAN KER, M.D., F.R.C.P. EDIN.,
MEDICAL SUPERINTENDENT, CITY HOSPITAL,
EDINBURGH.

It is with deep regret that we have to announce the death of Dr. Claude B. Ker, from pneumonia, on March 4th, in his fifty-eighth year. His untimely death is a grievous loss to the City of Edinburgh and to its medical school.

Claude B. Ker was born and educated at Cheltenham and was the son of Dr. Claudius Buchanan Ker. He studied medicine at Edinburgh University, where he graduated M.B., C.M. in 1890. After holding house appointments in the Royal Infirmary and in the Simpson Memorial Hospital, he became interested in mental work and took the certificate of the Medical Psychological Association in 1891. Impressed by the possibilities presented by the study of infectious diseases his interest turned to this branch of study, and in 1896 he wrote his M.D. thesis on typhoid fever, for which he was awarded a gold medal. In that year he succeeded Dr. Wood as superintendent at the old fever hospital at High School Yards, Edinburgh, a post which was both difficult and dangerous; in fact, Dr. Wood also died of pneumonia in the prosecution of his duties. Dr. Ker saw possibilities of providing the city with a fever hospital worthy of its traditions and its medical school, and with the aid of the late Sir Henry Littlejohn, then medical officer of health, and of the late Baillie Pollard, he worked hard and unceasingly till in 1903 he saw his object achieved when the fever hospital, in its unsatisfactory position in Infirmary-street, was closed down and the splendid set of buildings to the south of Edinburgh, well removed from the city itself, were opened as the City Fever Hospital.

He became a Member of the Royal College of Physicians of Edinburgh in 1898 and was elected a Fellow of the College in 1901, and later became a member of the Council. He represented the College on the infirmary board of management and on the Scottish Board of the College of Nursing. He was University lecturer in infectious diseases. As a research worker he showed the most thorough care in details, and he was a pioneer in introducing in this country the Schick test. He was the author of "A Manual of Fevers" and "Infectious Diseases, a Practical Textbook," and by these two books he will be long remembered. "A Manual of Fevers" was first published in 1911 and the second edition appeared in 1922. Although primarily intended for the use of students, the manual has more than justified the hope expressed by the author in his first preface, "that it might not cease to be useful when its owner had entered upon general practice." The first edition of "Infectious Diseases" appeared in 1909. It is an authoritative and valuable book dealing with the diseases commonly met with in the British Isles, and is clearly the work of a skilful, observant, and experienced physician. The second edition, adequately supplemented by a study of recent contemporary literature, was published in 1920. His contributions to medical journals were numerous, and include "Naphthols in Enteric Fever," "An Outbreak of Typhus Fevers," "Isolation and Quarantine Periods." To our own columns he made editorial contributions whenever requested, and it happens pathetically that one such article appears this week. His medical reputation in the specialty of infectious diseases is not confined to Britain, for his works are well known abroad, especially in America, as University lecturer on infectious diseases.

We are indebted to Dr. Andrew Balfour for the following appreciation. He writes: "I would like to tell, albeit briefly and imperfectly, what manner of man was 'Claude B' and how he came to gain the affection and esteem of all who came closely into touch with him. Ker was intensely alive, intensely human, full of humour and sympathy, and utterly devoid of anything savouring of advertisement or self-seeking. Withal he was a man of great force of

character with strong likes and dislikes and capable—very capable, of standing up for what he conceived to be the right. Yet he very rarely found himself in conflict, for he possessed much tact and discretion and a store of patience which time and again stood him in good stead. I first met him in 1896 when, having been appointed assistant physician at the Edinburgh City Hospital, I called at the Old Pest House, as we called it, at the foot of Infirmary-street to be interviewed by the medical superintendent. I was shown into a small room and presently there entered with a brisk step and a curious swing of the body a man of medium height who wore a monocle through which an eye afflicted, though not unpleasantly, by an internal strabismus surveyed me searchingly. He wore a blue velvet tasselled skull cap, was clad in a long white overall, and carried a wooden stethoscope of prodigious length. He spoke like an Englishman, kept flicking cigarette ash on the floor, and his manner was decisive, even a little brusque. He seemed to me rather nervous, and I gathered he did not quite approve of my appointment, which had been made at the instance of Sir Henry Littlejohn. Certainly he made it quite plain that I was there to carry out his instructions, though he indicated, also quite clearly, that he realised I might have views of my own and that he was prepared to accord them every consideration. As I told him long afterwards, my first thought was, 'How can I work under this man?' Yet very soon I had fallen, as did all his assistants and all his residents, under the spell of his personality. I realised that his was a choice spirit, that he was possessed of much originality of mind, that he was well-read and erudite, that he had wide interests, and that he was gifted with vision, though in no sense of the word a visionary. I had some slight acquaintance with French history and I found that Ker was a great student of the Napoleonic era and I never tired of hearing him descant on Buonaparte's strategy and recounting how he had secured the prints, statuettes, and relics with which his room was filled. Beyond doubt he might have been an admirable professor of military history, for he had a flair for tactics, and it was probably his military bent which led him to take a Commission, first in the Volunteers and then in the Territorials. He was interested in sport and athletics, especially in Rugby football, had a keen sense of humour, and wrote most amusing and delightful letters in verse and prose.

"We soon formed a friendship which stood the test of time and distance, and the memory of which will ever remain precious and fragrant. But Ker had a host of friends. It was the custom then, and I understand it remained a custom, for his old residents to gather in his room on Sunday nights. No more profitable evenings can be imagined than these informal gatherings in the venerable building full of memories of Sir Walter Scott, of the anatomist Knox, and of Burke and Hare, the West Port murderers; Ker delighted in the history of the dingy pile, as he delighted in everything pertaining to Edinburgh, for, though not a son of the city, though not a pure-blooded Scot, and though educated at an English public school, the fascination of Auld Reekie held him in its grip.

"It was largely Ker's efforts that made the present City Hospital a credit to Edinburgh, while it is undoubtedly due in the main to him that it attained such a high degree of efficiency. No man was ever more popular with his staff. He had a way of getting the best out of them and set an example of devotion to duty and of tireless yet painstaking energy which acted as a stimulus to all. He found relaxation chiefly in his family life, in travel, and in the society of his friends. At home he was a member of a small literary club which, beginning as the Heptagon, became an Octagon. Its membership was confined to a few medical men who met at each other's houses. He never missed a meeting throughout the 25 years of the club's existence."

Stricken with influenza Ker would not give in, for he had under his charge a desperate and septic case of scarlet fever in which he was deeply interested. Despite vile and inclement weather he was up and about until literally driven to the bed where he died. His memory will remain ever green in the hearts of those who knew his worth and valued his company and his friendship.

The fine City Hospital stands as a fitting memorial to his memory. He is survived by his widow, two sons and three daughters, to whom we extend our sympathy.

Medical News.

UNIVERSITY OF CAMBRIDGE: Pinsent - Darwin Studentship in Mental Pathology.—This studentship was founded in 1924 by the benefaction of Mrs. Pinsent and Sir Horace and Lady Darwin for the purpose of promoting research into any problem which may have a bearing on mental defects, diseases, or disorders. The studentship is of the annual value of about £200 and is tenable for three years in the first instance. The student may be of either sex and need not be a member of the University of Cambridge. He shall engage in original research in Cambridge or elsewhere, but may, subject to the consent of the managers, carry on educational or other work concurrently. Further particulars of the studentship may be obtained from the Registry of the University of Cambridge, and applications for appointment to the studentship should be sent before May 1st, 1925, to the Secretary, Pinsent-Darwin Studentship, Psychological Laboratory, Cambridge.

UNIVERSITY OF LONDON: London Hospital Dental School.—A special lecture Concerning Misplaced Teeth will be given by Mr. W. H. Dolamore, L.D.S., on Tuesday, March 24th, at 5 P.M., in the anatomical theatre of the hospital. Members of the dental profession and students are invited to attend.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following demonstrations of specimens in the Museum will be given by Sir Arthur Keith in the theatre of the College in Lincoln's Inn-fields on Fridays at 5 P.M.: March 20th, Specimens illustrating the Surgical Anatomy of the Middle Ear; March 27th, Specimen illustrating the Commoner Congenital Malformations of the Lower Limb; April 3rd, Acromegaly and Allied Disorders of Growth. The demonstrations are open to advanced students and medical practitioners.

DISEASES OF CHILDREN.—A post-graduate holiday course of clinical lectures, arranged by the Faculté de Médecine de Paris, on diseases of children will be held at the Hôpital des Enfants Malades, from April 6th to 18th. Further information may be obtained from the hospital, 149, Rue de Sèvres, Paris.

GUY'S HOSPITAL DENTAL SCHOOL.—A dental travelling scholarship, enabling the holder to take out a course of at least six months' practical work in dental surgery at one or more colonial or foreign dental schools, will be awarded by the treasurer, upon the recommendation of the Dental Council, in July, 1925. Candidates must be registered Licentiates in Dental Surgery of the Royal College of Surgeons of England or holders of a dental degree of a British university who have been educated at Guy's Hospital Dental School. The total value of the scholarship will be £250. Further information may be obtained from the Treasurer, Guy's Hospital, London, S.E. 1.

ROYAL DEVON AND EXETER HOSPITAL.—It is hoped that during the present year a department for the treatment of cancer will be opened at this hospital. A deep therapy apparatus has been fitted up, and arrangements are being made for a supply of radium. Some of the beds have had to be closed for lack of money.

BRIGHTON: ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN.—Erected in 1881, this fine building in the Dyke-road, Brighton, required important replacements during the past year, so that the year ended with a bank overdraft of £1094. At the annual meeting of the governors on Feb. 27th Mr. Harry Preston, who presided, promised to undertake the liquidation of the debt. The governors accorded cordial recognition for the help rendered by the Sussex Provident Scheme to the finances, and agreed to make a contribution towards the salary of an appeal secretary for the fund, as it was realised that the membership of the scheme might be greatly extended to the advantage of all the co-operating hospitals.

CHELSEA CLINICAL SOCIETY.—A meeting of this society will take place at the Club Room, St. George's Hospital (entrance in Knightsbridge), on Tuesday, March 17th, at 8.30 P.M. precisely, when a discussion on Some Diseases Common to Old Age will be opened by Dr. Leonard Williams and Mr. Kenneth Walker.

Mr. Percy Dunn, on resigning the editorship of the *Bulletin of the Fellowship of Medicine*, has been unanimously elected by the Executive Committee an honorary member of the Fellowship, in recognition of his services during the past five years.

ITALIAN CONGRESS OF MEDICAL RADIOLOGY.—The Sixth Italian Congress of Medical Radiology will be held in Trieste from May 7th to 10th. Communications will be read on the Radiology of the Biliary Passages, by Prof. Pasquale Tandoia, of Naples; on the Radiology of Lung Affections, by Prof. G. Pesci, of Genoa; and on the Radiotherapy of the Endocrine Glands, by Prof. E. Milani, of Rome. Full particulars may be obtained from the President of the Congress, Dr. Maximilian Gortan, at the Ospedale Civico Regina Elena, Trieste, Italy.

ROYAL SOCIETY OF MEDICINE.—The adjourned discussion on the opening papers of the general debate on Non-Specific Disturbances of Health due to Vitamin Deficiency, which was held by the Society on Feb. 16th, will be resumed on Monday, March 23rd, at 5.30 P.M., at 1, Wimpole-street, W. The papers read on Feb. 16th by Dr. Leonard Williams, Colonel Robert McCarrison, Dr. W. Cramer, and Dr. G. M. Findlay were reported in THE LANCET of Feb. 21st, p. 385. The original speeches can be read in full in the March number of the Society's Proceedings, and those who wish an epitome can obtain galley slips on application at the Society's office. The subject will again be opened by Dr. Williams, and the first speakers in a general discussion of these papers will be Dr. William Hunter and Dr. Robert Hutchison.

Nichols Prize.—In accordance with the will of the late Dr. Robert Thomas Nichols, the Royal Society of Medicine will offer, every three years, a prize of £250, open to any British subject, for the most valuable contribution towards the Discovery of the Causes and the Prevention of Death in Childhood from Septicæmia. The first award of the prize has been made to Dr. George Geddes, of Heywood, Lancs, for his essay entitled the Causation, Prevention, and Treatment of Puerperal Septicæmia. Work submitted for the next award should reach the secretary of the society not later than Oct. 1st, 1927, and must be marked "Nichols Prize." It must be typewritten or printed, in English, and accompanied by the name and address of the author. Work already published may be submitted, provided that publication was not earlier than Oct. 1st, 1924. If no work of sufficient merit be submitted, the prize will not be awarded.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A discussion on Post-graduate Study in London will be held at the house of the Royal Society of Medicine, 1, Wimpole-street, W., on March 18th, at 6 P.M. Sir Arbuthnot Lane will preside, and the freest criticism will be welcomed of the present facilities offered through the Fellowship with suggestions for their improvement. It is hoped that a large attendance of the medical profession, whether resident at home or overseas, will take part in the discussion.—Syllabuses of the following courses during March are now available: A course at the Brompton Hospital for Consumption and other Diseases of the Chest from March 16th to 28th; special reference to treatment by artificial pneumothorax will be made, but other diseases of the lungs besides phthisis as well as diseases of the heart will be dealt with and illustrated by frequent demonstrations of cases.—A course in Gynaecology will be held at the Chelsea Hospital for Women from March 16th to 28th, which will include clinical lectures and demonstrations and the opportunity of witnessing typical operations.—An intensive post-graduate course, including all departments of the practice of an active general hospital, will be held at the Royal Northern Hospital from March 23rd to April 4th. It will comprise demonstrations, clinics, operations, exhibitions of selected cases as well as formal lectures. Application for admission to the course should be made by March 16th.—During April there will be courses held at the Queen's Hospital for Children, St. Mark's Hospital for Diseases of the Rectum, and at the Hampstead General Hospital.—A practical course in Anæsthetics is being arranged and will begin approximately on March 23rd. The course will continue for a week, and opportunity will be afforded for post-graduates to obtain instruction in throat, nose, dental, abdominal, and nerve anæsthesia. Early application is desirable. Further information as to courses may be obtained from the Secretary to the Fellowship, 1, Wimpole-street, London, W.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this Society will be held to-day, Friday, at the Miller General Hospital, Greenwich, S.E., at 8.45 P.M., when a paper on Some Interesting Abdominal Cases will be read by Mr. Hugh Davies. Dr. H. S. Knight, the President, will occupy the chair.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—The area of operations of the King's Fund has been extended from a radius of nine miles of Charing Cross to a radius of 11 miles of St. Paul's Cathedral. Hospitals within this area, desiring to participate in the grants made by the Fund for the year 1925, must make application before March 31st to the Hon. Secretaries of the Fund, at 7, Walbrook, E.C. 4. Applications will also be considered from convalescent homes which are situated within the above boundaries or which, being situated outside, take a large proportion of patients from London.

ENTRY OF TUBERCULOUS IMMIGRANTS INTO SOUTH AFRICA.—A resolution has been adopted at a recent meeting of the Council of Public Health of Pretoria to the effect that more drastic steps should be taken to prevent tuberculous immigrants from entering the Union of South Africa, and that the plan adopted by Canada should be followed by the Union. Under this scheme all immigrants are examined by the ship's surgeon during the voyage, and a report on each is furnished to the immigration officer and port health officer at the port of arrival.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Friday, March 27th, in the Town Hall, Leicester, when discussions will take place on Maternity and Child Welfare Work, to be opened by Dr. Helen Dent, maternity and child welfare medical officer, and Mrs. C. J. Bond, J.P., and on Smoke Abatement, to be opened by F. G. McHugh, chief sanitary inspector. The chair will be taken at 3.30 P.M. by Prof. H. R. Kenwood. On Saturday, March 28th, visits will be paid to local health centres and various public institutions. Those proposing to attend the meetings and the visits should notify the hon. local secretary, Dr. C. Killick Millard, medical officer of health, Health Department, Grey Friars, Leicester, not later than March 20th.

ARTIFICIAL SUNLIGHT FOR LEEDS.—In THE LANCET of Jan. 3rd attention was called to the need of "artificial sunlight" treatment at Leeds General Infirmary. The lack is now about to be supplied by two donors, one of whom has undertaken to provide all the necessary apparatus, while the other has contributed a sum sufficient to erect a new building which will house the deep X ray therapy department already in existence and the new appliances for the adoption of the ultra-violet ray treatment. The new building will contain five large rooms equipped for the sunlight treatment, together with dressing and waiting rooms and offices, and five cubicles for X ray treatment of malignant disease. It is expected that the extension will be completed in about three months.

A GROUP of medical officers of health for the London boroughs have visited the Oxo factory, where the processes of manufacture of the products were explained and a demonstration was given of the way in which the "oxoid" gland preparations are physiologically standardised. A cinema film of life on the Oxo cattle farms was also shown. Dr. D. L. Thomas, M.O. for Stepney, in returning the thanks of the visitors for an interesting afternoon, stated that they were all impressed with the high standard of hygienic conditions existing in the factory, the quality of the preparations, and the trouble taken in looking after the comfort and happiness of the workers. We understand that further visits are being arranged, and any of our readers desirous of availing themselves of these opportunities should communicate with Oxo Limited, Southwark Bridge, S.E.

THE LATE DR. J. W. SMITH.—John Williamson Smith, M.D. Glasg., of Radcliffe, Lancs, honorary ophthalmic surgeon to the Bury Infirmary, died in distressing circumstances on Feb. 28th as the result of accidental poisoning by the exhaust gases of his motor-car. On the previous afternoon he was found unconscious in his garage, and medical aid did not avail to save his life. It was stated at the inquest that while making some adjustment to his car, as the engine was running, he had inhaled the carbon monoxide of the exhaust fumes. Dr. Smith was a native of Glasgow, and was 45 years of age. He graduated M.B., Ch.B. at Glasgow University in 1902, and obtained the M.D. with commendation in 1908. He practised for 22 years in Radcliffe, and in addition to the work of general practitioner he specialised in diseases of the eye. His sad and untimely death is deeply regretted by his colleagues and friends.

METROPOLITAN ASYLUMS BOARD.—A three-months course of lectures and demonstrations dealing with hospital administration for the Diploma in Public Health will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., by Dr. E. W. Goodall, medical superintendent, on Mondays and Thursdays at 4.45 P.M., and alternate Saturdays at 10.30 A.M., beginning Monday, April 6th. This course complies with the requirements of the revised regulations of the General Medical Council.

PROBLEMS OF HOSPITAL FINANCE AT PLYMOUTH.—At a recent conference of members of the boards of management of the local hospitals, the Plymouth Voluntary Hospitals Committee, and others, Lord Onslow, the chairman of the Voluntary Hospitals Committee, expressed his belief that mass collections were the only means by which a really considerable increase of income could be obtained. It was essential to broaden the basis of subscription and to reduce expenditure by organisation and co-operation. He promised to discuss with his colleagues the possibilities of recommending a Government grant for the training of nurses. Mr. S. R. Lamb, explaining the working of the penny-in-the-pound system in that city, said it was neither an insurance society nor a slate club, and it was not pretended that it was actuarially sound.—The annual report of the Plymouth Voluntary Hospitals Committee records that the two closed wards at the South Devon and East Cornwall Hospital have been reopened, and that a ward in the Homoeopathic Hospital has been brought into use. The penny-in-the-pound scheme, launched in 1923, has progressed beyond expectation and now has well over 20,000 members and promises to be much larger, since the scheme is now establishing itself in the country districts. During the past financial year the contributory scheme patients cost the hospitals £8697, towards which it provided £7632.

DONATIONS AND BEQUESTS.—Mr. William Morgan Lewis, J.P., colliery proprietor, Cardiff, left £1250 to King Edward VII. Hospital, Cardiff, for the endowment of a Dorothy Lewis bed, in memory of his late daughter.—Mr. Charles Arthur Head, Stockton-on-Tees, left £500 to the Stockton and Thornaby Hospital, and £100 each to the Ropner Convalescent Home and the National Society for the Prevention of Cruelty to Children.—The Right Hon. William Drennan Andrews, a judge of the Irish High Court, besides other bequests, left £500 to the Royal Victoria Eye and Ear Hospital, Dublin, £300 each to Sir Patrick Dun's Hospital, the Rotunda Hospital, the Royal Hospital for Incurables, the National Children's Hospital, the Stewart Institution for Idiot and Imbecile Children, and the Cumber District Nursing Society, Dublin, and £200 each to the Charitable Infirmary, Dublin, and the Royal National Hospital for Consumption for Ireland.—Dr. John B. Stelfox, of Birkdale, has made a gift of £2000 to the North of England Children's Sanatorium at Southport for the endowment of two beds for the benefit of children of Middleton and Lees.—The students of the University of Liverpool on Panto Day raised £3800—a record figure—for the hospitals.—Sir William Earnshaw Cooper, C.I.E., Guernsey, who left estate of the gross value of £55,085, gave 30,000 rupees to the Ramsay Hospital, Naini Tal, India, for the maintenance of the Cooper Ward for poor and non-paying patients; 10,000 rupees each to the Summer Home for Soldiers' Children, Mussori, and Allahabad Free School and Orphanage. After the fulfilment of a number of personal bequests, the residue of the property to his wife for life, and then as to one-half to Dr. Barnardo's Homes.—An anonymous donor has given £3500 in trust securities to the Manchester Royal Infirmary, the income to be used for the purchase of apparatus for the X ray department.—The Manchester University students' "rag" on Shrove Tuesday produced some £5808 for the medical charities of the city, or more than double the collection last year.—By the will of the late Mrs. Margaret Alice Dalton-Burgess, of Bristol, the testator left £2000 to the Zenana Bible and Medical Mission, and after certain bequests and private legacies the residue of the estate to, amongst other charities, the Cosham Memorial Hospital, Bristol, the Bristol Eye Infirmary, the Children's Hospital at Bristol, the Bristol Royal Infirmary, the Bristol General Hospital, the Clifton Zoological Gardens, and a further £2000 to the Zenana Bible and Medical Mission.—Mrs. Sarah Scholes Wrigley, of The Wood, Windermere, Westmorland, left £1000 each to the Royal Asylum, Lancaster, and the Royal National Lifeboat Institution, £500 each to the Westmorland County Hospital, Kendal, the Dispensary Hospital, Bury, the Manchester Royal Eye Hospital, the Manchester Domestic Mission, Manchester College, Oxford, the United Kingdom Beneficent Association, Railway Servants' Benevolent Institution, the Brompton Cancer Hospital, London, the Queen's Hospital for Sick Children, Hackney, London. Half of the residue of her property, after private bequests, she left equally between the above-named charities. The total sum available for charities will amount to about £40,000.

MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of this Association will be held on Wednesday, March 18th, at 3 P.M., at the Clothworkers' Hall, Mincing-lane, London, E.C. The chair will be taken by Sir Charles C. Wakefield, President of the Association.

MEMORIAL TO DR. F. W. A. GODFREY.—An appeal for a fund for establishing a memorial to the late Dr. F. W. A. Godfrey has been issued by the Mayor of Scarborough and other influential local signatories, the object being to associate with Dr. Godfrey's name an endowment of new beds in the Scarborough Hospital, or to make any other permanent provision for an institution to whose interests Dr. Godfrey was for 30 years devoted. Contributions amounting to nearly £500 have already been received, and cheques payable to the Godfrey Memorial Fund should be sent to Mr. William Boyes, the Mayor of Scarborough, at the town hall of the city.

SPIRITUAL HEALING.—In July, 1924, a group of medical men was formed to make an investigation into this subject in order to prepare and issue a statement on the question. Conferences with representatives selected by the churches are being held, and other avenues of research are being explored. The members of the group are: Sir Robert Armstrong-Jones, Dr. Helen Boyle, Dr. H. C. Bristowe, Dr. William Brown, Dr. Charles Buttar, Mr. W. McAdam Eccles, Dr. Letitia Fairfield, Dr. E. R. Fothergill (chairman), Dr. J. G. Porter-Phillips, Dr. Mary Scharlieb, Sir J. Purves-Stewart, Mr. E. B. Turner, Dr. Jane Walker, and Dr. Stanley Bousfield, hon. secretary, to whom communications may be addressed at 10, Albion-street, London, W. 2.

The Services.

ROYAL ARMY MEDICAL CORPS.

MILITIA.

Capt. J. A. Pridham to be Maj.

TERRITORIAL ARMY.

Capt. R. W. Smith resigns his commn. and retains his rank.

Capt. J. H. Iles (late R.A.M.C.) to be Lt.

L. C. F. Chevens to be Lt.

Lt.-Col. H. J. Walker resigns his commn. and retains his rank.

Lt. F. R. Daniel (late R.F.A.T.F.) to be Lt.

Supernumery for Service with O.T.C.—Capt. A. Fowler (late R.A.M.C., S.R.) to be Capt., for service with the Medical Unit, Aberdeen University, O.T.C.

Sanitary Companies.—Capt. (Prov.) A. Massey resigns his commn.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt. M. D. Mackenzie, from the Active List, to be Capt.

ROYAL AIR FORCE.

L. C. Palmer-Jones and T. W. Wilson are granted short service commissions as Flying Officers, for three years on the Active List.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 28TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 141; scarlet fever, 1729; diphtheria, 969; enteric fever, 33; pneumonia, 1306; puerperal fever, 54; cerebro-spinal fever, 7; acute poliomyelitis, 7; acute polio-encephalitis, 1; encephalitis lethargica, 61; relapsing fever, 1; dysentery, 3; ophthalmia neonatorum, 106. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 8 from the number for the preceding week. Twenty cases were notified from Derbyshire, 7 from Northumberland, 30 from Notts, 36 from Yorks, North Riding (Middlesbrough, C.B., 34), and 13 from Yorks, West Riding.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 98 from measles, 18 from scarlet fever, 120 from whooping-cough, 39 from diphtheria, and 346 from influenza, as compared with 352, 354, 291, and 202 in the four preceding weeks. In London itself the deaths from influenza numbered 64, from whooping-cough 37, and from diphtheria 13.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, MARCH 10TH.

THERAPEUTIC SUBSTANCES BILL.

The Marquess of SALISBURY (Lord Privy Seal), in moving the second reading of the Therapeutic Substances Bill, said that it had passed through their lordships House last session very much in its present form, but unfortunately it did not pass through the House of Commons. The principle of the measure was to prevent users of certain therapeutic substances from being misled as to their character. If it was necessary to ensure a proper standard in regard to ordinary substances it was specially necessary in the case of therapeutic substances on which the health of the users depended. The medical profession could not be rightly advised as to what they were prescribing unless there was some standard in regard to these substances on which reliance could be placed. Some of these substances were highly poisonous unless they were prepared in properly graded quantities. These substances included sera, vaccines, and special preparations such as salvarsan. In many other countries, including Norway, Sweden, France, Germany, Italy, Spain, and the United States, the manufacture of these substances was subjected to most rigid inspection. Denmark had gone still further and there such substances were only allowed to be prepared in State institutions. The procedure proposed in the Bill was that these substances should be subject to licences both in respect of the persons who prepared them and the place in which they were prepared. The conditions under which they could be prepared were to be laid down in regulations which would be laid before Parliament. The regulations would be made by a joint committee consisting of the Minister of Health, the Secretary for Scotland, and the Minister for Home Affairs in Northern Ireland. An advisory committee was also to be appointed consisting of representatives of the three departments named and, in addition, one representative each of the Medical Research Council, the General Medical Council, and the Pharmaceutical Society. Certain substances used for research purposes would be obtainable for that purpose under licence at strengths other than the standard strength used for medical purposes. This subject had been before the appropriate authority of the League of Nations and they had decided to move the various Governments to protect the standard of purity of these therapeutic substances.

Viscount HALDANE called attention to Subsection 2 of Clause 3 which he said compelled a man of science who needed these substances for research to obtain a special licence in order to use them. In many cases scientists would want them at short notice, and from what he knew of these men they would not apply for licences. Thus, this subsection might interfere with very valuable research work, and he suggested that a special instruction should be given to the Government department concerned that where a scientist required a small quantity of a particular substance for the purpose of research, he should be allowed to obtain it without the necessity for a licence.

The Marquess of SALISBURY said the point raised by the noble Viscount would be most carefully considered by the Government, and he would see whether it was possible to deal with the matter in committee.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 4TH.

Medical Certificates for Motor Drivers.

Mr. STEPHEN MITCHELL asked the Minister of Transport if he would introduce legislation to compel all applicants for a licence to drive motor vehicles to produce a medical certificate as to their mental and physical fitness.—Colonel W. ASHLEY replied: I am disposed to agree with the conclusion reached by the Departmental Committee on the Taxation and Regulation of Road Vehicles, as set out in their second interim report, that the difficulties in giving effect to the suggestion contained in my hon. friend's question render its adoption impracticable.

Royal (Dick) Veterinary College, Edinburgh.

Mr. J. B. COUPER asked the Secretary for Scotland the amount of grant paid annually by the Scottish Board of Agriculture to the Royal (Dick) Veterinary College, Edinburgh; and whether it will be affected by the decision to withdraw the annual grant from the Glasgow Veterinary College.—Sir J. GILMOUR replied: The annual grant paid to the Royal (Dick) Veterinary College by the Board is £4000,

orsuchsmallersum as will meet the deficit on the maintenance of the College. The grant sanctioned for the current year is £3722. The reply to the second part of the question is in the negative.

THURSDAY, MARCH 5TH.

Permanent Medical Appointments.

Major-General Sir RICHARD LUCE asked the Minister of Pensions what steps were being taken to make permanent medical appointments under the Ministry; and if English nationality and active service in the late war would be taken into special consideration in making selections for permanent appointments.—Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: It has been decided to create 48 permanent established appointments on the medical staff of the Ministry and to fill those appointments from the existing full-time temporary medical staff. All members of the full-time temporary staff who are within the prescribed age-limit, of eligibility have been notified of the conditions of the appointments, and a Selection Committee presided over by the First Civil Service Commissioner is at present engaged in interviewing a selected number of the candidates. All candidates must satisfy the general rule of the Civil Service as regards British nationality and must have served in His Majesty's forces in the late war.

Ex-Service Men in West Ham Mental Hospital.

Mr. GROVES asked the Minister of Pensions whether the 52 ex-Service men, at present inmates of the West Ham mental hospital at Goodmayes, Essex, were chargeable to the local Poor-law union or whether they were maintained from national funds; and if so, to what amount weekly was the local authority reimbursed.—Lieut.-Colonel G. F. STANLEY replied: I understand that there are 50 Service patients, that is, men whose disability is due to war service, in the hospital referred to for whom the Ministry are paying the cost of maintenance and treatment at the rate of 33s. a week for each patient, in addition to allowances for wives or dependents.

Pension Assessment Appeals.

Mr. PIELOU asked the Minister of Pensions the number of appeals made to the assessment appeals tribunals from Jan. 1st to Dec. 31st, 1924, showing the number allowed by the tribunals and the number disallowed.—Lieut.-Colonel G. F. STANLEY replied: During the period referred to 35,390 appeals were decided by the assessment appeal tribunals, thus giving a proportion (excluding statutory final awards) of approximately one appeal out of every seven cases of final award notified. In 13,560 cases either the appeal was disallowed or the Ministry's assessment was reduced, or the appeal was not proceeded with by the appellant. In 11,360 cases the finality of the award was confirmed, though the assessment was raised, and in 10,470 cases the appellant succeeded to the extent that the tribunal decided that the cases were not yet suitable for final award.

Double Inquiries in Coroners' Courts.

Mr. DIXEY asked the Home Secretary whether he was aware that the present system of double inquiries of the coroner's court and the police court in murder trials, which often were held simultaneously, was very unsatisfactory to all concerned; and what steps he proposed to take with regard to the same.—Sir W. JOYNSON-HICKS replied: I hope to introduce a Bill very shortly to amend the law relating to coroners' inquests which will deal with this matter.

The General Medical Council and Unregistered Practitioners.

Mr. ARTHUR GREENWOOD asked the Prime Minister whether his attention had been called to the warning notice issued to registered medical practitioners by the General Medical Council purporting to give a summary of the resolutions and decisions of the Council upon forms of professional misconduct; whether he was aware that in consequence of the issue and circulation of that notice registered medical practitioners were deterred from assisting, by administration of anaesthetics or otherwise, qualified but not registered practitioners of osteopathy, bone-setting, and other new forms of treatment of human ailments; whether he was aware of the feeling of dissatisfaction amongst the general public and also amongst many medical practitioners with the exercise by the General Medical Council of its functions and powers conferred by Statute of 1858; and whether he was prepared to set up a commission or departmental committee of inquiry into the operation and administration of the various medical Acts, and the exercise by the General Medical Council of its functions and powers under such Acts, with a view to the introduction of such legislation as might be necessary to ensure the recognition and legal regulation in this country of osteopathy, bone-setting, and other new methods of treatment, and to safeguard both qualified practitioners and the general public.—Mr. CHAMBERLAIN replied: I understand that the warning

notice to which the hon. Member refers was adopted virtually in its present form by the General Medical Council in 1897 and subsequent alterations have been merely verbal. The answer to the second part of the question is in the affirmative. As regards the third and fourth parts, while the application of the principles laid down in the notice to particular cases may have given rise to criticisms, there is no evidence of any general dissatisfaction among the public or the medical profession, and I see no necessity for the appointment of any commission or committee such as the hon. Member suggests.

Mr. GREENWOOD: Would the right hon. gentleman be good enough to ask the Prime Minister whether he would receive a deputation of some Members of this House?

Mr. CHAMBERLAIN: I suggest that the most convenient and practical course would be for him to make representations to the Minister of Health.

Delay in Payment of Sickness Benefit.

Colonel DAY asked the Minister of Health whether he was aware of the complaints arising from delay in payment of sickness benefit under the National Health Insurance Act to sick insured persons; and, if so, whether he would appoint a departmental committee to inquire into this matter.—Sir KINGSLEY WOOD replied: My right hon. friend is aware that some complaints have been made of delay in payment of benefit to insured persons who fall sick, and on receipt of any such complaints action is taken departmentally with the approved society concerned. My right hon. friend does not think it necessary to set up a departmental committee on the subject, which has already been brought to the notice of the Royal Commission on National Health Insurance.

Milk and Dairies Acts.

Mr. BARNES asked the Minister of Health whether he has decided to ask Parliament to continue the Milk and Dairies (Amendment) Act, 1922, or whether he was now prepared to recommend Parliament to put the Milk and Dairies Act of 1915 into operation.—Sir KINGSLEY WOOD replied: It is not proposed to ask Parliament to postpone further the operation of the Milk and Dairies (Consolidation) Act, 1915, which, under the provisions of the Act of 1922, will come into operation on Sept. 1st next. The other Act named in the question is not a temporary measure and will continue in force.

The Earl of DALKEITH asked the Secretary for Scotland whether it was proposed to postpone the bringing into operation of the Milk and Dairies (Scotland) Act, 1914; and, if not, whether any decision had yet been arrived at as to the appointed day on which it was to be brought into operation.—Sir J. GILMOUR replied: The reply to the first part of the question is in the negative. It is proposed to bring the Act into operation on Sept. 1st, 1925.

Treatment of Diabetes in Scotland.

The debate was resumed on the motion for the second reading of the Public Health (Scotland) Amendment Bill.

Mr. WILLIAM ADAMSON and Dr. DRUMMOND SHIELDS again urged that the Bill should be made applicable to other diseases besides diabetes and that it should be possible to extend its operation without the necessity for a fresh Act of Parliament.

Captain ELLIOT (Parliamentary Under Secretary of Health for Scotland) said that it was the express desire of the local authorities that the general power which the hon. Members desired should be included in the Bill should be left out of it. Their reason was that while they were willing to bear the small expense involved under the present measure they thought that if the power was to be extended it ought to be discussed in Parliament and form the basis of new legislation instead of being brought about in the somewhat surreptitious manner involved in the procedure by Order in Council laid on the Table of both Houses. The analogy of England and Scotland was not really justified because the English Act only made a temporary provision, whereas this Bill was a permanent one to deal with diabetes. He thought that they were all anxious to see this Bill passed to see the position regularised, and to see this wonderful new remedy made freely and legally available to all sections of the community.

After further debate the second reading of the Bill was agreed to by 272 votes to 115.

MONDAY, MARCH 9TH.

Opium Production in India.

Mr. BUCHANAN asked the Under Secretary of State for India whether the Government of India was aware that the use in India of opium was supported by British officials as a well-established and, on the whole, not an injurious habit; and what steps he proposed to take to ensure that the use of this drug should be discontinued.—Earl WINTERTON replied: The view of the Government of India, based upon the findings of the Royal Commission which investigated the consumption of opium in India in 1895, is that centuries

of inherited experience have taught the people of India discretion in its use, which for the most part is without injurious consequences. The distribution of opium is strictly controlled in accordance with the provisions of The Hague Convention, 1912. My noble friend does not propose to interfere with the discretion of the Government of India and Provincial Governments in the exercise of this control.

Effect of Preservatives in Food.

Mr. HARDIE asked the Minister of Health whether he was aware that on p. 19, para. 59, of the Final Report on Preservatives and Colouring Matters in Food it was stated that it was evident that individuals might consume quite considerable quantities of preservatives in the course of an ordinary day's diet and that it was easy to imagine a reasonable meal which might contain 20 or even more grains of boric acid besides other preservatives; and whether, in the opinion of his official adviser, the effects of 20 gr. of boric acid were good or bad for the average individual consumer.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is aware of the statement referred to by the hon. Member. He is advised that the continued consumption of such quantities of boric acid as those mentioned would be likely to have a deleterious effect.

The Danger of Toy Pistols.

Colonel DAY asked the Home Secretary if his attention had been drawn to the danger that the public were exposed to by the use of toy pistols, sold at a cost of a few shillings, which had proved the subject of a recent inquest; and, in view of these disclosures, would he consider introducing legislation to regulate the sale and use of these dangerous toys.—Sir W. JOYNSON-HICKS replied: I have no reason to think that the danger to the community arising from toy pistols is sufficiently great to justify the extension to them of the provisions of the Firearms Act, and I do not think I could initiate legislation for this purpose.

Accidents to Tramway Traffic Controllers.

Colonel DAY asked the Minister of Transport the number of traffic controllers employed by the London County Council on their tramway services who had met with accidents while engaged in their employment during the last 12 months; and whether the accidents had been caused by motor or other vehicles.—Colonel W. ASHLEY replied: I am informed by the London County Council that during the 12 months ended Feb. 21st last two tramway traffic regulators and two ticket inspectors in the employment of the Council were injured, in one case fatally. All these accidents were, I understand, caused by motor vehicles.

Defective Children.

Mr. STAMFORD asked the President of the Board of Education the number of defective children of school age under the heads of blind, deaf and dumb, feeble-minded, tuberculosis (pulmonary), cripples (tubercular), cripples (other than tubercular), and other physical defectives, together with the special school accommodation available for each class of case.—Lord E. PERCY replied: I can only give the figures based upon the classification adopted for the purpose of the returns made to the Board. On this basis the figures are:—

	Number of children.	Accommodation in Special Schools.
		March 31st, 1923.
1. Blind children..	5,401	3,787
2. Deaf children..	5,491	4,582
3. Mentally defective children ..	29,278	16,392
4. Physically defective children:—		
(i) Non-tubercular crippled children ..	34,591	Hospital schools 2,759 Cripple schools 6,386
(ii) Delicate children ..	49,358	Open-air schools 4,690

It will be readily understood that it is extremely difficult to give really accurate figures of the number of defective children. The whole matter is considered in detail in Section VI. of the Report of the Board's Chief Medical Officer for 1923.

REDLANDS HOSPITAL FOR WOMEN, GLASGOW.—

This hospital, formerly known as the Glasgow Women's Private Hospital, which was opened last month by the Viscountess Rhondda, is the only hospital of its kind in the West of Scotland. It is situated in the West End of Glasgow and is staffed by medical women with the exception of four honorary consulting officers. The hospital contains 50 beds and the patients all contribute to their maintenance. In the wards they pay 30s. weekly, but receive free medical and surgical attendance. There are rooms with four beds and two beds, and also single rooms. There is also a well-equipped maternity department, having both ward and single-room accommodation, with an up-to-date labour room.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 16th.

SOCIAL EVENING: at 8.30 P.M.

At 8.30 P.M., Fellows, Members of Sections, and their Friends will be received by the President, Sir St. Clair Thomson.

At 9.30 P.M., Dr. H. Charles Cameron will give an address in the Robert Barnes Hall on John Locke, the Philosopher (1690), on the Upbringing of Children. The Library will be open, and various objects of interest will be exhibited. Music, light refreshments, and cigarettes.

Tuesday, March 17th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

PATHOLOGY: at 8.30 P.M.

Annual General Meeting:

Election of Officers and Council for Session 1925-26.

Communications:

A. Piney: (1) The Morphological Factors Concerned in the Incidence of Pernicious Anæmia. (2) The Blood in Rubella.

W. Cramer: On the Relation of Innervation to the Experimental Production of Cancer.

Wednesday, March 18th.

HISTORY OF MEDICINE: at 5 P.M.

Papers:

Prof. J. S. Dobson: On Herophilus of Alexandria.

Mr. C. J. S. Thompson: Some Historic Remedies and Their Origins.

Thursday, March 19th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)

Cases:

Dr. A. C. Roxburgh: Case for Diagnosis.

Dr. J. M. H. MacLeod: Hemiatrophy of the Face.

Other cases will be shown.

Friday, March 20th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.

Papers:

Dr. Gilbert Scott: A General Survey of Radiation with Special Reference to Treatment of Carcinoma of the Breast by X Rays.

Dr. J. H. Douglas Webster: Results and Problems in Deep Therapy.

ROYAL INSTITUTION, Albemarle-street, W.

TUESDAY, March 17th.—5.15 P.M., Prof. E. N. da C. Andrade:

Evolution of the Scientific Instrument (II.).

THURSDAY.—5.15 P.M., Dr. Leonard Hill: Biological Action of Light (II.).

FRIDAY.—9 P.M., Prof. J. W. McBain: Soaps and the Theory of Colloids.

SATURDAY.—3 P.M., Sir Ernest Rutherford: The Counting of the Atoms (IV.).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 16th.—9 P.M., Sir Bernard Spilsbury:

Wounds and Other Injuries in Their Medico-Legal Aspect (last Lettsomian Lecture).

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY, March 17th.—8.30 P.M., Dr. Nathan Raw:

Three Suggested Grounds for Divorce: (1) Hopeless Insanity; (2) Chronic Inebriety; (3) Sentence of Penal Servitude for Life. Discussion.

TUBERCULOSIS SOCIETY, 1, Upper Montague-street, Russell-square, W.C.

FRIDAY, March 20th.—8 P.M., Dr. W. H. Dickinson: League of Nations Post-Graduate Course.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, March 19th.—8.15 P.M., A Laboratory Meeting

at the Royal Army Medical College, Grosvenor-road, Millbank, S.W. The following amongst others will give

demonstrations: Dr. Douglas Adams, Dr. A. W. Grace,

Dr. E. Hindle, Dr. J. T. Duncan, Dr. H. B. Newham,

Dr. A. S. Burgess, Colonel Marrian Perry, Dr. H. Seidelin,

Dr. A. C. Stevenson, Dr. J. Gordon Thomson,

Dr. C. M. Wenyon, Mr. A. L. Sheather, and Prof.

Warrington Yorke.

LECTURES, ADDRESSES, DEMONSTRATIONS. &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 16th to March 21st.—BARNES HALL,

Royal Society of Medicine. A Discussion on Post-

Graduate Teaching in London will take place on

Wednesday, March 18th, at 6 P.M., Sir Arbuthnot Lane,

Bt. (President of the Fellowship of Medicine), will

preside. All members of medical profession are invited

to attend and to give their criticisms of the existing

arrangements and suggestions for improvement.—

CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street,

W.C. Lecture-demonstrations in Diseases of the Eye.

Daily in the afternoons.—CHELSEA HOSPITAL FOR

WOMEN. Special Course in Gynaecology. Lectures,

Demonstrations, Operations, &c.—HOSPITAL FOR CONSUMPTION, Brompton. Special Course in all Departments of Diseases of the Lungs, Phthisis, Heart and Treatment by Artificial Pneumothorax.—NORTH-EASTERN FEVER HOSPITAL, St. Ann's-road, N., Wednesday and Saturday at 11 A.M., Demonstrations on the Diagnosis and Treatment of the Acute Infectious Diseases will be given by Dr. Frederic Thomson.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynecology. Lecture-demonstrations will be given in the Wards and Out-patient Departments.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, March 16th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Addison: Surgical Wards. 2.30 P.M., Dr. Saunders: Medical Wards.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrell Gray: Surgical Wards.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients.

THURSDAY.—11 A.M., Sir Henry Simson: Gynecological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept. 2 P.M., Mr. Bishop Harman: Eye Dept.

FRIDAY.—11 A.M., Dr. McDougal: Medical Electricity. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, March 17th.—4.30 P.M., Dr. F. G. Crookshank: Rheumatoid and Osteoid Arthritis.

FRIDAY.—4.30 P.M., Mr. E. Gillespie: Some Uses of Orthopaedic Surgery.

Daily: Medical and Surgical Clinics, Clinics in the various Special Departments, Surgical Operations, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: FEB.—MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, March 16th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Syphilis of the Nervous System (2): Dr. Adie.

TUESDAY, March 17th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Disseminated Sclerosis: Dr. Birley.

THURSDAY, March 19th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Friedreich's Ataxia: Dr. Gordon Holmes.

FRIDAY, March 20th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Demonstration of Physical Exercises in Exercise Room: Mr. Elmquist.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, March 19th.—12 noon, The Neuroglia: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, March 16th.—12 noon, Cerebral Cortex and Cerebral Localisation: Dr. Hinds Howell.

A COURSE OF CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, is held in the Wards at 10 A.M. on Tuesdays and Fridays by Dr. H. J. Macbride.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, March 18th.—3.30 P.M., The Oculomotor Nerves: Mr. Leslie Paton.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced. Full particulars on application to

J. G. GREENFIELD, Dean of Medical School

HOSPITAL FOR SICK CHILDREN, Gt. Ormond-st., W.C. THURSDAY, March 19th.—4 P.M., Dr. Shires: X Ray Diagnosis of Diseases of the Chest.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C. TUESDAY, March 17th.—5 P.M., Dr. A. C. Roxburgh: Scleroderma. Neurofibromatosis.

ST. MARY'S HOSPITALS, Manchester. FRIDAY, March 20th.—4.30 P.M., Post-Graduate Lecture (at Whitworth-street, West Branch), Lr. J. Bride: Visit to the Obstetric Wards.

MANCHESTER ROYAL INFIRMARY. TUESDAY, March 17th.—4.15 P.M., Mr. J. Morley: Oesophageal Diverticula and Cardiospasm.

FRIDAY.—4.15 P.M., Dr. E. B. Leech and Mr. J. Howson Ray: Clinical Cases.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH. TUESDAY, March 17th.—4 P.M., Prof. Murray Lyon: Diuretics. Discussion to be opened by Prof. Charteris and Dr. Maitland Ramsay.

CHADWICK PUBLIC LECTURES. FRIDAY, March 20th.—7 P.M. (at University College, Cardiff), Dr. W. M. Feldman: Antenatal Child Physiology and Hygiene.

SATURDAY.—3 P.M., Postnatal Child Physiology and Hygiene.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.

WEDNESDAY, March 18th.—6 P.M., Dr. M. J. Rowlands: Feeding and Breeding of Stock.

Appointments.

BARR, WILLIAM, M.D., Ch.B. Glasg., D.Sc.P.H., has been appointed Medical Officer of Health to the County Borough of Rotherham.

BEALE, PEYTON T. B., F.R.C.S. Eng., Consulting Surgeon to King's College Hospital.

GAMLEN, H. E., M.B., B.S., D.P.H. Durh., Honorary Physician in charge of the Electrical and Massage Departments, Royal Victoria Infirmary, Newcastle-upon-Tyne.

LAMBERT, MARJORIE A. M., M.R.C.S., L.R.C.P. Lond., House Surgeon to the New Sussex Hospital for Women and Children, Brighton.

MOORE, F. CRAVEN, M.D., M.Sc. Manch., F.R.C.P. Lond., to the Chair of Systematic Medicine in the University of Manchester.

MYLES, D. M.B., Ch.B. St. And., Medical Officer, Forfar Parish Council.

Freemasons Hospital and Nursing Home: BOX, CHARLES R., M.D., B.S. Lond., and BEAUMONT, G. E., M.D. Oxon., Physicians; CHRISTOPHERSON, J. B., M.B., B.Ch. Camb., Tropical Diseases; EVANS, ARTHUR, F.R.C.S., M.D., M.S. Lond., GRAY, H. TYRELL, F.R.C.S. Eng., FITZWILLIAMS, DUNCAN C. L., F.R.C.S. Eng., Surgeons; BONNEY, VICTOR, F.R.C.S. Eng., RIVETT, L. CARNAC, F.R.C.S. Eng., Gynecologists; MACDONALD, S. G., F.R.C.S. Eng., Genito-Urinary; FRENCH, J. GAY, F.R.C.S. Eng., NEILSON, D. F. A., F.R.C.S. Eng., Throat and Ear; MAYOU, M. S., F.R.C.S. Eng., Ophthalmic; BATTEN, H. E., F.R.C.S. Eng., Orthopaedic; BERRY, HERBERT MARTIN, M.D. Liverp., Radiologist; DOBSON, L. C., M.D. Lond., Electro-Therapeutist; CHAMBERS, HERBERT, M.R.C.S., L.R.C.P. Lond., GANDY, ERIC W., M.R.C.S., L.R.C.P. Lond., IRONSIDE, R. W., B.Ch. Camb., PHILLIPS, H. R., M.D., Ch.B. Edin., Anaesthetists; HARRIS, H. E., Surgeon-Dentist.

Metropolitan Asylums Board: MCCARTNEY, J. E., M.D., Ch.B. Edin., Director of the Board's Pathological Services; WHITE, R. G., M.B., Ch.B. Glasg., Director of the Antitoxin Establishment.

Vacancies.

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—H.S.'s at rate of £110. Barnstaple, North Devon Infirmary.—H.S. at rate of £150.

Bath, Royal United Hospital.—Hon. Asst. S.

Belfast, Mater Infirmorum Hospital.—Hon. Asst. Gynecologist. Belfast, Ulster Hospital for Children and Women, Templemore Avenue.—Hon. Asst. P.

Belgrave Hospital for Children, Clapham-road, S.W.—H.P., H.S., and Asst. H.P. at rate of £100.

Birmingham, Queen's Hospital.—Third Phys. £50.

Boole Borough Hospital.—Hon. S.

Bradford Municipal General Hospital, St. Luke's.—H.P. and H.S. at rate of £200 each.

Brighton, New Sussex Hospital, Windlesham-road.—Hon. Asst. P. and Temp. Asst. S.

Bristol University.—Lecturer in Pathology.

British Guiana.—Asst. M.O.H. £500.

British Hospital for Mental Disorders, &c., 72, Camden-road, N.W. Hon. P.

Bromley Borough.—M.O.H. £800.

Burton-on-Trent Infirmary.—H.S. £150.

Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. at rate of £150.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. Also Jun. H.S. at rate of £100 and £50 respectively.

Coventry and Warwickshire Hospital.—Res. H.P. £125.

Doncaster Royal Infirmary and Dispensary.—Hon. Ophth. S.

Dover, Royal Victoria Hospital.—H.S. £180.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Clin. Asst. £1 1s. per session.

Evelina Hospital for Children, Southwark, S.E.—H.S. at rate of £120. Also Anaesthetist. 25 guineas.

Exeter, Royal Devon and Exeter Hospital.—H.P. at rate of £150.

Federated Malay States.—Research Studentship in Tropical Medicine. £700.

Folkestone, Royal Victoria Hospital.—R.M.O. at rate of £150.

Glasgow, Consumption Sanatoria of Scotland, Bridge of Weir.—Res. M.O. £200—£250.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—R.M.O. and H.P. at rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each at rate of £50.

Leamington Spa, Warneford General Hospital.—Hon. Asst. P. and Hon. Asst. S.

Leeds City.—Asst. M.O.H. for Maternity and Child Welfare. £600.

Lichfield County Mental Hospital, Burnthwood.—Sen. Asst. M.O. £750.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. M.O. £200.

London Homœopathic Hospital, Great Ormond-street, W.C.—Pathologist. £200.
 London Hospital, E.—First Asst. to Surgical Firm. £400.
 London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.
 London Lock Hospital, 233, Harrow-road, W.—Temp. Hon. S. to Out-patients.
 Maidstone, Kent County Mental Hospital.—Asst. M.O. £300.
 Maidstone, West Kent General Hospital.—H.S. at rate of £220.
 Manchester, St. Mary's Hospitals.—Two H.S.'s. Each at rate of £50.
 Manchester University.—Lecturer in Morbid Anatomy and Histology. £500.
 Metropolitan Hospital, Kingsland-road, E.—S. for Diseases of Nose, Throat, and Ear.
 Miller General Hospital for South-East London, Greenwich-road, S.E.—H.P. £125.
 National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. at rate of £150. Also Out-patient M.O. at rate of £125.
 Newcastle-upon-Tyne, Royal Victoria Infirmary.—Med. Reg. at rate of £50. Also Hon. Asst. to Electrical and Massage Depts.
 Nottingham Children's Hospital.—Res. H.S. at rate of £150.
 Plymouth, South Devon and East Cornwall Hospital.—H.P. and Asst. H.S. Each at rate of £50.
 Putney Hospital, Lower Common, Putney, S.W.—R.M.O. £150.
 Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—R.M.O. £200. Also Two H.P.'s and Cas. H.S. Each at rate of £100.
 Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. at rate of £250.
 Royal Chest Hospital, City-road, E.C.—Phys. £50.
 St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. Phys. £100.
 Sheffield Royal Hospital.—Hon. Radiologist.
 South London Hospital for Women, South Side, Clapham Common, S.W.—H.P. and Three H.S.'s in each case at rate of £50.
 Sudan Medical Service.—Two Medical Inspectors. £E.720.
 Sutton, Surrey, Downs Hospital for Children.—Second Asst. M.O. £550.
 Suva, Fiji.—Port M.O. and Bacteriologist, &c. £750.
 Wandsworth Common, Springfield Mental Hospital.—Asst. M.O. £400.
 West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.
 The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Coxhoe, Durham; and Brigstock, Northampton.

Births, Marriages, and Deaths.

BIRTHS.

BOND.—On March 5th, at Bulford Camp, the wife of Major A. H. Bond, R.A.M.C., of a son.
 CHAPMAN.—On March 1st, at Marine House, Bridlington, the wife of P. D. H. Chapman, M.B., of a daughter.
 JACKSON.—On March 6th, at Coombe House, Wallington, Surrey, the wife of G. Maudsley Jackson, M.B., B.S., of a son.
 SIDEBOTHAM.—On March 2nd, at Raleigh House, Ottery St. Mary, the wife of Dr. F. N. Sidebotham, of a daughter.

MARRIAGES.

MANN—HOWELL.—On March 7th, at Christ Church, Hendon, James Wallace Mann, M.B., Ch.B., to Margaret Olwen Howell, M.B., B.S., second daughter of the late John Howell and Mrs. Howell, Llanelli.

DEATHS.

BROWNE.—On March 7th, at Minto, Esher, Samuel Browne, M.D., late R.N., aged 74.
 BURROWS.—On March 8th, at Devonshire House, Southsea, Lucy Mary Elizabeth, the beloved wife of Harold Burrows.
 CLELAND.—On March 5th, at Moorcroft, Lidsing, Chatham, John Cleland, M.D., F.R.S., &c., Emeritus Professor of Anatomy, University of Glasgow, in his 90th year.
 COMPTON.—On March 2nd, at midnight, Thomas Armetriding Compton, M.D., Trinity Coll., Dublin, B.A. Camb., of Journey's End, Parkstone, aged 87.
 KER.—On March 4th, at the City Hospital, Edinburgh, of influenza pneumonia, Claude Buchanan Ker, M.D., F.R.C.P. Edin., Medical Superintendent, aged 57.
 KNIGHT.—On March 5th, at Bolton-le-Sands, Alexander Angus Halley Knight, M.D.
 MOORE.—On March 7th, Colonel E. J. Moore, C.B., V.D., M.B., B.Ch. Ox., of Park End, Blackheath Park, aged 62.
 ORMEROD.—On March 5th, Joseph Ardenne Ormerod, M.D., F.R.C.P.
 PEARSON.—On March 4th, at a nursing home, Cheltenham, John Douglas Pearson, M.R.C.S., L.R.C.P.
 WHITELEY.—On March 7th, Daniel Flockton Whiteley, M.R.C.S., L.R.C.P. Lond., of Coleherne Court, S.W.
 N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GREENOCK INFIRMARY.—It is proposed to establish an auxiliary hospital in the Inverkip Valley to relieve the pressure upon the infirmary, and Mr. Matthew Rankin and Miss Rankin are giving £20,000 for the purpose in memory of their brother, Mr. John F. Rankin, who died recently. The new building is to be so arranged that it can readily be extended.

Notes, Comments, and Abstracts.

THE METHOD OF TRIAL IN MATE SELECTION.

THE majority of anthropologists have maintained that primitive society was committed to the system of group marriage and promiscuity, in which sexual selection could play but a trivial part, though Darwin raised his voice in protest, asking how humanity could have progressed without selective mating in the earlier phases. But his views and those of Westermarck and others were overshadowed by the preponderating opinions of many authorities. It was to re-establish those views that Prof. Malinowski was concerned in a recent address to the Eugenics Education Society. He took as his theme the marriage customs of a tribe of Melanesian islanders from the north-west of New Guinea, where he had been engaged in field-work. The peoples were among those hitherto regarded as classical examples of a system of promiscuity and group marriage, but he had satisfied himself that certain institutions, which on a superficial observation appeared to belong to this system, were in fact of a different nature. Among these people immature sexual gambols begin in early childhood and are regarded by the community with indifference as "natural," the only restraint, which is strictly observed, being against incest or exogamy. At puberty the childish dalliances give place to more serious and passionate attachments, but these are not associated immediately with marriage and permanent relations. The sexual approach shows greater variety in manifestation as age advances, romantic and æsthetic elements come into prominence, and there is a definite attempt to achieve possession of the beloved, by work, by magic, or other means. During this time the couples can sleep together freely in certain houses specially set apart for them, and this is the phenomenon which has been interpreted as the institution of group marriage. When closely scrutinised it is found to be of a different nature. There is no promiscuity in these houses; the couples who frequent them remain faithful to each other and a strict decorum is observed. The houses form, in fact, a provision for the method of trial in the selection of the mate, while strict convention demands that unmarried couples shall not live together in any other sense—to eat with a girl before marriage is as shocking to these Melanesian people as their methods for testing compatibility are to us. Sooner or later a lasting intrigue becomes known among the tribe to have occurred between a couple and this is taken as an indication of intended marriage, while on the whole the ensuing unions are permanent and satisfactory. The final choice is based on a mutual appreciation of the character and personality of the mate, and so the principle of selective breeding is clearly subserved. One obvious question refers to the number of illegitimate children, and this is answered by the curious fact that babies are hardly ever born as a result of the early intrigues, while "fatherless children" are regarded as reprehensible results on the part of the mothers; but exactly how their incidence is prevented is not clear. The tribe, then, which has no realisation of the physiological basis of fatherhood, yet sees the sociological need of two parents, and the institution of the family is firmly established by custom and legality.

Prof. Malinowski's investigations raise many problems of interest. Civilisation is still concerned with the difficulties presented by human nature in the attempt to stabilise family life and monogamy. The method adopted to this end by recent European culture differs fundamentally from that of these Melanesians, yet the end desired is the same and seems to be about equally achieved by either route. Both methods are attended by certain physical and psychopathological results; we are accustomed to regard such free expression of the sexual instinct as a drain on the strength of the organism, and modern psychology has preached from the housetops the baleful results of repression. An interesting sidelight on this was thrown by Prof. Malinowski's statement that hysteria and mental disease are far more commonly met with in tribes with strict sexual limitations than among those with extensive sexual liberty. It seems certain that a psychological appreciation of the values and characteristics of the mate is the only possible basis for permanent partnership. Some doubt may be thrown on the ability of such primitive peoples as these Melanesians to experience such a conscious appreciation as we should understand by these terms, but they are probably able, when free of the distorting effect of unexpressed emotional tension, to find their psychological affinity or complement in a subconscious or instinctive fashion and thus to fulfil the demands of natural selection. It is interesting to note that these people have long been in contact with European

culture and yet have been affected by it less than any. Missionaries have laboured in vain to modify their customs and their clothes—or lack of clothes. Now all that elaboration of æsthetic, moral and intellectual development which we associate with cultured humanity seems to have resulted psychologically from the process of inhibition. It may be suggested that the method of free expression practised by these people is to be correlated with the fact that they have proved so resistant to Western influence. Their method is satisfactory from the biological point of view, the desired ends are attained, but they are bound by it to a condition of "nature," and the gateway to all that wealth of human experience which flows from diversion of instinctive impulse into alternative channels is to them forever closed. It seems probable that the two paths of expression and repression are two extremes, each attended with certain penalties, and that future generations will find some "middle way" between the restrictions of Mrs. Grundy and the licence of the South Sea Islander.

NATIONAL BABY WEEK COUNCIL.

THE annual general meeting of the National Baby Week Council was held at 117, Piccadilly, London, W., on March 4th, when a satisfactory account of the year's work was given by Dr. Eric Pritchard, chairman of the Executive Committee. Sir Arthur Newsholme, who presided, congratulated the Council on their work of saving child life throughout the country, and said that the good done in forming public opinion could not be over-estimated under a system of democratic government. The results of the efforts made to preserve infant life during the past 20 years had been marvellous, and since the end of the last century the death-rate had been halved. This could be explained by a large number of factors, among which publicity and education had been the most essential. Infantile diarrhoea had become a rare disease in London, and it was even difficult to get hold of well-marked clinical cases for demonstration to students.

An amendment to the constitution of the National Baby Week Council was agreed to, providing for membership of local authorities and voluntary bodies doing continuous maternity and child welfare propaganda.

I. R. J. A. Hadfield gave an address on the

Formation of Character: A Problem of Child Psychology.

After pointing out that some of the abnormalities which occurred late in life were directly derived from, and were themselves reproductions of, morbid infantile states of mind, I. R. Hadfield went on to show how the character of the adult depended upon the earlier experience and training of the child. The first years of life, he said, were characterised by a feeling of dependence, followed by the development of self-will and the desire for self-gratification. In the third and fourth year came self-knowledge and self-consciousness, the development of the moral sense, and of the will. It was important that all these phases of life should have their proper and normal development. All these impulses could be dealt with in different ways; they might be indulged or repressed and crushed, but if they were crushed disorders might develop in later life. If they were well directed, the result would be the full and true development of character. These tendencies should be directed towards some ideal. The child whose dependence was over-indulged would never "grow up," and would never be prepared to face the responsibilities of life. On the other hand, there might be a danger of mistaking what seemed to be over-affection for the mother for real starving of affection—the mother not being sufficiently responsive. The end-result in later life was often hysteria. If the attempt was made to make a man of a child at the age of 1½, the result would probably be the production of a coward. If the impulse of gratification were crushed the result in after life might be sense perversions, while if the tendency was controlled, guided, and directed the formation of a strong character would result. The proper guidance of self-will was of great importance, for tremendous harm was done by crushing the impulsive tendencies which were engendered by it. The will of the child of 3 or 4 years was merely the reproduction of the parental will and authority exercised at the age of 1 and 2. The child's choice should be developed, it should be taught how to do things, if it showed tendencies to do them, and in this connexion he, Dr. Hadfield, thought that the age of 2 years was not too early to teach a child to strike a match and light a fire, if it wished to do so. It might seem paradoxical, but if the child wanted to do "naughty" things it had better be taught how to do them properly. A factor of enormous importance was the single atmosphere in child training. The greatest damage could be done to the child's life if it were treated differently by different people, or if the father and mother were not in agreement in regard to control. The child whose parents did not always deal with it in the

same way for the same fault was led to the attitude of the criminal type who in committing a crime knew he would get no choice, if caught, and so just "chanced his luck."

COLONIAL HEALTH REPORTS.

BECHUANALAND PROTECTORATE.

THE territory of the Protectorate is bounded on the south and east by the Union of South Africa, on the north-east by Southern Rhodesia, on the north by the Zambesi and Chobe (Linyanti) Rivers, and on the west by the territory of South-West Africa. It has not been surveyed as a whole, but its area is estimated at 275,000 square miles. Its mean altitude is about 3300 feet. The population at the census of 1921 was 152,983, including 1743 whites. The health conditions throughout the territory for the year ended March 31st, 1924, are stated, in the annual report just to hand, to have been on the whole satisfactory. As in the past, malaria and its sequelæ head the list of prevalent diseases. During the early months of the year there were several outbreaks of the disease in the northern districts. These, though of the benign tertian form, were of more than usual severity in character: but they were not sufficiently widespread or severe to affect the economic position either through disablement or direct or indirect mortality. As against this, the prevalence of the disease throughout the southern areas was occasional only, and its character uniformly mild. Respiratory troubles came next in order, but these, though figuring largely in the list, were of the light and non-dangerous variety. Of severe intestinal ailments, 16 cases of dysentery had to be recorded in the year, with 1 death. All these occurred in the northern part of the territory. There was an epidemic of measles in the village of Gaberones and at other isolated posts in the neighbourhood, as well as at Ramoutsa, where the mortality was high. There were 2 cases of scarlet fever at Gaberones camp. The portion of the country inhabited by the greater number of both Europeans and natives is adjacent to the only line of railway which passes through the eastern side of the territory for a distance of 403 miles; the average altitude of the stations and sidings along this section of the line is 3418 feet.

BRITISH HONDURAS.

This colony, in Central America, on the Atlantic side of the mainland, has an area of about 8598 square miles. The country is well watered, and its rivers, which are many, provide the chief means of communication. The climate, for a tropical area, is naturally very healthy, and in Belize (the capital), where the trade winds blow, pleasant for most of the year. The estimated population on Dec. 31st, 1923, was 46,527. The report for 1923 states that the general health of the colony during the year was exceptionally good; 112 cases of malaria of all types were treated in the Belize Hospital without any deaths, and 134 cases were treated in district hospitals with 4 deaths. The returns of deaths for the whole colony show 32 deaths certified by registered medical practitioners from malaria. On referring to the cause of deaths in cases not certified by registered medical practitioners, there is naturally considerable doubt as to the diagnosis, but it is probable that about 150 were due to malaria. As to the actual prevalence of malaria there are no statistics, but it is probable that malaria is the cause of a great majority of absences from work and invalidity. Sixteen cases of amoebic dysentery and 3 cases of bacillary dysentery were treated in Belize Hospital with one death; 39 cases of both types were treated in district hospitals with one death. Ten deaths were certified by registered medical practitioners as due to dysentery. There were 8 certified deaths from tetanus. Thirty-one cases of pulmonary tuberculosis, with 16 deaths, were treated in Belize Hospital, and 21 cases, with 5 deaths, in the district hospitals; 41 certified deaths from this disease were also registered. It is impossible to estimate the number of uncertified deaths from this cause, but they are undoubtedly very many. Filariasis is unknown in the colony, and plague has never occurred. Small-pox has never reached the colony, and the alastrim of Jamaica has also not appeared. The passengers from Jamaica are subject to medical supervision for 14 days from date of departure unless they are able to produce satisfactory proof of recent vaccination. Vaccination here (primary) is carried out fairly well. The number of births registered during the year was 1764, and the number of deaths 954, the birth-rate working out at 37.91 per 1000 of the population, and the death-rate at 20.5 per 1000. There was a decrease in the number of infant deaths. The highest rainfall registered in 1923 was at Punta Gorda in the Toledo district, which had a total of 149.85 inches. The lowest was at Corozal, where the total was only 25.05 inches. The hottest days were Oct. 17th and 18th, on which the thermometer registered 91.5°F., and the coldest day Nov. 16th, when it registered 61.5°F.

LEGISLATION AND SMOKE ABATEMENT.

A Chadwick public lecture was delivered on March 9th at the Inner Temple Hall by Lord Newton, who spoke on the necessity for legislation with regard to smoke abatement. Sir William J. Collins was in the chair. After describing the waste and damage to health and property caused by smoke, Lord Newton said that it was surprising no effective steps were taken to deal with this national nuisance. Smoke nuisances were usually dealt with under the Public Health Act of 1875, but owing to its ineffectiveness various towns had obtained local Acts. The difficulties attending the enforcement of the 1875 Acts as regards smoke had resulted in complete inaction in many districts, local authorities having become apathetic. This attitude, however, was largely due to the apathy of the central authority. No Government had shown, he said, until quite recently, the slightest interest in smoke abatement, and the old Local Government Board consistently declined to put any pressure on local authorities. It was not until 1914 that, as the result of much educational work by private individuals and societies, a departmental committee was appointed. The activities of this committee were suspended during the war, but its work was resumed in January, 1920, and after an exhaustive inquiry the first report was issued in December, 1921. This report, after dealing with the deficiencies of the present law, made certain recommendations, none of which had ever met with any opposition, but which hitherto had been completely ignored.

Amongst the recommendations were the following (1) Power to the Minister of Health to compel a defaulting authority to act. (2) An amendment to the law providing a general legal obligation on manufacturers to use the best practicable means for avoiding pollution instead of prohibiting absolutely the emission of "black" smoke. (3) Power to the Minister of Health to fix standards, as in the case of the Alkali Acts. (4) The duty of enforcing the law to be transferred from the local sanitary authorities (1800 in number) to the county councils and county boroughs. (5) The imposition of larger fines than at present. All recommendations were made on the assumption that questions of cost must be taken into account in determining what was practicable. With regard to domestic smoke, it was recommended that the central housing authority should not sanction any housing scheme submitted by a local authority unless provision was made in the plans for the adoption of smokeless methods, granting that the adoption of such methods was considered by the central authority to be practicable.

Since the production of the departmental committee's report, the lecturer continued, three Bills had been introduced by three successive Governments, but in each case they failed to embody the main recommendations of the committee, and were introduced at so late a period of the session that there was obviously no serious intention of passing them. The present Minister of Health, having been approached on the subject, had intimated that there was no time to pass a Bill this year, but that he would endeavour to introduce one early next year. Lord Newton submitted that if it was seriously desired to get rid of the smoke nuisance fresh legislation was imperative. No improvement in the situation would reasonably be expected until the Ministry of Health intervened and insisted upon a more efficient and uniform administration. "It is difficult to understand," he concluded, "why this Ministry was ever created if it is not to concern itself with a matter which affects the health, economy, and general amenity of life of the vast majority of the population."

COÖPERATION BETWEEN DOCTOR AND DENTIST.

IN 1921, as the result of a Departmental Committee of the Privy Council, a new Dentists Act was passed, which provided that no unregistered person should henceforth be able to practise dentistry. Under this Act a number of hitherto unrecognised practitioners who had vested interests became entitled to registration on complying with certain requirements. The Dental Board of the United Kingdom was established, and a large degree of autonomy was given to the dental profession. It was not to be expected that the 6000 qualified dentists then registered would appreciate the dilution of their body by the addition of some 8000 names. But the struggle of the unqualified men to obtain recognition, to secure registration, and to achieve some means of self-government had been arduous, the opportunity of making a start on the road towards the creation of an autonomous and respected profession was wisely seized, and the British Dental Association strongly supported the Government Bill which ultimately became law. Now dentists admitted under the 1921 Act range from men who have passed through the whole curriculum but failed in their final, and for want of means have

not qualified, through men who have had a really good apprenticeship and know a great deal about the practical side of their work, down to men whose early experience was gained at the expense of their patients. Even the last-named class have often acquired sound judgment as well as mechanical skill in the course of the years of practice which led to their inclusion on the Register. A letter from the Registrar of the General Council of Medical Education and Registration of the United Kingdom, which was published in THE LANCET of Feb. 28th, implies that doubt has arisen as to the propriety of coöperation between medical men and dentists admitted under the Act. He points out that doctors are entirely at liberty to give an anæsthetic for any person whose name appears in the Dental Register. We would be inclined to go further and to contend that refusal to coöperate could hardly be justified on general grounds. A practitioner called upon to administer an anæsthetic for any individual operator, however well qualified, whom he believed to be unskilful would be faced with a difficult problem; but any invidious distinction between those who have achieved membership of an honourable profession by examination and those who have been admitted to its privileges on other grounds is unseemly, and is likely to injure both professions in the eyes of the public.

A USEFUL WARNING.

To the Editor of THE LANCET.

SIR,—Last week our out-patient superintendent saw a man hanging about the department and speaking to patients. Wanting to know his business he pretended to be a patient, and limped past him, whereupon this man gave him a card with the name and address: "V. J. Vowler, Claims Assessor, 11, Ludgate Hill, E.C. 4," on it.

I wrote to Mr. Vowler asking for his explanation, and the enclosed correspondence has passed.

I think this method of getting business so objectionable that I feel all hospitals should be warned.

I am, Sir, yours faithfully,

London Hospital, E., March 6th, 1925.

KNUTSFORD.

[ENCLOSURES.]

(1)

To the Viscount Knutsford.

Kneesworth Hall, Royston, Herts.

MY LORD,—I am in receipt of your communication of the 26th ultimo in which you complain that your out-patient superintendent whilst pretending to be a hospital patient with a bad limp was given a card of mine.

I may say at once that I am not the person who it is stated gave your superintendent my card and I know nothing whatever about the matter, and the suggested indiscriminate and promiscuous use of the card by the individual in question was entirely without my knowledge or sanction and would not be countenanced by me.

At the moment I cannot make up my mind whose conduct it is to be deprecated most, your superintendent's for masquerading and assuming the rôle of an injured man or the other individual, but I do not know that I should view with great discrimination any complaint emanating from a gentleman whose zeal can carry him so far as to pretend to have an affliction which in reality he is fortunate enough to escape.

I am, My Lord, Your Obedient Servant,
V. J. VOWLER.

11, Ludgate Hill, London, E.C. 4, March 2nd, 1925.

(2)

SIR,—You will not find it easy to get anyone to believe that this man was touting for business for you actuated by mere philanthropy.

Do you suggest that he spent his own money in getting your advertisement cards printed, and gave his own time attending the out-patient department of the London Hospital without remuneration direct, or by commission?

Find some innocent marine, and tell him that story. Nobody else would believe it.

Yours faithfully,

KNUTSFORD.

MINISTRY OF HEALTH: CIVIL SERVICE BONUS.

IN a circular (No. 567) addressed to local authorities, the Minister of Health states that the Civil Service bonus, as reviewed on March 1st, has been fixed on the basis of an average cost of living figure of 80—that is, on the same basis as obtained during the six months commencing March 1st, 1924. In so far as insurability under the National Health and Unemployment Insurance Acts of officers employed otherwise than by way of manual labour, and in receipt of bonus on the Civil Service scale, is dependent upon the rate of their remuneration, the question of insurance should be determined until further notice with reference to the basic rate of remuneration, plus the bonus on such remuneration applicable from time to time. Officers of the classes concerned whose rate of remuneration with bonus based on an average cost of living figure of 80 will not exceed £250 a year are thus treated as insurable from March 1st. A "Ready Reckoner" for use in connexion with the bonus scheme has been prepared by the Treasury.

A PECULIAR CASE OF "ALBINISM."

IN THE LANCET of Nov. 15th, 1924, p. 1048, reference was made to a report in *Man* on the so-called white Indians of Panama, and in the current issue of the same journal Mr. F. W. H. Migeod states that there are places in Africa where there is a local tendency to albinism, and infers from certain evidence that the condition has nothing to do with intermixture of European blood. He states also that he has never seen an elderly adult case of albinism; all have been in children or young men. He narrates the case of a soldier, a native of the Gold Coast, Northern Territories Colony, who fell sick, and when, after a long time, he returned to duty he had become entirely white. The black pigmentation had disappeared, except for some mottling. He was in this state when Mr. Migeod last saw him, but this was in 1916. The natives in out-of-the-way places on the Gold Coast account for albinism by saying that the mother when pregnant saw a white man, and, owing to the shock, brought forth a white child, which appears to be a charitable interpretation.

SUMBUL.

WE have received from Messrs. Ralph L. Fuller and Co., of 21, Harp-lane, London, E.C., samples of Russian musk-root more accurately known as sumbul and sometimes called spikenard. They are of interest as showing that the drug, which has always enjoyed some measure of popularity, is again available for British doctors, for during the past eight years the isolated position of Russia has led to its practical disappearance from our markets. Sumbul has been used as a substitute for musk, which it much resembles in odour, while its medicinal properties, due to a resin and an essential oil, are held to be the same as those of asafoetida. It has had a place in the British Pharmacopoeia, but it was well known in Russia many years before it received any recognition in this country. However, as far back as 1850 we find the famous Dr. Robert Bentley Todd, F.R.S., prescribing sumbul in a case of epilepsy under his care at King's College Hospital, when he explained that the root had been brought to his notice by Mr. Savory of Bond-street, who had experienced difficulties in getting genuine supplies from Russia. Messrs. Fuller and Co. inform us that they have secured and warehoused a quantity sufficient to supply the requirements of the trade, and that many pharmaceutical chemists are now notifying their medical clients that tincture of sumbul is again obtainable.

TRAINING AND SUPPLY OF MIDWIVES: GRANTS FROM THE MINISTRY OF HEALTH.

IN 1919 the Board of Education (Midwives' Training) Regulations were issued, under which grants could be made by the Board to recognised residential institutions in aid of the training of intending or practising midwives. As the supervision of the arrangements for securing an adequate supply of midwives is within the province of the Minister of Health, it has been decided that, from April 1st, 1925, the Exchequer grants in aid of the training of midwives shall be made by the Minister of Health and not by the Board of Education, as formerly. The Minister of Health has now issued a Memorandum¹ setting forth the conditions upon which grants from the Exchequer will in future be paid in respect to the training of midwives. The grants, he states, will be paid to recognised residential institutions as in the past, and will be made only in respect of students who intend to practise as midwives or as health visitors or who are already employed as full-time health visitors. Further, as the Central Midwives Board, with the approval of the Minister, have recently revised their rules relating to the training of midwives and have decided to increase the minimum period of training, the new conditions for the grants will provide for the increase required by the extended period of training, which comes into force on May 1st, 1926. With regard to the supply of midwives, a circular (No. 559),² issued by the Ministry to local supervising authorities under the Midwives Acts, states that in rural areas where there are special difficulties in securing and maintaining an adequate supply of trained midwives, the Minister will be prepared to approve of contributions being made by a county council to the County Nursing Association in respect of the provision of trained midwives for service in the area of the council. These contributions will rank for the Exchequer grant of 50 per cent. under the Maternity and Child Welfare Regulations. It is intended that the contributions made by the County Council for the provision of midwives should take the place of any contributions which are or have been made by local authorities towards the cost of the training of midwives.

¹ Memorandum as to the Conditions upon which Grants will be made by the Minister of Health in Aid of the Training of Midwives. Memo 102/M.C.W. London: H.M. Stationery Office. 2d.

² Training and Supply of Midwives. Circular 559. London: H.M. Stationery Office. 1d.

X RAY APPARATUS.

WE have received from Messrs. Watson and Sons a catalogue (No. 68) of X ray apparatus and radium, and on examination it brings home the point that in the future it will be well if the student looks more carefully at the manufacturers' catalogues for descriptions of apparatus, while the writers of text-books might cease giving a third of their space to such technical detail. The present example gives a good list of modern and up-to-date apparatus, although perhaps there are not many novelties. Several useful improvements to Watson's well-known screening stand are shown, while on p. 155 the description of the new Gaiffe-Gallot and Pilon constant tension apparatus for deep X ray therapy is of real interest. The text is accompanied by a useful diagram. It is one of the few catalogues which devotes a good sized section to radium and radium apparatus, and although in so individualised a subject as radium therapy not a great deal of help can be given, many of the illustrations give valuable hints of different workers' technique. The whole catalogue is well printed. Messrs. Watson and Sons (Electro-Medical), Ltd., with whom are incorporated the X ray sections of the General Electric Company, Ltd., the British Thomson-Houston Company, Ltd., are contractors to the Admiralty, War Office, India Office, and many foreign Governments, and the address is Parker-street, Kingsway, W.C.2.

AMBULANCE COMPETITION TESTS.

THREE further additions to the series of folders prepared by Dr. Corbet Fletcher (John Bale, Sons and Danielsson, Ltd., 6d. per folder) for ambulance competition tests have recently been issued. These consist of special articles, hints on competitions, and a series of questions based upon the St. John Ambulance Association's Manual. No. 4, the first of the present series, deals with errors in treatment, No. 5 with the history of competitions and tests, and No. 6 with the preparation of competitions. They should prove valuable to the ambulance student preparing for examination, and to the examiners themselves.

BARBAROUS ENGLISH.

To the Editor of THE LANCET.

SIR,—May I be allowed to enter what I hope will seem a timely protest against the threatened introduction into English medical literature of barbarisms such as "to evaluate" instead of "to value"; "to stress" instead of "to lay stress upon"; "view-point" instead of "point of view"; "such and such diet was fed to such and such an animal" instead of "such and such animal was fed with such and such diet," and the like? I would quote in this connexion the exceedingly apposite remarks of Peter Mark Roget, himself a member of our profession, on the use of such expressions in the beautifully-written introduction to his well-known "Thesaurus of English Words and Phrases."

"Some modern writers, however, have indulged in a habit of arbitrarily fabricating new words and a new-fangled phraseology, without any necessity, and with manifest injury to the purity of the language. This vicious practice, the offspring of indolence or conceit, implies an ignorance or neglect of the riches in which the English language already abounds, and which would have supplied them with words of recognised legitimacy, conveying precisely the same meaning as those they so recklessly coin in the illegal mint of their own fancy."

I enclose my card and remain, Sir,

Yours faithfully,

March 5th, 1925.

M.A., M.D.

M. P.—A certain disability on returning to the erect position after prostatectomy is not unusual. It is possibly due to the thick band of fibrous tissue which forms around the drainage-tube from the bladder to the abdominal wall, which is pulled upon when the patient gets up and begins to walk about. The disability appears to be more pronounced after an operation in two stages than after an enucleation at one, but it is difficult to get reliable evidence on this point.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	..	..	£2	2	0
	Six Months	..	..	1	1	0
	Three Months	..	..	0	10	6
ABROAD	One Year	..	..	2	10	0
	Six Months	..	..	1	5	0
	Three Months	..	..	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "Westminster Bank, Ltd., Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET OFFICES, 423, Strand, London, W.C.2.

Goulstonian Lectures

ON THE STUDY OF

GASTRIC FUNCTION IN HEALTH AND DISEASE.

BY JOHN A. RYLE, M.D., F.R.C.P. LOND.,

ASSISTANT PHYSICIAN AND LECTURER ON MEDICAL PATHOLOGY,
GUY'S HOSPITAL.

LECTURE I.*

THE physiology of the human stomach has acquired so vast a literature since Beaumont's day that the most earnest student could scarcely hope to acquaint himself with all its history, much less to assimilate and to analyse the countless observations and experiments upon which our knowledge has been based. When, therefore, I received the honour of being called to deliver these lectures and decided, not without misgivings, to attempt such a survey as my title suggests, I felt that some explanation of my choice and purpose and of the scope of the undertaking would surely be required of me.

In my choice I was mainly influenced by the nature and the results of certain studies which have claimed my attention during the past five years. For the most part these studies have been of a clinical kind, but it was also my good fortune, at the suggestion of my colleague and teacher, Dr. A. F. Hurst, to be the first to introduce into this country in 1920 the fractional method of gastric analysis devised by Rehfuß and originally described by him in 1914. The investigations with this method in which I have been concerned may be grouped under three headings: (1) an inquiry into normal gastric function (in collaboration with Dr. T. Izod Bennett) based on an examination of 100 healthy men; (2) a collateral and subsequently extended inquiry into the various disturbances of gastric function encountered in the ordinary course of hospital and private practice; and (3) a short series of experiments on myself.

I was further influenced by a belief that something in the nature of a review of recent work on human gastric function might be of value, and even that it might be possible, on the basis of such a review, to formulate a clearer doctrine and a more scientific classification of the dyspepsias than is at present furnished in the text-books of general medicine.

During the past 10 or 15 years medicine may be said to have re-entered upon a physiological phase. Less dependent than formerly upon information acquired in the post-mortem room or available by means of animal experiment, we have turned with a new zest to the more practical study of function, both normal and abnormal, in the living human subject. The physiology of symptoms and the early evidences of perverted activity in one viscus or another are now being widely investigated, and seldom have better conditions obtained for useful collaboration between the physiologist and the physician.

The most important contributions to the study of gastric motility and sensibility include those of Cannon and Carlson in America and of Hurst in this country, while Rehfuß and his collaborators, and Crohn, with the fractional method, have initiated a new line of inquiry into the secretory and chemical phenomena of digestion. In addition, valuable contributions have been made by radiologists and surgeons. It must, however, be admitted that the general effect of all these researches has been rather to diffuse than to crystallise information, and that practical medicine has to some extent suffered in consequence. As so commonly happens, the introduction of new methods has stimulated expectation to march in advance of reason. On the basis of new tests the old error of according to a symptom the dignity of a diagnosis has been revived; we find, for instance,

even in recent literature, hyperchlorhydria and achylia discussed as clinical entities instead of as symptoms of various underlying pathologies. At one period and another radiography and the test-meal have been too highly appraised, and almost inevitably there has resulted a tendency not only to under-rate the importance of clinical observation, but even to disregard clinical data, the very interpretation of which should have been enhanced by the introduction of these methods. Operations have been devised and performed without proper regard for physiological principle, and certain ill-results of surgical interference have been regretted without being studied.

These errors in thought and practice, as is the case with all such errors, are to be traced to lack of accurate knowledge, to lack of correlation of existing information, and to a too frequent exaltation of theory. In the words of John Abercrombie,¹ "The best way of avoiding the errors which have been referred to, will probably be to keep in mind the important principle, that the object of physical science 'is to ascertain the universality of a fact.'" The closer intimacy which now obtains between clinical and physiological research should help to foster this principle.

I shall endeavour, wherever possible and whether dealing with subjective or objective phenomena, to trace the transition from the normal to the abnormal, and to bear in mind the conception so vigorously fostered by the late Sir James Mackenzie² that symptoms are best viewed as expressing disturbances of normal reflex mechanisms. Throughout I shall try to confine myself to considerations of the problem having a practical bearing. To the chemical and bactericidal properties of the gastric juices I shall not refer, for it would take too long and be beyond my scope to discuss them in detail. With structural disease of the stomach, excepting in so far as it is necessarily prominent among the causes of disturbed function, I propose in no wise to concern myself. Nor do I intend to discuss the study of gastric behaviour in animals.

With so much by way of introduction I need only add that the first lecture will deal with the study of the normal gastric responses, and the second and third lectures with the study of the gastric responses to disease.

THE SENSORY FUNCTIONS OF THE STOMACH.

The functions of the stomach may be conveniently reviewed under the three headings—Sensory, Motor, and Secretory. The first and almost the only indication vouchsafed to the individual that these functions are healthy or deranged is the state of his own sensations. In health he is for the most part unaware of his stomach excepting when hunger, satisfaction, or repletion tell him that it is empty, comfortably filled, or over-filled. In disease of many kinds he is reminded of its presence by such symptoms as pain, nausea, vomiting, flatulence, regurgitation, and loss of the desire for food. All of these symptoms may occur in the presence or absence of organic disease of the stomach itself. They therefore indicate derangements of function which may be produced either by local or distal stimuli. It is of the first importance to consider what is the actual significance of these sensations, and such considerations should properly precede a review of the objective evidence. It has long been supposed, and finally established by Hurst³ and others, that the mucosa of the stomach is insensitive to ordinary tactile, thermal, and chemical stimuli, and yet daily experience tells us that the organ possesses a sensibility of its own. Of the sensations which we may associate in whole or in part with the healthy stomach there are only four. These are the gastric elements of hunger, appetite, satisfaction, and repletion. Nausea, it is true, may be induced in an otherwise healthy person by disgusting emotions, and it also accompanies normal pregnancy; I have, however, deemed it better to regard it as a symptom of disordered function.

* Lectures II. and III. will appear in subsequent issues of THE LANCET.

Hunger and Satisfaction.

The most important contribution of the past decade to the study of hunger is to be found in the writings of Carlson,⁴ published in book form in 1916. As the result of an exhaustive series of experiments and graphic records obtained with the aid of balloons introduced into the stomach, he concludes that the local element in the sensation of hunger is dependent upon the tonus and peristaltic contractions of the gastric musculature, his work confirming and supplementing the earlier findings of Cannon and Washburne.⁵ His experiments included frequent observations on a healthy man with a gastric fistula, on himself and colleagues, on individuals at various ages and in various conditions of impaired health, and on lower animals. It is open to any one of us by the simple experiment of fasting to appreciate the rhythmical character of the hunger sensation. That this rhythmical sensation is associated with an increase in peristalsis and intragastric tension is shown by the occurrence during the hunger phase of borborygmi and of frequent small eructations due to displacement of some of the air from the fundic air-bubble. Although not subscribing to the view that the stomach is insensitive to thermal stimuli, Carlson otherwise confirms the observations of Hurst that the main element in the production of gastric sensibility is muscular tension. Intragastric and also muscular tension may obviously be influenced by many factors, including the tonic and peristaltic activity and the elasticity of the stomach wall itself, the nature and bulk and rate of introduction of the stomach contents, and the patency or otherwise of the pyloric and cardiac sphincters. Upon various combinations and modifications of these factors and upon disturbances of motor rhythm the majority of all gastric sensations, whether normal or morbid, depend, the sensations in each instance originating in the muscle-fibre and being conducted by the nerves distributed to it. Similar properties pertain to all the hollow viscera, and indeed it would be natural to suppose with all of them that the most essential perception of which they should be capable is the perception of states of emptiness and fullness, and of muscular hypertonus and hypotonus. Appreciation of tonus (or posture) and of tension for them is as important physiologically as is the appreciation of light and colour by the eye, of sound by the ear, of touch by the skin, and of position and tension by the skeletal muscles. In brief, the special sense of the hollow viscera, as Hurst and Carlson have demonstrated, and as Brinton⁶ surmised nearly 70 years ago, is their particular form of muscle-sense. In the case of the rectum or the bladder the state of emptiness is the state of comfort or "unawareness," but evacuation is their obvious function. The main function of the stomach is to replenish, and so the state of comfort is satisfaction. Satisfaction occurs when the stomach walls are adequately relaxed so as to enclose or grasp a meal of appropriate bulk and consistency. It does not necessarily follow that emptying of the stomach is immediately succeeded by an increase of tonus sufficient to induce hunger, but too prolonged emptiness results in tonic and peristaltic contractions of a degree sufficient to awaken consciousness in the form of the hunger discomfort, and this at times may even become a painful sensation.

Repletion.

Repletion may give rise to sensations which are mildly uncomfortable or definitely painful, and is experienced when the stomach is overfilled or too rapidly filled with a normal quantity of food or fluid. Gross and rapid over-eating may conceivably, but very exceptionally, cause distension and stretching of muscle fibres; in fact, dilatation of the healthy stomach from over-eating is probably as rare as dilatation of a healthy heart from over-exertion. Generally the sensations of repletion depend upon an increase in tension due to the fact that muscular relaxation has not proceeded *pari passu* with the introduction of food or fluid.

Appetite.

Although such a distinguished and careful observer as Beaumont⁷ stated that "Appetite and hunger belong to the same class of sensations; they differ only in degree," modern observers regard the sensations as having a separate nature and origin. To such an extent do physicians rely on appetite as an index of physical health and loss of appetite as a symptom of physical disease, that it is a matter for some surprise that closer attention is not paid by Carlson to the question of its genesis, and that he seems to stress the psychic elements in its production at the expense of the gastric elements.

The following are the essential differences between the sensations of appetite and hunger. The first is a pleasant sensation; the second unpleasant. The first may occur in an adequately fed subject, may be present even when the stomach contains food in plenty, is stimulated rather than diminished by pleasant foods and beverages, and is only abolished by repletion. The second results only from undue abstinence from food or excessively rapid utilisation of food, is absent when the stomach is filled, and is relieved by eating. The first is a daily experience in health; the second is only an occasional experience under the usual conditions of civilised life. The first has a sustained quality; the second is felt as a recurring or intermittent sensation.

Other senses besides taste may stimulate appetite, and in man sights, smells, sounds, and the general sensory comforts of pleasant environment may all react in its favour. To a great extent it is undoubtedly a "conditioned reflex." The localisation of the appetite sensation is not so accurate as that of the hunger sensation, but this is partly because it is a less clamant spokesman. Some refer it to the pharynx or oesophagus, some to the epigastrium, or to all three. Personally I experience the sensation mainly in the gastric zone. In any case the ability to localise it at all indicates the possibility that, as with hunger, there may be a local visceral process concerned, and there are various clinical, radiographic, and pathological observations which lend support to the view that appetite, while differing from hunger in many respects, has also a local origin in the upper alimentary tract. These observations point to the tonic activity of the gastric and perhaps the oesophageal plain muscle as the probable factor, while, for the appreciation of hunger, peristaltic activity is—as Carlson's experiments suggest—a necessary addition. Appetite may occur without hunger, but hunger seldom, if ever, occurs without appetite. Peristaltic activity (in the same manner as the activity of skeletal muscles) requires for its initiation a certain degree of tension or postural tonus. It may be urged, too, that just as general well-being and preparedness for physical effort are associated in idea and fact with a favourable state of tonus and adaptability of the skeletal muscles, so too digestive well-being and preparedness for digestive effort are associated with a favourable state of what may be termed "anticipatory" tonus in the plain muscle of the stomach or upper alimentary tract generally. Certainly there is a close inter-relationship between the two states, for general well-being and good appetite are associated phenomena, and it will be agreed that appetite is stronger in the vigorous athletic type of individual and that it varies directly with constitution and habit. Gastric tonus from the radiographic point of view shows a similar variation with physical type.

In support of the view that appetite is related to gastric tonus we also have radiographic evidence in certain diseases accompanied by poor or by excessive appetite. Thus hypotonus is a very common finding in sufferers from pulmonary tuberculosis and other debilitating conditions in which appetite is diminished. Conversely in conditions such as duodenal ulcer, in which appetite is increased, hypertonus is frequently recorded. Hypertonus is also described in diabetes. Barclay,⁸ on the basis of radiographic observations, relates the appetite sensation to gastric tonus, and has visualised tonic adaptation in response to such

appetite stimuli as the exhibition of savoury foods or even the mention of a glass of beer to hospital patients.

Of all the diseases in which loss of appetite is liable to develop, in none is it more constant or pronounced than carcinoma ventriculi. Brinton⁶ states that it is present in 85 per cent. of cases. The greater the infiltration of the stomach wall the more profound is the anorexia. Needless to say, anorexia is encountered in malignant disease elsewhere, but generally in the later cachectic phases. In carcinoma of the stomach it is often an early symptom. In "leather-bottle" stomach it may be the only symptom, and may occur independently of any extreme loss of weight, anæmia, or other factors, such as pain and sickness, which would be calculated to induce a secondary anorexia. The following case appears to me to support the contention that appetite may be a particular function of the stomach:—

A man in the middle forties had complained for two years of complete loss of appetite. He was leading throughout this period an energetic life, both physically and mentally. He played games with vigour, but no measures which he could adopt and no treatment prescribed produced the slightest amelioration of his symptom. He had no pain, and his loss of weight was not more than could be accounted for by his diminished intake of food. On clinical and radiographic evidence and the discovery of a complete achlorhydria a diagnosis of "leather-bottle" stomach was made, and at operation the typical appearances of this condition were revealed.

In such a condition the function of tonic adaptability is obviously entirely destroyed; in this special instance the only concomitant symptom was complete destruction of appetite. The anorexia which accompanies acute fevers, fatigue, and neurasthenia is due partly to a relaxation of tonus, which may be present also in the skeletal muscles, and partly to the nervous depression. In a case of advanced "anorexia nervosa" I have seen an unusual degree of atony, or, more correctly, of hypotonus, demonstrated radiographically. In such cases physical exhaustion combines with the perverted and depressed emotions in bringing about the loss of tonus. A similar asthenia probably operates in the case of hunger-strikers and professional fasters, who notoriously lose their appetite in the later stages of their fast. It should, however, be mentioned that Carlson⁴ demonstrated both in man and dogs a tendency to increasing tonus and peristaltic vigour during starvation, and that this persisted when the hunger and appetite sensations had become enfeebled. He attributes this to depression of the central nervous system; it has, however, occurred to me that diminishing adaptability in the muscle coincident with the steadily amplifying tonus (just as with extreme hypotonus or with rigidity of the stomach wall) may be a partial explanation, for a healthy or normal tonus is that from which a normal movement or adaptation can most readily be initiated. Pavlov⁹ showed with animals that appetite stimuli were capable of producing a secretory response, and since secretory and motor responses are both of vagal origin and commonly show a parallel behaviour, it is highly probable that there exists a simultaneous muscular response. Even admitting that there is a strong psychic and memory element in the production of appetite, it seems justifiable to submit that there is also a stimulus transmitted to the gastric musculature which enhances its tone to a sufficient degree to waken consciousness. The necessary degree of tonic activity may be extremely slight and not easily susceptible of demonstration, but when it is considered how small and insignificant are the degrees of tonus in a skeletal muscle which serve to inform us of its posture or the stresses opposed to it the hypothesis becomes at least a reasonable one.

Beaumont⁷ suggested that hunger and appetite might be due to distension of the gastric glands or blood-vessels. Possibly the sudden sensation of warmth or "glow" in the epigastrium, which is sometimes felt at the beginning of a pleasant meal

and which is more constantly induced by alcohol, may be associated with this phenomenon, but the sensation to my mind is quite different from the appetite sensation.

Briefly, to summarise the view of the gastric appetite sensation which I have endeavoured to sketch we may say that *the sensation is in part a memory process and in part a local manifestation of efficient gastric tonus reflexly induced by the memory stimulus, or by the more direct stimulus of seeing, smelling, tasting, or swallowing food, or by some combination of these factors.*

I have digressed into a discussion of appetite because the gastric elements in its production seem to me to have been undervalued, and because in the clinical study of general and gastric disorders we have long been accustomed to rely upon its presence, perversion, or absence as being of such peculiar diagnostic and prognostic significance.

In the foregoing sections frequent use has been made of the word tonus, and it is desirable that the term should be used in its most accepted sense. Sherrington¹⁰ quotes Hughes Bennett's¹¹ definition of "reflex muscular tonicity" as being "that slight constant tension which is characteristic of healthy muscle." In Sherrington's words "reflex tonus is in short reflex posture." The recent investigations of Hunter¹² and Royle¹³ have shown that the maintenance of posture both in skeletal and visceral muscle is a function of the sympathetic.

When the stomach is filled so as to raise the intragastric tension, the tension, as demonstrated by Moritz,¹⁴ quickly falls again to its previous level by an adaptation of the musculature so as to accommodate comfortably the increased content. The state of tension of the stomach muscle is its postural tonus, and, as Sherrington points out, we might speak of its "quarter-pint" and "half-pint" postures. Tonus and tension are not synonymous, for, without altering its posture, the tension in a muscle-fibre may be raised by the application of an external pressure or a stretching force. By the automatic regulation of intragastric and muscular tension we are in health spared from experiencing all symptoms—apart from those which we rather dimly appreciate in the guise of hunger, appetite, and satisfaction, and which depend upon an exaggeration or reduction of muscular tension of one kind and another inadequate for the production of real pain or discomfort. If, however, the stomach be too rapidly filled, or be allowed to remain too long empty, or if through exaggerated vagal stimulation in physical disease or emotional stress, or from other causes, a condition of exaggerated tension results, then discomfort or pain is developed.

The conception that the secretory behaviour of the stomach or the chemical reactions of its contents may directly influence sensibility is discounted in many ways. Hurst³ showed that with the single exception of alcohol none of the chemical stimulants which he employed, including hydrochloric acid in the highest physiological concentration, are capable of promoting gastric sensibility. In the series of 100 healthy men investigated by Bennett and Ryle¹⁵ every variety of secretory response was encountered. In four cases there was complete achlorhydria throughout the test. In another group the readings were so high as to have suggested, on earlier conceptions, some pathological condition. All of these men were free from dyspeptic symptoms, and the only one of them who mentioned an unusual readiness for meals was one of a small group showing a normal range of acidity but an unusually rapid rate of emptying.

In the light of existing knowledge it thus becomes fair to conclude that we have in the "symptoms of health"—hunger, appetite, satisfaction, and repletion, and the readiness with which they appear and disappear—a measure not only of the muscular sensibility, but also of the muscular and motor efficiency of the stomach; but these symptoms give no index of its secretory behaviour.

THE MOTOR FUNCTIONS OF THE STOMACH.

Radiographic examination of the stomach after an opaque meal has probably contributed more to the accurate diagnosis of organic gastric disease than any other method of physical inquiry excepting surgical exploration. Its contributions to the study of gastric function have been less valuable and some of its earlier conclusions were misleading. This was due mainly to an inadequate study of the normal. Until recently most of the literature of gastric radiology has been provided by observers concerned with the examination of patients and often unconsciously actuated by the desire to make a diagnosis, or at least to find an explanation for symptoms for which the clinician had not provided a suitable explanation.

It is now recognised that the normal stomach may present a wide variety of appearances after the administration of a bismuth or barium meal; that the same stomach may behave differently on different occasions; and that a number of conditions formerly reported as abnormal are really consistent with perfect health. Hurst and Morton,¹⁶ as long ago as 1907, drew attention to the great variations found in healthy students during radiographic examinations of the alimentary tract. If at an earlier date a large series of healthy men and women had been carefully examined and reported upon we should have been spared many difficulties and doubts in clinical work. The functions of the stomach which may be observed radiographically are its tonus, peristaltic activity, and emptying-rate.

The *tonus* of the stomach may to some extent be judged from the position, size, and shape of its shadow. Of these the position alone is easily measurable; in the normal attitudes of health it is only influenced in a very small degree by the state of the abdominal musculature and other external factors. An important investigation has been published by Moody, Van Nuys, and Chamberlain,¹⁷ who examined 600 healthy men and women, described remarkable variations, and concluded that the use of such terms as gastropexia is unjustifiable, and that the position of the stomach may be so low or so high in healthy persons that these variations cannot in themselves be regarded as evidence of disease. Table I. briefly epitomises their findings.

TABLE I.—(Moody, Van Nuys, and Chamberlain.)
Position of the Stomach in 600 Men and Women Students.

Position of the greater curvature with reference to the iliac crests.	Percentage of subjects (nearest whole figure).	
	Men.	Women.
More than 2 inches above	2	1
" " 1 inch " " " " " " " "	5	2
Less " " 1 " " " " " " " "	18	10
Less than 1 inch below	23	19
More " " 1 " " " " " " " "	27	21
" " 2 " " " " " " " "	16	22
" " 3 " " " " " " " "	6	17
" " 4 " " " " " " " "	3	8

It will be noted that hypertonus, as would be expected, on ordinary clinical experience, is more commonly an attribute of the male sex and hypotonus of the female sex. Employing Schlesinger's¹⁸ classification into orthotonus, hypertonus, and hypotonus, Moody, Van Nuys, and Chamberlain found in their male series that orthotonus was present in 79 per cent. of cases; hypertonus in 17 per cent.; and hypotonus in 4 per cent. It is interesting to compare these figures with those obtained in the normal series of Bennett and Ryle,¹⁵ who found normal secretory curves in 80 per cent. of cases; hyperchlorhydria and high normal curves in 15 per cent.; and hypochlorhydria and achlorhydria in 5 per cent. In their female series Moody, Van Nuys, and Chamberlain found orthotonus in 78 per cent.; hypertonus in 7 per cent.; and hypotonus in 15 per cent.

Campbell and Conybeare¹⁹ examining independently the same group of healthy students by means of the fractional test-meal and radiographically, were able to demonstrate a definite relationship between hypertonus and hyperacidity on the one hand and hypotonus and hypoacidity on the other. They also correlated these phenomena with gastric motility and the general physique of the individual. Hypertonus, hyperacidity, and rapid emptying (of barium) occurred most frequently in men of the broad-chested, vigorous, athletic type; hypotonus, low acidity, and slow emptying (of barium) for the most part in narrow-chested men below the average of physical development, and not taking regular exercise. Between these extreme types was a much larger group showing normal tonus and normal acidity. Tables II. and III. illustrate certain of their findings.

TABLE II.—(Campbell and Conybeare.)
Showing the X Ray Findings in 50 Men with Hyper- or Hypochlorhydria Compared with the Normal.

	Percentage found in which the stomach was—		
	High or rapidly emptying.	Normal.	Low or slowly emptying.
Of six men with hyperchlorhydria (Group 6) ..	67	33	0
Of 39 men in whom the stomach was normal (Groups 3, 4, 5) ..	15	70	15
Of five men with hypochlorhydria (Groups 1 and 2) ..	40	0	60

TABLE III.—(Campbell and Conybeare.)
Showing that in Most Cases a Subject who was Picked Out as Unusual by X Rays was also Unusual by His Test-meal.

	Percentage found as normal by test-meal.	Percentage found unusual—i.e., Groups 1, 2, or 6.
Of 31 subjects normal by X rays	93	7
Of 15 subjects unusual in one particular by X rays ..	60	40
Of eight subjects unusual in both particulars by X rays ..	38	62

The association of particular gastric appearances with particular physical attributes has long been recognised by radiologists. In a less distinct way the association of physical type and certain dyspepsias has long been observed by physicians, who would, perhaps, go further and associate certain temperaments and nervous attributes with certain physical and dyspeptic types. Thus it would, I believe, be agreed that the patient with duodenal ulcer is frequently either of the vigorous, broad-chested type, or lean and nervous and fittingly described as a "hypertonic" individual, and that he commonly shows brisk and even exaggerated tendon reflexes. At the opposite end of the scale the female patient with visceroptosis may be described as "hypotonic" and commonly shows sluggish tendon reflexes. With normal subjects there have not, so far as I have been able to ascertain, been any previous anthropometric studies of such a complete kind as those of Campbell and Conybeare, and Moody, Van Nuys, and Chamberlain. Carman,²⁰ from the point of view of the clinical radiologist, writes as follows: "Thus I feel that the chief test by which the stomach is to be adjudged of normal tone is its correspondence to the habitus of the individual, and not its form, size, and position alone. With the broad habitus the tone may vary from orthotonus to hypertonus. With the normal habitus it may be expected to vary from orthotonus to at least slight degrees of hypotonus. With the enteroptotic habitus, hypotonus is the rule. . . ." The observations quoted above lend strong support to this useful generalisation.

If the recognition of variations in different individuals is important the recognition of variations in the same individual at different times and under varying conditions is equally so. Barclay,⁸ in a valuable dissertation on the normal stomach, emphasises the need for greater familiarity with these variations, and states that: "The alterations possible in the shape and size of the normal stomach are many, and apart from displacements such as by collections of air in the intestines, they are almost all due to variations in tonic action." He mentions an experiment on three healthy students conducted by Morison, who reported that the appearances on one occasion were of the normal "J" and "cow-horn" types; on a subsequent occasion "not one of them was of the so-called normal type, various stages of atony being present." Barclay refers also to the remarkable alterations in the shape and position of the stomach as the result of disgusting smells, sudden emotion, and fright, and in association with feelings of faintness. On one occasion he saw the lower border of a normal orthotonic stomach drop nearly 3 inches when the patient was startled by a banging door. He attaches great importance to the tonic action of the oblique fibres of the stomach and suggests for them a sling-like supporting mechanism, quoting the anatomical investigations of Jefferson,²¹ and indicating that they probably have a separate purpose and can contract independently of the circular and longitudinal fibres. Even the remarkable "cup and spill" stomach, in which the food collects in the upper portion of the organ and spills over into the lower portion, is referred to by Barclay as "another picture of the normal stomach." He regards this appearance as being due to the action of the oblique fibres "contracting or remaining in posture."

The peristaltic activity of the healthy stomach is chiefly a function of the mid-gastric and præ-pyloric portions. It begins shortly after the ingestion of the meal, but its advent may be retarded or even inhibited by nervous states and emotions. The depth of the waves shows wide variations; it is usually greater in association with hypertonus and less with hypotonus. Position may also influence peristaltic activity, which is commonly increased when the subject is lying prone.

Motility or emptying-rate may be usefully studied by radiographic methods, although it is doubtful whether the information thus obtained is as accurate as that furnished by the fractional test-meal. Again, the widest variations are encountered. According to Carman,²⁰ "It would seem that by no simple test can sharp and constant lines of demarcation be drawn between hypermotility, normal motility, and hypomotility." The conditions of the test must obviously be standardised, for differences in the opaque salt employed, in the bulk and character of the meal, and the management of the patient after its ingestion may all have an influence on the rate of emptying. To Haudek²² we are indebted for the double-meal method of examination and the establishment of the six-hour limit. With the barium meal usually employed in this country and given to a fasting subject the stomach should be completely empty within six hours. The average emptying-rate in patients without obstructive lesions is considerably less than this and may be said to lie between three and five hours. I have not succeeded in finding a reference to any accurate radiographic study of the emptying-rate and its variations in a long series of healthy men or women, but P. J. Briggs (communicated) in 100 patients without gastric or duodenal disease obtained the following figures. The stomach emptied in two and a half hours in 1 per cent.; in three hours in 6 per cent.; in three and a half hours in 9 per cent.; in four hours in 44 per cent.; in four and a half hours in 32 per cent.; and in five hours in 8 per cent.

The relationship between gastric tonus and emptying-rate is not so definite as might be supposed. A hypertonic stomach does not necessarily empty quickly nor a hypotonic stomach slowly, and much

depends on the nature of the meal employed. In health as well as in disease the behaviour of the pylorus is apparently the most important factor regulating the rate of emptying.

Although the fractional test-meal can obviously give no direct information relative to tonic or peristaltic activity, it is a valuable test of motility. Levy²³ advocates the gastric tube as being more accurate than X rays for gauging the emptying-rate of the stomach, and in my own clinical work I have formed the same opinion. As will be shown later, the rate of emptying is the most constant and accurate of all the findings with the fractional method. The average rate of emptying with the standard gruel meal in a healthy man is two hours and the extreme variations are one hour and two and three-quarter hours. Briggs, examining radiographically a group of 20 men from the normal series of students studied by Bennett and Ryle and employing a meal of approximate density to the standard gruel meal, found closely comparable emptying times, the average rate of emptying, irrespective of tone, being two hours and eleven minutes.

The table quoted hereunder (Table IV.) illustrates the rate of emptying as judged by the fractional

TABLE IV.—(Baird, Campbell, and Hern.)
Rate of Emptying of the Gruel Meal. Figures given as Percentages.

	Average time of emptying.	1 hr. or before.	Stomach contains no starch at (hours)—						
			1½	1¾	1½	2	2½	2¾	or later.
This series (57 men) ..	2.1	5	7	14	9	17	16	10	22
Bennett and Ryle (100 men) ..	1.9	0.6	3	7	13	17	14	18	22
Combined (157 men) ..	2.0	5.5	4	9.5	12	17	15	15	22

test-meal in the two series studied by Bennett and Ryle¹⁵ and by Baird, Campbell, and Hern.²⁴ The extreme variations from the average normal figure are seen to be not more than 50 per cent. of that figure—a much smaller percentage variation than obtains with other measurable quantities, such as gastric acidity. The one hour test of Ewald can obviously give no such accurate estimate of motility.

THE SECRETORY FUNCTIONS OF THE STOMACH.

The fractional method of gastric analysis was described by Rehfuß²⁵ in America in 1914, but did not attract attention in this country until 1919. Since then its numerous advantages over the older one-hour test of Ewald have resulted in its adoption both as a method of physiological inquiry and as an aid to clinical work in many hospitals and schools in this country. Douglas and Priestley²⁶ have recently incorporated this method in their practical text-book on Human Physiology. It has formed the basis of many gastro-enterological studies in recent years, and with its help many of the classical observations of Pavlov in the case of dogs have now been confirmed in man. Indeed, a voluminous literature of the fractional test-meal has grown up on both sides of the Atlantic, but it has for some reason found less favour on the Continent. It is unnecessary to refer here to the technique, for full descriptions of the method have been given elsewhere.^{27 28 29}

The advantages of the fractional method may be summarised as follows:—

1. It permits of accurate measurement of the fasting juice and a study of its mucus, bile, and cell content, together with estimations of its free and total acidity.

2. It provides in graphic form an indication of the chemical processes at each stage of gastric digestion and detects late rises in acidity and such phenomena as continued secretion. By recording the times at which bile-regurgitation occurs it gives an indication of the occurrence of pyloric relaxation and duodenal reflux.

3. It determines with considerable accuracy the emptying rate of the stomach for a standard meal.

4. By combining chloride estimations with those for free and total acidity it furnishes information relating to the factors causing neutralisation and so indirectly again to the functions of the pylorus.

5. In pathological cases the presence of food residue in the fasting specimen, of blood or pus in this or subsequent specimens, the odour of the samples and other physical characters may also be observed.

Amongst the possible fallacies which have to be considered are the following:—

1. The action of the tube as a foreign body in the stomach.
2. The stimulation of excessive salivation which would tend to dilute and to a less extent to neutralise the free acid.

3. Diminution of the psychic secretion by the circumstances of the test and the unappetising character of the meal.

4. Emotional inhibition or exaggeration of secretion during the test.

5. Duodenal regurgitation from retching.

6. Variations from day to day in the curve of a given subject.

7. Variations in acidity at different levels in the stomach.

8. Variations with sex and age.

These will be discussed seriatim.

1. Inert foreign bodies in the stomach do not apparently influence its secretory behaviour. This was demonstrated by Beaumont⁷ in the case of man and by Pavlov⁸ in the case of animals.

2. A foreign body in the oesophagus may, however, induce a vigorous reflex salivation, and acting in this way, the gastric tube can cause an artificial hypo-acidity, as was shown by Bennett and Ryle.¹⁵ In their series all cases of excessive salivation were excluded. In clinical work it is occasionally necessary to insist on expectoration of saliva or to make allowance for its occurrence in interpreting the curves. The proportion of cases in which it occurs has been small in my experience.

3. In man there is a certain amount of continuous secretion which can at all times be shown to be present excepting in cases of genuine achylia, but the importance of the psychic secretion is uncertain. Carlson⁴ concludes that "the significant appetite secretion in man is that induced by tasting and chewing good food," and considers that Pavlov placed too great an emphasis on the secretion as induced in a hungry animal by seeing and smelling food. Haneborg²⁹ also doubts the importance of psychic secretion in man. Bennett and Venables³⁰ failed to demonstrate it in students, and in a few unpublished observations on myself I could not convince myself of its occurrence. I think, however, that the question is deserving of fuller inquiry. It cannot be denied that the insipid nature of the gruel, and the absence of any need for mastication, would tend to minimise appetite secretion (if it occurs), but this should be considered rather an advantage than otherwise, since it must render the conditions more comparable for different individuals.

4. That emotional inhibition of secretion may occur has been shown by various authors, including Hornburg,³¹ in the case of the continued or appetite secretion in a child, and more recently by Bennett and Venables,³⁰ who greatly modified the acid curve with the standard meal and lengthened the emptying time of healthy individuals by suggesting nausea or anxiety to them while under the influence of hypnosis. Generally the emotional stresses of the test are not significant. The proportion of cases in which there is real difficulty in swallowing the tube or serious retching or nausea is small. Both with hospital and private patients the initiation and supervision of the test can safely be left to nurses who have had a little preliminary instruction and can appreciate the importance of making light of the difficulties. Among many hundreds of cases in the investigation of which I have been directly or

indirectly concerned, I can call to mind less than half a dozen in which emotional factors prevented the swallowing and retention of the tube, and gross variations in the curves which could reasonably be attributed to mental or physical distress have been rare.

5. Just as salivation may alter the conformation of the curves of acidity by dilution and neutralisation, so, too, an abnormal amount of duodenal regurgitation consequent upon retching and recognisable by the presence of unusual quantities of bile may create a fallacy. Continued retching is even more rare in my experience than continued salivation. Nevertheless, admitting that there is often a disturbing psychic factor on the occasion of the first test, it is obvious that more reliable findings would be obtained by repetitions of the experiment. In clinical practice this is seldom feasible.

6. It is important to dispose of the criticism that there may be wide variations in the responses of the same individual from day to day. On the analogy of the variable tonic and peristaltic behaviour of the stomach secretory variations would also be anticipated, and such changing factors as appetite and hunger and minor differences in the conditions of the test might be expected to find reflection in the acid curves. We do not expect constant and identical behaviour on the part of other glands, such as the salivary and sweat glands, even under closely parallel conditions. With the fractional test-meal the conditions are, so far as possible, standardised by carrying out the test at the same time in the morning after the night's rest, by employing the same meal and the same method, and by encouraging the subject to occupy his or her mind with a book or other diversion during the period of the experiment. With these precautions the variation in the results obtained from the same individual on different dates have generally been slight. Where they appear more considerable the general conformation of the curve is maintained and the rate of emptying is remarkably constant. Subjects with low curves or achlorhydria show low curves or achlorhydria; subjects with high curves show high curves on subsequent occasions. The four curves here given were obtained in my own case on the dates indicated. (Chart 1.)

Bell and MacAdam³² performed the interesting experiment of examining the same man on no less than 20 consecutive days. They found the rate of emptying remarkably constant. On 13 occasions it was one and a half hours. On five occasions it was one and three-quarter hours; on two occasions it was two hours. The general conformation of the curves was similar, but the curve obtained on the first day was distinctly lower than on any subsequent day.

7. Gorham³³ and Kopeloff³⁴ have criticised the fractional test-meal on the ground that acidities at different levels are sufficiently divergent to render the ordinary conclusions unreliable. It need hardly be pointed out that it is a part of the technique to keep the tube at the same level during the whole period of the test, and having regard for the fluidity of the gruel meal and the constant activity of the stomach during gastric digestion, it is difficult to believe that the contents can escape thorough mixing. On studying the reports of Gorham and Kopeloff, it appears that they did not employ the gruel meal. Kopeloff employed the tea and toast meal, and Gorham shredded wheat and water. With meals of this nature it is obvious that a certain amount of sedimentation will be liable to occur; that the farinaceous portions will be mixed with saliva; and that there will be greater variability in the fluidity of the samples. The experiments of Gorham and Kopeloff thus require repetition with the gruel meal. Even allowing that their criticism may be reasonable from the scientific standpoint, it need not necessarily be held to invalidate the practical utility of the test; Wheelon³⁵ supports Gorham's findings, but does not condemn the clinical employment of the test-meal. Fractional analysis is chiefly employed as a clinical test, and can never, by any stretch of imagination, be regarded

as an accurate chemical procedure. It must be clearly appreciated that its findings merely portray in a general way the results of the numerous processes influencing the chemistry of the gastric contents from moment to moment. A similar lack of appreciation of the objects and limitations of the test attach also to the contentions of Cole and Adie³⁵ and of Kopeloff,³⁴ who have urged the inadequacy of the usual titration methods and the importance of hydrogen ions and buffer salts in the estimation of gastric acidity. The time and attention expended

of the instances of hyperchlorhydria after 40 were in men aged 60 and upwards.

In summary we may conclude that the practical utility of the fractional method as a means of studying gastric function has been sufficiently established; its value in clinical work is great, but it must not be regarded as a "diagnostic" test excepting in the presence of obstructive lesions.

The findings in regard to gastric secretion and motility and the factors bringing about neutralisation in the normal series of 100 healthy students examined by Bennett and Ryle may be summarised as follows:—

The Fasting Juice.

This varied from 10 to 150 c.cm. with an average of 54 c.cm. Bile was present in 40 per cent. of fasting specimens. The range of free acidity was from 0 to 60 (per cent. of decinormal soda), taking all the cases, and from 0 to 22 in the 80 cases providing the figures for the standard chart. (Chart 3.) In a series of individual examinations of my own gastric juice carried out over a period of 31 days the quantities varied from "a few c.cms." obtained with difficulty to "20 or 30 c.cm." obtained with ease. It should be stated that my curve of free acidity corresponds closely with the mean of the 80 per cent. of normal students. The free acidity of the specimens varied from 0 to 22 and the total acidity from 4 to 38 with a difference between free and total acidity ranging between 10 and 15. During a portion of this experiment I was on a diet as nearly as possible salt-free. Over this period the fasting specimen was scanty and obtained with difficulty, but the response to the standard test-meal was not influenced. Bile in the fasting juice was present or absent with equal frequency and sometimes absent in the first syringe-ful and present in the second, suggesting that either aspiration or automatic reflux from the duodenum had occurred.

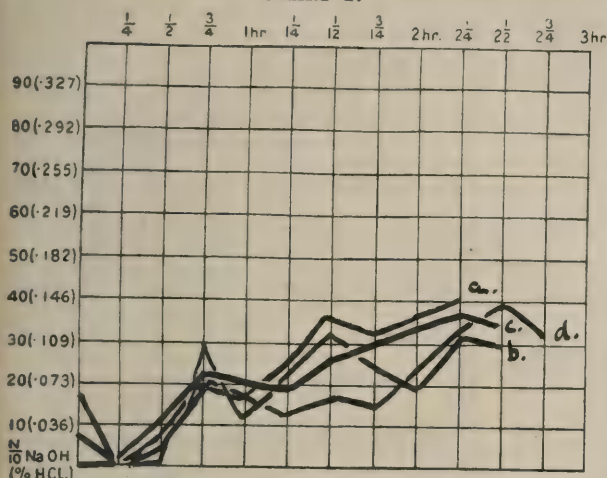
Acidity.

The percentage of free acid in 91 of the cases showed a steady increase after ingestion of the meal, reaching a maximum at one and a quarter hours, and was thereafter followed by a gradual fall. The extreme variations in the curve of the acidity are shown in Chart 2. Chart 3 shows the variations in the 80 per cent. selected to compose the standard for comparison in clinical work. There is generally a difference between the curves of free and total acidity of 10 to 15 per cent. N/10 NaOH, and they run closely parallel. Four cases in the series—i.e., 4 per cent.—showed complete absence of free acid throughout the test on each of the several occasions on which they were examined. Confirmation of this finding was obtained by the alveolar CO₂ method of Dodds. Campbell⁴³ criticises this observation and suggests that the incidence of genuine achylia in health may be less than 4 per cent. and that if the total chlorides had been estimated in these cases it would possibly have been found that some of them were not cases of achylia, but of achlorhydria due to excessive neutralisation. In the series examined by himself in collaboration with Baird and Hern there were three cases of achlorhydria, but only one of these was shown to have a constant achlorhydria and subsequent physicial studies raised doubts as to the fairness of classifying him as a healthy subject. Eight cases (Bennett and Ryle's series) showed hyperchlorhydria (acidity above 60 or 0.219 per cent. HCl) and of these five gave climbing types of curve akin to those encountered in pathological conditions such as duodenal ulcer. Six cases in the series showed a normal range of acidity, but unduly rapid emptying. The important conclusion to be drawn from these observations is that neither hyperchlorhydria nor achlorhydria can in themselves be regarded as pathological findings.

Bile Regurgitation and Secretion of Mucus.

Bennett and Ryle, and Baird, Campbell, and Hern refer in their two series to the frequent presence of bile in the fasting juice and also in the later specimens of the test-meal. Its appearance in the later specimens

CHART 1.



Showing response of same individual on four different occasions. Standard gruel meal. (a) 18/1/20; (b) 25/1/20; (c) 1/2/20; (d) 9/5/20.

on such accurate methods would be out of all proportion to the results obtainable. Haneborg³⁹ states that the curve of hydrogen-ion concentration in fractional specimens follows the curve of free acidity fairly closely. Norgaard,³⁷ comparing pH estimations with titration results, concludes that "the titration method can therefore still be recommended as the most convenient and diagnostically adequate method of acid determination in test-meal investigations."

8. In regard to sex variations, Fowler and Zentmire,³⁸ examining the resting juice in healthy women, obtained results in all ways similar to those obtained in men by Fowler, Rehfuess, and Hawk.³⁹ I have not been able to find a reference to an extended series of test-meals in normal women. Kopeloff³⁴ examined ten young pupil nurses, each on several occasions. A study of the curves shows them to be mostly of normal type and conformation, but the acidities run at a slightly higher level in comparison with the chart obtained from the normal male series of Bennett and Ryle; this may be accounted for by the difference in the nature of the meal. Wright⁴⁰ investigated 250 school-children between the ages of 6 and 15 with the Ewald test and found the free and total acidity to give the same figures as in adults. He observed no essential difference between the sexes. Four cases of achlorhydria were encountered, but the finding was not constant in all four. Bell,⁴¹ on an analysis of 425 test-meals in hospital and private patients, concluded that women preponderate over men in the low curves in the proportion of 68.4 to 42, and men over women in the high curves in the proportion of 100 to 61.2. It is improbable that pathological states would greatly influence the sex incidence of the different types of secretory response. A comparable, though wider, disproportion in regard to tonus in the two sexes in health has already been mentioned. It has been stated that there is a tendency to diminished secretion with advancing years. Haneborg⁴² recently subscribed to this view, but Bell found no confirmation for this in the series just referred to. Actually he found hyperchlorhydria to be more common after than before 40, and a third

often coincides with the commencement of the fall in acidity and probably accompanies the duodenal reflux which is considered to be an important factor preventing hyperacidity in the stomach. Baird, Campbell, and Hern found bile regurgitation to be rather more frequent in the cases with hyperchlorhydria. The amount of mucus present can only be judged visually. It becomes more plentiful towards the end of the meal, is sometimes mingled with a clear juice of low acidity, and probably represents the mucous portion of the protective alkaline secretion of the pyloric mucous membrane. There is generally an inverse relationship between mucus content and acidity.

Rate of Emptying.

This has already been discussed under the heading of gastric motility. In Bennett and Ryle's series the average rate was 1.9 hours; in the combined series of Bennett and Ryle and Baird, Campbell,

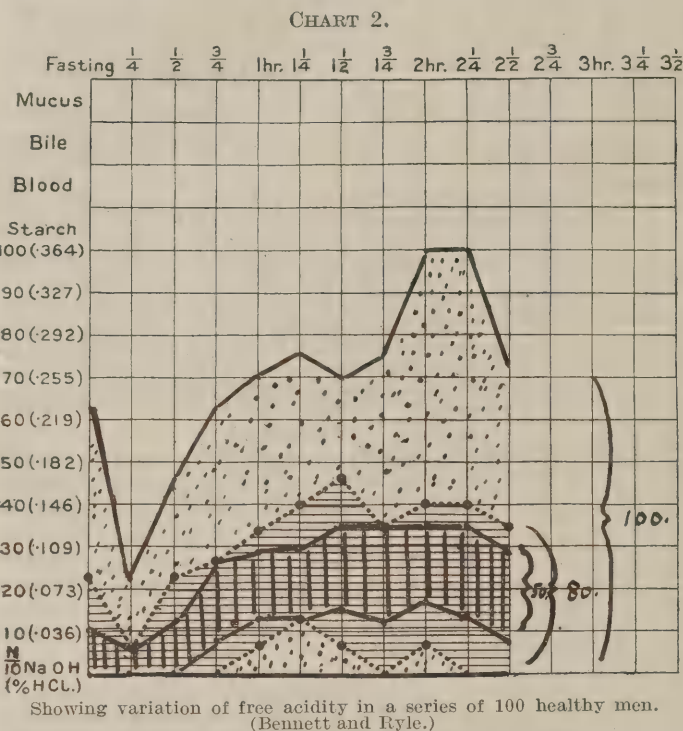
be accompanied by rapid emptying; hyperchlorhydria to occur in men leading a more active life and more commonly to be associated with delayed emptying. The emptying-rate of the heavier barium meal showed an entirely different relationship, and, presumably by reason of its weight, was slower in association with hypotonus. Indeed, the weight of the barium constitutes a very real fallacy in radiographic estimations of motility.

A review of the results of Campbell and Conybeare, and Baird, Campbell, and Hern, in the light of clinical experience, seems to justify their conclusion "that certain anatomical and physiological variations present in health may be the physical basis of the subject's diathesis or tendency to develop certain gastric disorders under appropriate influences." Their findings thus lend support to the contentions of Hurst⁴⁴ in regard to gastric diatheses, provided we agree to accept "diathesis" as implying a tendency to "retain" or to "develop" and not a tendency to "acquire" a disease. We have, as Hurst has suggested and I shall endeavour to show, evidence that the physiological characters or habitus of the stomach may determine its dyspeptic reactions to various stimuli, and there is little doubt that the physiological characters may also help to determine the perpetuation of such a lesion as duodenal ulcer. There is, however, no evidence that the physiological characters render the stomach or duodenum more liable to acquire a lesion in the first instance.

Mention must be made of the indirect method described by Dodds,⁴⁵ who showed that there is a definite respiratory response to meals. Of this response the chief characters are an initial rise in the alveolar carbon-dioxide pressure of from 2 to 6 millimetres; later, after three-quarters of an hour, a fall of about the same amount below the original level; and finally a return to the original level. Bennett and Dodds,⁴⁶ comparing the results obtained by this method and by the fractional test-meal, found that they confirmed one another both in normal and abnormal groups of cases.

Response to Different Foods.

The response to different foodstuffs may, as I have shown elsewhere,⁴⁷ be readily studied by the fractional method. The accompanying charts (4, 5, 6, 7, 8, and 9) illustrate the response in my own case to



and Hern it was two hours. It appears to be very constant for the individual and shows a limited range of variability in the male community. Whereas the free acidity in healthy persons can vary from the mean by 300 per cent. and more, and tonus, if it were measurable, would probably be found to vary in at least an equal degree, the emptying rate varies by not more than 50 per cent. from the mean.

The findings of Campbell, Baird, and Hern^{24 43} have frequently been quoted above. These observers repeated the experiments of Bennett and Ryle with a further series of healthy students, examining 57 men in all. They concluded as follows: "The general results of Bennett and Ryle on the rate of emptying the stomach and the range of acidity of the gastric juice after a gruel meal are confirmed in a further series of students," and "that the fractional test-meal does give a true idea of the course of digestion in the stomach, provided certain limitations about its accuracy are recognised." They also made interesting observations on the association of physical fitness with gastric type. In the normal and high normal groups they found that there is no association between the degree of acidity, the rate of emptying, and the physical fitness of the subject. Outside this range, however, hypochlorhydria or achlorhydria is more likely to occur in men leading a sedentary life and to

meals of milk, skim-milk, an emulsion of cream, tea and milk, water, and a solution of sugar in water. The response to water, according to Ivy,⁴⁸ and also to Moffatt, Mitchell, and Powell,⁴⁹ is too variable for it to be employed as a test, and the long sojourn in the stomach of protein and fatty meals renders their use impracticable in routine work. The "exciting" influence of protein and the "inhibitory" effect of fats is demonstrated in the milk or skim milk and cream feeds respectively; the excitation and inhibition are as much in respect of motility as of secretion. The slowly climbing curve in the milk test-meal is closely similar to curves obtained with the gruel meal in pyloric stenosis; this similarity and the high point of acidity attained depend on delayed emptying rather than upon increased secretion. Skim-milk produces a curve similar to that obtained with gruel, except that there is a wider interval between free and total acidity owing to the combination of acid and protein. The cream, therefore, seems to be the factor responsible for the delay in the whole milk meal. The inhibitory effect of fats is probably due to their physical characters, and by imparting an insoluble pellicle to the mucosa they may be said to act in the same way as the excessive mucous secretion in gastritis which "blocks" the secretory and motor responses normally due

to the contact of soluble food with the mucous membrane.

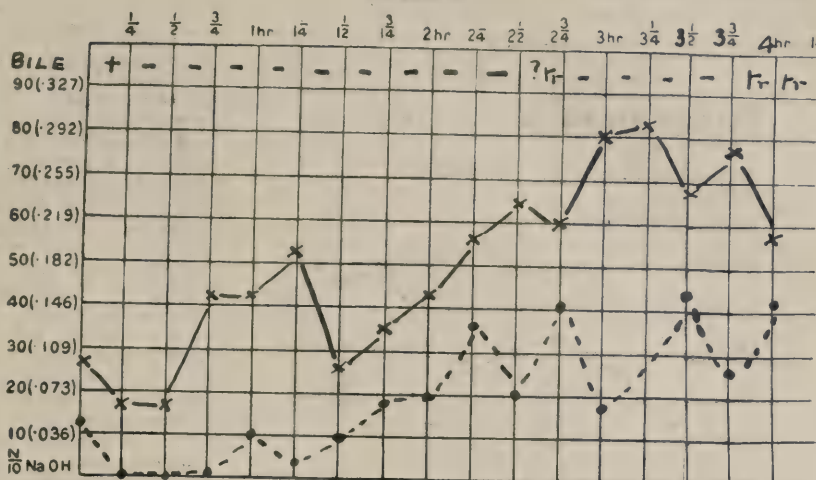
Haneborg,²⁹ investigating the gastric response to supposed stimulants of appetite, concludes (as also did Carlson⁴) that bitters have no effect upon secretion; that coffee has a definite stimulant effect upon secretion; and that soup and extracts have a definite stimulant effect which is not due to their aromatic qualities, but, as with coffee, to certain xanthin bodies or purin bases. Pure albuminous substances such as egg-white produce no such effect. He claims that there are three classes of secretory response: (1) Psychic secretion (very insignificant in man); (2) secretion physically excited by water and all kinds of food; and (3) a chemical secretion excited by xanthin and caffeine on absorption, by the formation of a gastric secretin.

THE FUNCTIONS OF THE PYLORUS.

No discussion of gastric function would be complete without a reference to the modern views on the functions of the pylorus. An appreciation of its mechanisms in health is essential for a proper understanding of many of the symptoms of disease. Apart from controlling the exit of the stomach contents in such a manner as to prevent food entering the duo-

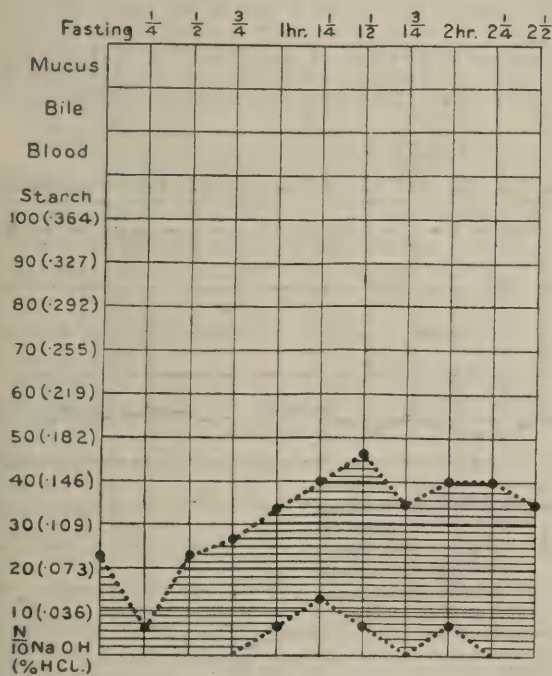
denum and Crohn⁵² have regarded regurgitation from the duodenum as the main mechanism obviating hyperacidity, and Bennett and Ryle,¹⁵ and Bolton and Goodhart⁵³ have subscribed to the same view.

CHART 4.



Milk test-meal (one pint). The straight line represents total acidity and the dotted line free HCl.

CHART 3.



Standard chart (Bennett and Ryle). The shaded area represents the limits for free HCl of 80 per cent. of normal people.

denum at too great a rate and in too indigestible a form the pylorus has been held to be the most important agent regulating the acidity of the gastric chyme. Boldyreff⁵⁰ was the first to draw attention to this particular function. Rehfuess and his collaborators⁵¹

Hunter⁵⁴ found marked hyperchlorhydria, with curves of the "climbing" or "plateau" type, in seven out of eight cases of gall-stones obstructing the common duct and attributed this to the absence of bile and pancreatic secretion. Other factors normally preventing hyperacidity include the diluting and neutralising effects of the saliva and the alkaline secretions of the pyloric mucosa. Campbell,⁴³ on the basis of a very ingenious experiment in which the factor of duodenal regurgitation was eliminated, considers that greater importance should be attached to the alkaline secretion of the pyloric part of the stomach. All of these factors naturally call for consideration in reviewing the mechanism of physiological and pathological hyperchlorhydria and hypochlorhydria. In an earlier paper⁵⁵ I concluded that the important factors promoting pathological hyperacidity were (1) an excess of secretion; (2) pyloric hypertonus preventing duodenal reflux. These I regarded as the essential factors in the ordinary case of a slowly emptying stomach, but with a rapidly emptying organ I suggested that the rapid emptying itself was an essential factor, since secretion (whether normal or excessive) into a steadily diminishing volume must entail a steady rise in the percentage acidity. Theoretically, it would only require a certain degree of gastric hypertonus to prevent duodenal reflux altogether; actually, of course, the tonus must vary from moment to moment, so that even with a hypertonic organ the intragastric pressure at times (though less frequently and less completely than with normal tonus) falls below the intraduodenal pressure. Apperly⁵⁶ subscribes to the view that increased intragastric tension is a cause of hyperchlorhydria and believes that positive forces in the duodenum normally play a part in the regulation of alkaline reflux. Important observations by Bolton and Goodhart,⁵³ and later by Campbell⁴³ and his collaborators on the estimation of chlorides in fractional specimens have thrown further light on the influence of duodenal regurgitation. These workers rightly point out that without chloride estimations it is impossible properly to interpret hyperchlorhydric and achlorhydric curves. When free acid is present in excess chloride estimations alone can distinguish between a positive hypersecretion and a failure in neutralisation. When free acid is absent chloride estimations alone can distinguish between achylia and achlorhydria due to excessive neutralisation.

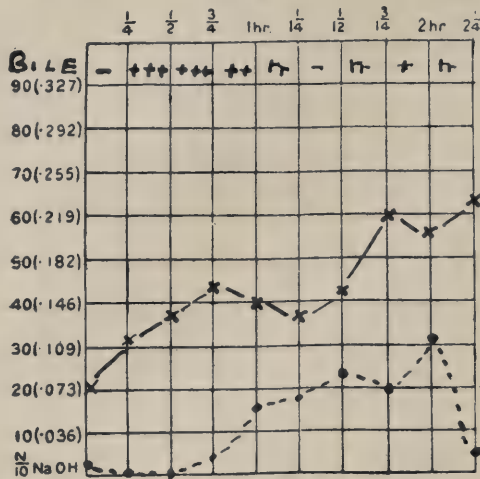
Bolton and Goodhart and Campbell conclude that the pylorus is the main factor controlling duodenal reflux. I believe, however, that a clearer conception is required of what we mean when we employ the term pylorus in this sense. It is evident that whatever part the opening and shutting of the sphincter may

cussed later suggest that acidity remains high after gastro-jejunostomy in the cases with hypertonus and rapid emptying, and that the most effective neutralisation occurs in the cases with hypotonus and slow emptying.

The Control of the Pylorus.

Cannon's⁵⁷ views on the acid control of the pylorus so long accepted have recently been called in question. McClure, Reynolds, and Schwartz,⁵⁸ on the basis of radiographic experiments, conclude that "acid is not the principal factor controlling the opening and closure of the pyloric sphincter in man." Egan,⁵⁹ also on X ray and experimental evidence, concludes that the usual view is unsatisfactory, and Baird, Campbell, and Hern,⁴³ with simultaneous gastric and duodenal intubation, showed that "acid in the duodenum does not necessarily close the pylorus, for the most rapid emptying took place at a time when the duodenal contents were unusually acid." The observation that extreme hyperchlorhydria and complete achylia may occur in healthy men with normal digestion and in patients without gastrointestinal symptoms, and that there is no fixed relationship between acidity and emptying-time also suggests that the acid factor in pyloric control is not an essential one. Where a relationship between a secretory anomaly and emptying-rate is demonstrable it is just as reasonable to regard the high or low acidity as the result and not the cause of the pyloric hypertonus or hypotonus. Two clinical observations, however, require further consideration. The first is the relief of pain in duodenal ulcer by the administration of alkalies. Hurst^{3 60} has regarded this as due in part to the lessened acid control of the pylorus; but I shall later suggest a slightly different explanation. The second is the immediate relief by the administration of hydrochloric acid of the gastrogenous diarrhoea accompanying achylia. In this condition the necessary dosage of acid is so small (30 minims three times a day of the dilute Pharmacopoeial solution is usually enough) and the effect is so prompt that it is difficult to suppose that enhanced digestive or bactericidal action can be the relieving factor. This effect may be due to increased pyloric

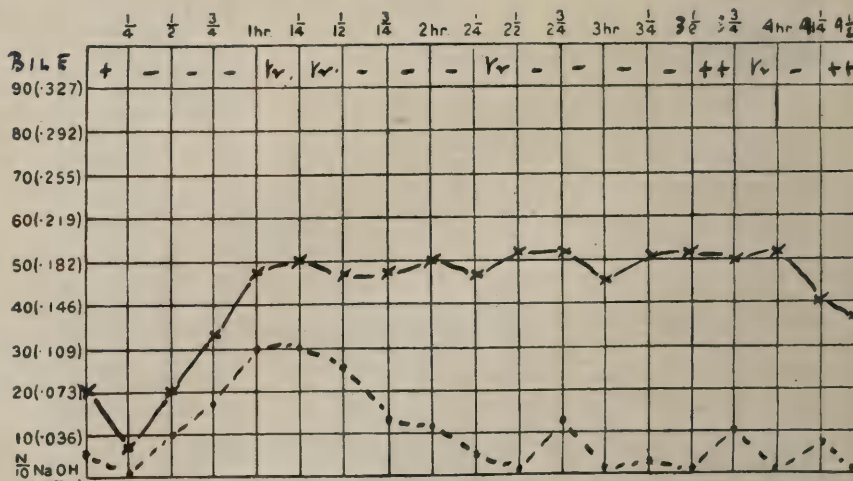
CHART 5.



Skim-milk test-meal (one pint). The straight line represents total acidity and the dotted line free HCl.

play in assisting or preventing alkaline reflux, there must also be a simultaneous adjustment of intragastric and intraduodenal pressure. The mere relaxation of the sphincter, for instance, would not allow regurgitation if the pressure in the pars pylorica did not at the same time fall below the pressure in the duodenum. The high position of the pars pylorica in relation to the duodenum in the hypertonic or "steer-horn" stomach is an additional factor opposing duodenal reflux, while its low position in the hypotonic or "J"-shaped stomach would facilitate reflux, at any rate in the erect posture. The pylorus consists of the pyloric sphincter and the valve formed with its covering fold of mucous membrane; anatomically the sphincter is a continuation of the præ-pyloric circular muscle layer and probably works in unison with it. On this hypothesis it is reasonable to suggest that a general hypertonus of the whole pars pylorica by causing unusual disparity between intragastric and intraduodenal tension, and not a simple closure of the valve, is the essential factor predisposing to hyperchlorhydria. Conversely, hypotonus of the pars pylorica as well as of the sphincter would predispose to hypochlorhydria. The pyloric antrum is of tubular form in the normal "hypertonic" stomach, and with duodenal ulcer (in which hyperchlorhydria is more constantly present than in any other condition) general hypertonus is commonly demonstrable. Eliminating the services of the sphincter in cases of duodenal ulcer by a gastro-jejunostomy does not necessarily abolish the hyperchlorhydria as it should do if the sphincter alone were to blame. Clinical observations to be dis-

CHART 6.



Emulsion of cream and water (1 1/2 oz. cream, 1 pint water). The straight line represents total acidity and the dotted line free HCl.

tonus, but another possible explanation is an increased output of pancreatic secretin and enhanced digestion in the small bowel.

Carlson⁶¹ has recently shown in animals that not only acid but mechanical and even alkaline stimulation of the duodenum can produce pyloric closure, and considers that this is the result of simple sensory stimulation. Recent investigations thus tend more

and more to bring the emptying of the stomach into line with the other peristaltic phenomena of the alimentary tract, stimulation at any point producing contraction or increased tension above and relaxation below, in accordance with the observations of Bayliss and Starling⁶² on the movements of the intestine. Every tonic phase of the pylorus and the pars pylorica must, however, be followed by a phase of relaxation which, in the later phases of a meal especially, allows fluid regurgitation into the stomach and a lowering of gastric acidity. Probably a rise in intra-duodenal tension synchronises with the fall in intra-gastric tension. Although both in life and after death the aperture of the pyloric valve is a

image a normal or exaggerated tonic contraction of the whole of the pars pylorica of the stomach.

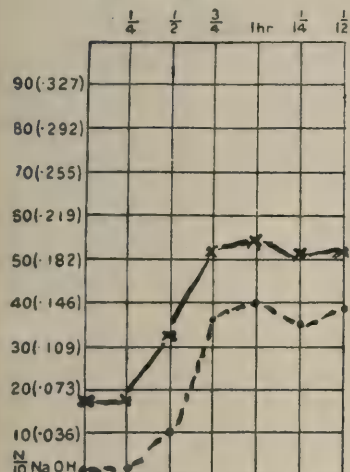
SUMMARY.

1. The present position of our knowledge relating to normal gastric sensibility, motility, and secretion in man has been reviewed.

2. Evidence has been adduced to show that the motor or muscular functions of the stomach play a far more important part in controlling both sensibility and digestion than do the secretory functions.

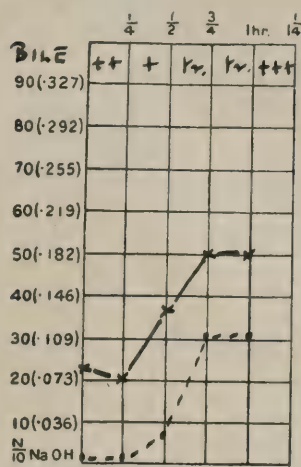
3. The "clinical," radiographic, and chemical criteria of healthy motor function have been briefly

CHART 7.



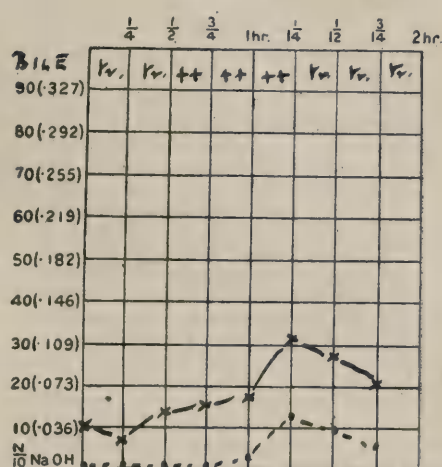
Tea and milk (half pint). The straight line represents total acidity and the dotted line free HCl.

CHART 8.



Water (half pint). The straight line represents total acidity and the dotted line free HCl.

CHART 9.



Sugar and water (half pint). The straight line represents total acidity and the dotted line free HCl.

very narrow one, it is doubtful whether in health it can ever be regarded as completely shut. Screening and radiograms after a barium meal suggest (even in conditions such as duodenal ulcer, which are supposed to be associated with pylorospasm) that closure can never be more than a momentary affair, for direct continuity between the gastric and duodenal shadows is so commonly visible. It is obvious that the pyloric sphincter is able to resist the passage of large fragments and semi-solid chyme, but it would also seem that it allows a more or less continuous tidal interchange of fluid contents regulated by the varying pressures within the pars pylorica and the duodenum. That such an interchange is taking place is strongly suggested by inspections of the specimens obtained by the fractional method, whether during digestion or in interprandial periods. These may reveal bile or no bile at such comparatively short intervals of time (sometimes in one half of a specimen and not in the other) that the impression is obtained of a "to-and-fro" mechanism of this kind. Without such a "to-and-fro" mechanism neutralisation could hardly be such a regular process as it is shown to be. The fact that bile becomes plentiful towards the end of a meal when the stomach is adapting itself to its diminished content and tonus is presumably increasing necessitates the conception that even at this stage the intra-gastric tension must automatically and frequently fall below the intra-duodenal tension.

I think we may fairly conclude that a reciprocal action as between the tonus of the pars pylorica and the duodenum plays a more important part in regulating (1) fluid outflow and (2) gastric acidity than the opening and shutting of the pyloric valve, and that when we speak in a general way of closure of the pylorus and in pathological conditions of "pylorospasm" we should include in our mental

image a normal or exaggerated tonic contraction of the whole of the pars pylorica of the stomach.

described. The emptying-rate for the individual with a standard test-meal shows considerable constancy, and whether in the individual or the community is a less variable quantity than acidity or tonus.

4. The variations in tonus and peristaltic activity are as wide as the variations in appetite and hunger. Extraordinary variations in acidity also occur, from complete "achlorhydria" to extreme "hyperchlorhydria," and are generally expressions of the variations in tonus, peristalsis, and motility. An appreciation of the existence of such variability in health is essential for the study of the gastric responses to disease.

5. Evidence for a correlation between physical type or habitus on the one hand and motor and secretory type on the other has been cited. A familiarity with the characters of the extreme physiological types is essential for the study of certain pathological types. In these characters may originate the liability to certain dyspeptic reactions, and possibly also the "diathesis" or liability to "retain" or to "develop" certain types of local disease.

6. Recent views on the functions and control of the pylorus have been discussed.

REFERENCES.

1. Abercrombie, J.: Pathological and Practical Researches on Diseases of the Stomach, the Intestinal Canal, the Liver, and other Viscera of the Abdomen, 3rd ed. (p.v. preface), London, 1837.
2. Mackenzie, J.: Symptoms and Their Interpretation, 4th ed., London, 1920.
3. Hurst, A. F.: Goulstonian Lectures on the Sensibility of Alimentary Canal, London, 1911.
4. Carlson, A. J.: Control of Hunger in Health and Disease, Chicago, 1916.
5. Cannon, W. B., and Washburne, A. L.: Amer. Jour. Phys., 1912, xxix., 441.
6. Brinton, W.: Diseases of the Stomach, 1st ed., London, 1859.

(Continued at foot of next page.)

Milroy Lectures

ON

EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

Delivered before the Royal College of Physicians of London on March 5th, 10th, and 12th, 1925,

By ARTHUR SALUSBURY MACNALT, M.A.,
M.D. Oxf.,

A MEDICAL OFFICER OF THE MINISTRY OF HEALTH; EXAMINER
IN PUBLIC HEALTH IN THE UNIVERSITY OF OXFORD.

LECTURE III.*—THE EPIDEMIOLOGY OF ENCEPHALITIS LETHARGICA.

HISTORY OF THE DISEASE.

IT is possible, and even by some considered more than probable, that outbreaks of encephalitis lethargica occurred prior to 1916-17. Crookshank¹ gives an account of epidemics in the past which may have been examples of the disease, and Hall² has assembled interesting clinical evidence on the subject. It is indisputable, however, that the authentic study of the malady began in the winter of 1916-17 when von Economo³ and von Wiesner⁴ in Vienna described the clinical and pathological features of 13 cases presenting the cardinal phenomena of stupor, accompanied by disturbances of the ocular muscles.

Encephalitis lethargica next made its appearance in France, where the outbreak was studied by Netter.⁵ In March and April, 1918, a number of cases of an obscure disease, characterised usually by stupor or lethargy and ophthalmoplegia, were reported in England. Early attention was directed to the subject by Harris⁶ and by Hall.⁷ A likeness to the clinical description of botulism was observed in these cases, and the suggestion hazarded that they were due to the consumption of food infected with the *Bacillus botulinus*. A detailed investigation was made under the auspices of the Local Government

Board and the Medical Research Council which put botulism out of court as responsible for the outbreak. It should be remarked that owing to the war we were ignorant of von Economo's work, and that the disease was investigated *de novo* in this country.

The outbreak was studied from the pathological aspect by McIntosh and Marinesco, from the epidemiological standpoint by James, and by myself from the clinical point of view.⁸ We arrived independently at the same conclusion that the "new disease" was anatomically and clinically distinct from analogous affections such as the cerebral form of poliomyelitis (polioencephalitis), and constituted a clinical entity. Kinnier Wilson⁹ and Buzzard¹⁰ also early adduced evidence supporting the same conclusion. Later, we were in a position to add that the illness as it appeared in the outbreak was identical with encephalitis lethargica, described by von Economo and by Netter. Our findings were recorded in a special report to the Local Government Board, published in 1918.⁸ Since then information has been given from all quarters of the globe. A comprehensive report by Dr. A. C. Parsons,¹¹ which embodied much additional information, was published by the Ministry of Health in 1922. The more recent researches upon the pathology of the disease have been carried out by McIntosh and Turnbull, Greenfield and Da Fano and Ingleby in this country, in France by Levaditi and Harvier, and in the United States by Loewe, Hirschfeld and Strauss, Thalheimer and Amoss.¹² Buzzard, Hall, and Netter have continued to enrich our clinical knowledge, and in epidemiological investigations mention must be made especially of the work of Parsons and of Stallybrass.¹³

Encephalitis Lethargica in Great Britain.—The outbreak in 1918 affected in all some 51 sanitary districts in England and Wales. Encephalitis lethargica was made compulsorily notifiable in England and Wales on Jan. 1st, 1919, and from that date fairly complete records of all recognised cases are available. There was a recrudescence of the disease in the early part of 1919 when the notifications reached a maximum figure of 41 in the week ending Feb. 8th. Since then annual returns have shown that it has a tendency to recur in epidemic form in the early months of the year. Previously to 1924, the most considerable outbreak occurred in the spring of 1921, when a maximum of 138 notifications was reached in the week ending

* Lectures I. and II. appeared in THE LANCET of March 7th and 14th respectively.

GOULSTONIAN LECTURE: REFERENCES.

(Continued from previous page.)

7. Beaumont, W.: Physiology of Digestion, 2nd ed., p. 56, Burlington, 1847.
8. Barclay, A. E.: THE LANCET, 1922, ii., 261.
9. Pavlov, I. P.: Work of the Digestive Glands, 2nd English ed. (transl. by W. H. Thompson), 1910.
10. Sherrington, C. S.: Brain, 1915, xxxviii., 191.
11. Bennett, A. Hughes: Ibid., 1888, x., 289.
12. Hunter J. I.: Ibid., 1924, xlvii., 261.
13. Royle, N. D.: Ibid., 1924, xlvii., 275.
14. Moritz, F.: Zeitschrift f. Biol., 1895, xxxii., 313.
15. Bennett, T. I., and Ryle, J. A.: Guy's Hosp. Rep., 1921, lxxi., 286.
16. Hurst, A. F., Morton, C. J., and Others: Ibid. 1907, lxi., 389.
17. Moody, R. O., Van Nuys, R. G., and Chamberlain, W. E.: Jour. Amer. Med. Assoc., 1923, lxxxi., 1924.
18. Schlesinger, E.: Berl. Klin. Woch., 1910, xlvii., 1911.
19. Campbell, J. M. H., and Conybeare, J. J.: Guy's Hosp. Rep., 1924, lxxiv., 354.
20. Carman, R. D.: Roentgen Diagnosis of Diseases of the Alimentary Canal, Philadelphia and London, 1921.
21. Jefferson, G.: Jour. Anat. and Physiol., 1915, l., 165.
22. Haudek, M.: Die Technik und Bedeutung der Radiologischen Motilitätsprüfung, Verhandl. d. xxix. Deutsch. Kong. f. inn. Med., Wiesbaden, 1912, 143.
23. Levy, I. H.: Amer. Jour. Med. Sci., 1918, clvi., 795.
24. Baird, M. McC., Campbell, J. M. H., and Hern, J. R. B.: Guy's Hosp. Rep., 1924, lxxiv., 339.
25. Rehfuß, M. E.: Amer. Jour. Med. Sci., 1914, cxlvii., 848.
26. Douglas, C. G., and Priestley, J. A.: Human Physiology, Oxford, 1924.
27. Ryle, J. A.: THE LANCET, 1920, ii., 490.
28. Ryle, J. A.: Guy's Hosp. Rep., 1921, lxxi., 42.
29. Haneborg, A. O.: Acta Med. Scand., 1924, Supp., vii., 228.
30. Bennett, T. I., and Venables, J. F.: Brit. Med. Jour., 1920, ii., 662.
31. Hornburg, A. F.: Skand. Arch. f. Physiol., 1904, xv., 209.
32. Bell, J. R., and MacAdam, W.: Quart. Jour. Med., 1924, xvii., 215.
33. Gorham, F. D.: Arch. Int. Med., 1921, xxvii., 439.
34. Kopeloff, N.: State Hosp. Quart., May, 1922.
35. Wheelon, H.: Arch. Int. Med., 1921, xxvii., 613.
36. Cole, S. W., and Adie, W. J.: THE LANCET, 1921, i., 423.
37. Norgaard, A.: Acta Med. Scand., 1924, ix., 491.
38. Fowler, C. C., and Zentmire, Z.: Jour. Amer. Med. Assoc., 1917, lxxviii., 167.
39. Fowler, C. C., Rehfuß, M. E., and Hawk, P. B.: Ibid., 1915, lxxv., 1921.
40. Wright, C. B.: Arch. Int. Med., 1924, xxxiii., 435.
41. Bell, J. R.: Guy's Hosp. Rep., 1922, lxxii., 302.
42. Haneborg, A. O.: Acta Med. Scand., 1921, Supp. i., 117.
43. Baird, M. McC., Campbell, J. M. H., and Hern, J. R. B.: Guy's Hosp. Rep., 1924, lxxiv., 23.
44. Hurst, A. F.: THE LANCET, 1922, ii., 1369, and 1923, i., 111.
45. Dodds, E. C.: Jour. Phys., 1921, liv., 342.
46. Bennett, T. I., and Dodds, E. C.: Brit. Jour. Exper. Path., 1921, ii., 58.
47. Ryle, J. A.: Guy's Hosp. Rep., 1921, lxxi., 158.
48. Ivy, A. C.: Amer. Jour. Phys., 1918, xlv., 420.
49. Moffatt, P. McG., Mitchell, G. O., and Powell, A. T. W.: Guy's Hosp. Rep., 1921, lxxi., 52.
50. Boldyreff, W.: Quart. Jour. Exp. Path., 1914, viii., 1.
51. Spencer, W. H., Meyer, G. P., Rehfuß, M. E., and Hawk, P. B.: Amer. Jour. Phys., 1916, xxxix., 459, and 1916, xl., 141.
52. Crohn, B. B.: Amer. Jour. Med. Sci., 1918, clvi., 656.
53. Bolton, C., and Goodhart, G. W.: THE LANCET, 1922, i., 420.
54. Hunter, D.: Quart. Jour. Med., 1923, xvi., 95.
55. Ryle, J. A.: Guy's Hosp. Rep., 1921, lxxi., 45.
56. Apperly, F. L.: Med. Jour. Austral., 1923, i., 33, and 1924, i., 256.
57. Cannon, W. B.: Mechanical Factors of Digestion, New York, 1911.
58. McClure, C. W., Reynolds, L., and Schwartz, C. O.: Arch. Int. Med., 1920, xxvi., 410.
59. Egan, E.: Mediz. Klinik, Sept. 3rd, 1922.
60. Hurst, A. F.: Brit. Med. Jour., 1925, i., 145.
61. Carlson, A. J.: Arch. Int. Med., 1924, xxxiii., 281.
62. Bayliss, W. M., and Starling, E. H.: Jour. Phys., 1899, xxiv., 99.

Jan. 5th. In inter-epidemic periods the notifications have averaged about 10 per week. The outbreak in 1924 began in the latter part of January and was at first localised in Lancashire; it is noteworthy that the disease first appeared in outlying districts and only later converged on the larger centres of population. The peak of the epidemic in Lancashire was reached in the week ending March 8th, when a total of 78 cases was notified, 29 of which were in Manchester. Liverpool was affected somewhat later. From Lancashire the stress of the epidemic passed eastward to Yorkshire, and at the same time the disease began to manifest itself in Northumberland, Warwick (with special incidence on Birmingham), Gloucester (where Bristol was specially attacked), and London. The chief centres of infection were Manchester, Sheffield, Birmingham, and Bristol. Elsewhere the disease has been widely scattered and sporadic in appearance. For the first 20 weeks of 1924, 2469 cases were notified, as compared with 1155 in the corresponding period of 1921.†

The number of cases notified in 1924 up to Oct. 25th was 4605; already by this date the number of cases of the disease in 1924 had exceeded the figures for each preceding year of notification.†

Scotland.—Encephalitis lethargica is not generally notifiable in Scotland except in certain districts locally under the Infectious Disease (Notification) Act, 1889. The annual reports of the Scottish Board of Health indicate that the disease did not manifest itself in pronounced epidemic form in Scotland until 1923, when cases were reported by medical officers of health of widely different areas, both populous industrial districts and rural areas, such as Easter Ross and Aberdeenshire. There was an intensive outbreak in Glasgow in this year, comprehending 125 cases out of the 189 cases in Scotland coming to the notice of the Central Health Authority. Chalmers and Macgregor^{14 15} have reported fully on it. From the Registrar's returns it appears that in 1923, 79 deaths from the disease took place in the 16 larger towns of Scotland.

Ireland.—Encephalitis lethargica does not seem to have been unduly prevalent in Ireland, although since 1919 a certain number of cases have been reported annually from different parts. Lumsden,¹⁶ writing in 1920, had then observed some 20 or 30 cases in Dublin.

Geographical Distribution.

It is probable that instances of encephalitis lethargica occurred immediately prior to the Austrian outbreak. Examples were reported in France during the winters of 1915-16 and 1916-17 in the districts around Commercy, Verdun, and Bar-le-Duc, and came under Cruchet's¹⁷ observation in various military neurological clinics. In Austria cases were seen in the later months of 1916 and the first quarter of 1917. The outbreak subsided. In the first quarter of 1918 the disease appeared simultaneously in England and France, in Algiers, where it was probably conveyed by French troops, and in Germany in Berlin. The outbreak appears to have been restricted to the countries named. In September and October, 1918, encephalitis lethargica appeared in the United States, and cases occurred in New York, Chicago, and elsewhere.

In the first quarter of 1919 the disease was again prevalent in England and France; it also was manifest in the Netherlands, Germany, Warsaw, Italy, Sweden, and parts of Russia (Ukraine). Isolated cases were noted at Geneva and Neuchâtel in the early part of the year; later the disease prevailed in Switzerland, and examples were reported so far afield as the Philippines, Guatemala, &c. In the last quarter of 1919 it had spread to Canada (where an outbreak was recorded at Winnipeg by Boyd¹⁸), Italy, and India. During the winter of 1919-20 there was a sudden and severe outburst of the disease in Northern Italy, Austria, Bohemia, and Bavaria were also

smitten. The disease continued to occur in Germany, Belgium, and Holland, and became established in Spain and Portugal. In 1920 the Scandinavian countries were invaded. Sweden, Norway, Denmark, and Finland were appreciably affected. Cases were also reported from Bagdad, Palestine, Egypt, and China. In December, 1921, there was an outbreak of the disease in Berlin; in France the epidemic was severe. Encephalitis lethargica has appeared in Luxemburg, Roumania, Czecho-Slovakia, Malta, and Syria; cases are accumulating in the Orange River Colony and South Africa generally and have also been reported from Swaziland and the Gold Coast. Australia, New Zealand, and Tasmania are not exempt. In the New World epidemic encephalitis now occurs annually in Canada and the United States; it has appeared in some of the larger cities of Mexico, Brazil, and Chile. In 1924 a severe outbreak of an epidemic cerebral disease apparently resembling encephalitis lethargica was reported from Japan. Exercising its severest stress in Europe, its apparent birthplace, within seven years encephalitis lethargica has become widespread in every continent.

Incidence.

The number of cases notified in England and Wales annually since 1919 are given in Table I. (Lecture I.). It is probable that this under-rates the extent of the disease as many mild and abortive cases, including cases of epidemic hiccup, fail to be notified. The general attack-rate in 1920 in England and Wales was estimated at 0.02 per 1000 of the population. For London the general attack-rate was taken as 0.03 per 1000 of the population. There is not always a strict correlation between population and case-incidence in encephalitis lethargica. Bristol's aggregate of 108 cases during the period from Jan. 1st, 1919, to Sept. 30th, 1921, was nearly double that of Birmingham, although its population is scarcely half that of the Midland town. The incidence of the disease in this country shows a perceptible increase, considerably marked in 1924.

Incidence in Urban and Rural Communities.—Encephalitis lethargica has been reported chiefly from urban districts, which in 1920 supplied 86.8 per cent. of the total number of cases notified. Large cities and industrial centres have been particularly affected, probably on account of the enhanced opportunities for the spread of personal infection, although possibly the better facilities for medical diagnosis possessed by large towns may also contribute. During the three years, 1919, 1920, and 1921, examples were notified from 520 (45.7 per cent.) of the 1138 urban and from 254 (39.0 per cent.) of the 650 rural districts in England and Wales. In 1918 I found a restricted topographical distribution of cases of encephalitis lethargica in certain districts, notably in Stoke-upon-Trent. The same tendency for examples of the disease to clump in certain areas of a town or city was noted in 1924 in Sheffield and elsewhere, probably associated with density of population and increased opportunities for case-to-case infection.

Mortality.

In 1918, in the first outbreak in this country, out of 168 cases of the disease 37 died, a case-mortality of 22.0 per cent. Variant case-mortality rates are quoted by Parsons¹¹ ranging from 53.0 per cent. (McClure) to 15.7 per cent. (Bramwell). The notification figures (England and Wales) for 1919-23 gave a case-mortality rate of 54.0 per cent. In view of the failure to notify cases of epidemic nervous disease generally, and through failure to recognise mild non-fatal types of encephalitis lethargica, these figures cannot be taken as a true estimate of the number of deaths that occur among persons attacked by encephalitis lethargica. No definite opinion can be expressed at present as to the case-mortality, except that it is probably under 50 per cent.

Age, Sex, and Race.

All ages may be attacked from the newborn babe to the octogenarian. A woman of 84 has died from

† These are only provisional figures; the complete returns for 1924 are not yet available.

the disease. The main incidence of the disease begins to be apparent in those approaching adult life; 25 per cent. of a series of British cases occurred in persons between the ages of 10 and 20 years. The incidence appears to be fairly evenly distributed over the years 20 to 40, but the tendency to acquire encephalitis lethargica declines with advancing age.

Sex.—The records of the Ministry of Health show that the sexes are equally affected. Of 1273 cases, 634 were males and 639 females. This proportion is evenly maintained at different age-periods.

Race.—With few exceptions no special racial incidence has been observed. In Warsaw the case-incidence in the Jewish population was high. Butt reports that the mortality among South African natives was exceptionally higher than that of the whites.

Seasonal Prevalence.

The first outbreak occurred during the first quarter of 1918. James early called attention to the difference between the seasonal incidence of the disease and that of poliomyelitis. Since then the increase in the number of cases in the colder months of the year has been annually noted in this country, the rest of Europe, and in North America. The increase in the incidence of encephalitis lethargica usually begins towards the end of December and continues during the first quarter of the new year. The second quarter shows still many cases, but by the end of May the epidemic has waned and much fewer cases, as a rule, are notified in the third and fourth quarters of the year.

The seasonal incidence in England in 1920 was exceptional in that there was a recrudescence in May, June, and July which reached its climax about midsummer. The cause of this is not clear, but the month of July that year was abnormally wet and cold. Small localised outbreaks have occurred in non-epidemic months, for example, the Derby outbreak in a girls' home in August, 1919.

Predisposing Causes.

Careful inquiries have been made by the Ministry of Health into possible predisposing causes but little of value has resulted from the quest. The influence of pregnancy is regarded as of importance by some writers. Jorge, in reviewing a series of 18 pregnant cases, found that the mortality-rate was 72 per cent. On the other hand, the Ministry's figures show that the mortality-rate in respect of all the cases of encephalitis lethargica which were associated with a pregnancy past or present is 44 per cent.; this percentage also represents the general case mortality among all women between the ages of 20 and 40 who contracted the disease during 1919 and 1920. Social conditions appear to exert no influence upon the disease. As regards occupation, from a study of 1070 patients, Parsons¹¹ found that 734 followed indoor occupations, 133 engaged in outdoor occupations, while 203 patients belonged to an indeterminate group. He concludes that the disease chiefly attacks those who spend the greater part of the day indoors in pursuit of their avocations. Over-work is often assigned as a predisposing cause. The specific infectious diseases and diseases generally do not appear to dispose to the disease beyond the circumstance that any antecedent or associated disease may lower the patient's resisting powers to infection.

The Question of Reinfection.

It is impossible at present to say whether the disease may occur more than once in the same individual. Netter¹⁰ reports the case of a child, aged 9 years, who became the subject of encephalitis lethargica in December, 1920. The child had been in contact with a person who had suffered from encephalitis lethargica eight months previously, had apparently recovered, and then manifested symptoms of the disease again shortly before the child was attacked. G. E. Price²⁰ records a case in a girl of 12 years in whom there was one and a half

years of apparently complete recovery; then a recurrence ending fatally took place. Buzzard²¹ has seen a case of encephalitis lethargica in an elderly woman who similarly made an apparently complete recovery; four years later, in 1924, at the height of the epidemic period, she again displayed symptoms of encephalitis lethargica and died. In view of the epidemicity prevailing at the time of the second manifestation, Buzzard's case may have been one of reinfection. On the other hand, the frequent occurrence of sequelæ, mental changes, symptomatic paralysis agitans and the like, may be due to persistence of the virus of the disease which, like the virus of syphilis, may be capable of lurking quiescent in the body for long periods and of returning to activity from time to time. Hall² states there is no *a priori* reason why the virus should not so persist for any period, indeed for the remainder of life. Nonne²² believes that there may be a "normal" interval of three to four years between the acute and chronic stages of the disease. The lapse of time alone can solve the problem. Alarming from the epidemiological standpoint is the view that the virus so persisting may for an indefinite time be capable of transmission to others under fostering conditions. Netter²³ and others have adduced a certain amount of evidence in support of this contention.

Route of Infection.

Like cerebro-spinal fever and acute poliomyelitis, it seems reasonable to conclude that the virus of encephalitis lethargica first infects the upper respiratory passages, where it may either lurk and give rise to the carrier phase in the person infected or may pass on to attack the brain. There is no definite catarrhal stage associated with its early manifestations, but sore-throat is a frequent concomitant. Dr. Willoughby Gardner¹¹ has described its peculiar characteristics thus: "There is slight swelling but very marked congestion of the fauces and pharynx; the colour is generally a deep crimson, but sometimes is almost vermilion. There is comparatively little swelling of the tonsils, but whitish patches of exudation are to be seen on tonsils, fauces and pharynx. . . . These throats tend soon to become dry, and are often associated with a red, bare, swollen, and dryish tongue." Similar attacks of "sore-throat" are seen in the associated abortive and mild cases. I was especially struck by this in the mild cases in the Derby outbreak. There is reason also to believe that the virus may enter the brain through the eyes. I early drew attention to the frequent presence of conjunctivitis in the first stages of encephalitis lethargica.⁸ Levaditi, Harvier, and Nicolau's²⁴ experimental method of transmitting the virus of encephalitis lethargica in series in rabbits by corneal inoculations is of interest in this connexion.

Lastly, infection by the gastro-intestinal route cannot be dismissed. Many cases of illness in the 1924 epidemic associated with undoubted cases of encephalitis lethargica exhibited vomiting and diarrhoea. Exactly as in poliomyelitis, a gastro-intestinal type is recognised in the mild and abortive forms of encephalitis. Gastro-intestinal symptoms occur occasionally in the disease, and in autopsies on patients in 1924 presenting these features ulcers were observed in the intestine together with softening and slight enlargement of the spleen. In 1918 in the first post-mortem I performed on a case of encephalitis lethargica this splenic condition was noted.

Incubation Period.

No definite statement can be made as to the incubation period. It is probably variable like that of acute poliomyelitis. Reece's²⁵ case of a nurse infected by a patient would assign the incubation period as nine days. In the fulminating outbreak at Derby the incubation period may have been of short duration. Our records at the Ministry of Health suggest that it may vary widely from one to two days up to two weeks or more. Kling and Liljenquist²⁶ found the period could be determined in three of their cases and regard it as being ten days. Five

days is the duration of incubation, according to Godfrey and Gwyn.²⁷ For the isolation of persons who have been in intimate contact with the disease three weeks is usually regarded as sufficient. Most recorded cases assigned to direct contagion have developed the disease within this period.

Epidemic Hiccup.

Von Economo³ recorded hiccup as a complication of encephalitis lethargica in one of his original fatal cases in 1917, and I noted it in five of my series of cases in 1918.⁸ In the autumn of 1919 small outbreaks of illness occurred in Egypt, Austria, Italy, Germany, and Canada in which hiccup, sometimes associated with fever, was the predominant symptom. In 1920-21 it was particularly prevalent in France. Railliet²⁸ saw 130 examples at Rheims in November and December, 1920. At the same time epidemic hiccup appeared in this country and was investigated by Farrar and myself on behalf of the Ministry of Health.¹¹ It is contagious—the casualty medical officer of Charing Cross Hospital apparently contracted it from his patients—though not in a high degree. In the first quarter of 1924 epidemic hiccup was widespread. It was seen in definite association, for instance, in the same household, with encephalitis lethargica; an attack of hiccup may precede or accompany the nervous symptoms of the major disease and there is strong reason, in view of the cumulative evidence, for regarding epidemic hiccup as a mild or frustrated form of encephalitis lethargica.

PREVENTION OF EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

The first step in prevention of disease is to survey the magnitude of the problem. It has been shown in these lectures how defective is notification of epidemic diseases of the central nervous system, and it is incumbent upon both medical officers of health and practitioners of medicine to aim at improvement in this respect, and, particularly in epidemic periods, to keep an alert watch for abortive and mild types of nervous disease.

Health authorities in epidemic periods should endeavour to inform the public, by means of leaflets, posters, notices in the press, cinema films (preferably shown in the open), lectures in the school, &c., how infection may be guarded against and the care to be observed in case of attack. Public information should be circulated also respecting the local facilities for treating patients which have been provided in the district. When epidemics prevail, all crowded assemblies should be discouraged, as far as is possible, and all gatherings of young children must be avoided; young children must not be allowed to enter any house where there is a case of illness. The latter precautions are of especial importance in outbreaks of poliomyelitis.

In view of the severity of epidemic nervous diseases and the value of good nursing for the patients, it is important to secure hospital treatment as far as possible. The isolation hospitals of local authorities are often available for this purpose. In addition, any public nursing arrangements possessed by or arranged with the authority should be made available for patients treated at home. In the case of patients so treated the sick should be isolated from the healthy, the association with other inmates of the household being limited to what is necessary for requisite care and nursing.

School-children in the affected household may be kept from school, as a precautionary measure, for three weeks after the isolation of the patient. There is no necessity to place restriction on the movements of other occupants provided they are frequently examined and remain well. Those in contact with the case, however, may be advised to use antiseptic nasal sprays or douches and to gargle the throat. Any person in the infected household who suffers from sore-throat or other symptoms suggesting an abortive attack should be treated from this point

of view and isolated as far as possible until they have recovered. The sick-room should be thoroughly cleansed and disinfected at the end of the illness.

In only one of the three epidemic nervous diseases does the question of serum-therapy at present arise as a prophylactic measure. So far the experience with prophylactic injections of anti-meningococcal serum has not given such favourable results as to commend its general adoption in an epidemic period of cerebro-spinal fever.

GENERAL FEATURES OF EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

It is apparent from our study of the epidemiology that the three diseases, cerebro-spinal fever, acute poliomyelitis, and encephalitis lethargica, all possess points of similarity. So much is this the case that the clinician may find it hard to make a differential diagnosis; epidemics of cerebro-spinal meningitis have frequently been confounded in the past with those of acute poliomyelitis, and acute poliomyelitis, especially in outbreaks where cerebral types occur, has been mistaken for cerebro-spinal fever. Encephalitis lethargica when it first appeared, after the diagnosis of botulism had been excluded, was considered a cerebral form of poliomyelitis. Osler for a time held this view. The advocates of the epidemic constitution hypothesis would correlate all three epidemic diseases of the central nervous system as manifestations in the wake of influenza.

In these lectures the view has been adopted, from epidemiological, clinical, and pathological evidence, that each of the diseases considered is an independent entity. At the same time the resemblances indicate that they belong to the same epidemiological family tree, and repeated allusion has been made to the fact that the study of one disease may make clear the epidemic behaviour of the others. Elsewhere, I have compared the relation which subsists, for example, between acute poliomyelitis and encephalitis lethargica to that between typhoid and paratyphoid fevers.

GENERAL BEHAVIOUR OF EPIDEMICS OF THE CENTRAL NERVOUS SYSTEM.

It has been mentioned that cerebro-spinal fever occurs in epidemic periods or cycles, and suggested that acute poliomyelitis and encephalitis lethargica also obey an epidemic law of this character. The organisms of epidemic nervous disease are always present in countries which have been affected by previous outbreaks of these diseases. This is shown by the presence of sporadic cases as well as by bacteriological evidence which indicates that persons may harbour the meningococcus or the virus of poliomyelitis in non-epidemic periods without displaying symptoms of illness. By these means the strains of the causal organisms are kept in circulation through a community. Consideration has also been paid to the question of evolution of these organisms which, previously mere saprophytes, may to-day have assumed inimical parasitical characteristics. It has further been contended that the central nervous system of man to-day is more subjected to fatigue and strain than in more leisured centuries, and that the organisms have attacked him in a region where his systemic defences are weakest.

It is at this stage that some factors as yet unknown come into play and initiate an epidemic of nervous disease. The virus of the disease is exalted, possibly by increasingly frequent passage through susceptible individuals; the increasing number of cases in successive years which portend an epidemic is in favour of this contention possibly by cosmic influences, such as unusual variations in seasonal temperature, excessive warm weather, and the like; probably other factors appear simultaneously, which lower the defensive forces of the human organism, and to these may be added increased opportunities for personal infection to the influence of which the movements and aggregation of troops in the last war supply ample testimony.

Infection in a nervous epidemic is disseminated, in the first place, like other infectious diseases, by case-to-case contact. If this method of propagation always succeeded, epidemics of nervous disease would be the deadliest of all scourges of mankind. Personal contact does not play the major rôle in the epidemic spread, although, in my own view, its influence is greater than that commonly assigned to it.

The links in the chain of infection are broken, first, by the fact that the causal organisms die out quickly and have a brief existence outside the body; second, because many persons infected do not contract the disease owing to lack of that mysterious catalytic agent of infection which is termed susceptibility. While these epidemiological characters stand to the credit account of epidemic nervous diseases, others must be debited which are important and serious, and make the problem of prevention extremely complex and baffling.

It may be assumed that in epidemic periods the viruses of these diseases are widespread among the population of the area affected. The thesis, as we have seen, is proven for cerebro-spinal fever and acute poliomyelitis. The epidemiological behaviour of encephalitis lethargica bears so great a resemblance to these diseases that the assumption appears equally true for it also, although at present bacteriological proof cannot be adduced. There is reason for postulating that any one of the "carriers" may transmit epidemic nervous disease to others, or may more rarely themselves develop a declared type of nervous illness. In these diseases there is as yet no method of animal experiment, as in the case of diphtheria, for deciding whether the "carrier" harbours a benign or virulent form of organism. Furthermore, all three forms resemble one another in that they give rise to mild and abortive types which often pass unrecognised and which have all the potentialities of disseminating the epidemics in their gravest form. I would submit that it is these circumstances which underlie the widespread distribution of an epidemic and its apparent sporadicity. It has been noted by Wickman and others that when an epidemic of nervous disease is localised and restricted to a particular town or small district the channels of direct and indirect infection from individual to individual can be traced with almost mathematical exactitude.

A last common characteristic of epidemic nervous diseases, and the most encouraging one yet cited, is that they conform to the behaviour of other epidemics in waning as well as waxing; they are all much influenced in this respect by seasonal variations.

EPIDEMIOLOGICAL DIFFERENCES BETWEEN EPIDEMIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

We have arrived at the conclusion that all three epidemic nervous diseases here considered resemble one another in epidemic behaviour in certain general features. It is equally well established that they possess distinct and independent epidemiological characters. The most important points of difference are seen in age-incidence, mortality, and seasonal incidence.

Table V. illustrates the differences in age-incidence shown by the three diseases. The greatest incidence of cerebro-spinal fever is at the 5-10 years age-period, that of acute poliomyelitis under 5 years of age, and that of encephalitis lethargica at the middle period of life.

Concerning mortality in both sexes, the fatality per cent. for epidemic nervous diseases in England and Wales for the year 1919 was found to be as follows in each disease: cerebro-spinal fever, 67.2 per cent.; acute poliomyelitis, 14.7 per cent.; encephalitis lethargica, 54.6 per cent.

As regards seasonal incidence for the year 1919, the highest point occurs for cerebro-spinal fever in May, for acute poliomyelitis in September, and for

encephalitis lethargica in January. There are also many minor points of epidemiological differentiation which have been already set forth.

TABLE V.—Showing for 1919 in England and Wales the Attacks by Cerebro-spinal Fever, Acute Poliomyelitis, and Encephalitis Lethargica at Different Age-periods as Percentages of Total Attacks at all Ages (Civil Population Only).

Year 1919.	Both sexes.						
	Under 1.	1-	5-	10-	15-	20-	30 +
C.-S.F. ..	10.36	16.06	18.26	15.28	15.82	10.88	13.34
A.P. ..	6.49	46.01	25.04	11.13	6.12	3.34	1.87
E.L. ..	1.53	5.92	7.63	10.69	13.93	14.50	45.80

C.-S.F. = Cerebro-spinal fever. A.P. = Acute poliomyelitis.
E.L. = Encephalitis lethargica.

CONCLUSION.

It sometimes falls to the lot of the epidemiologist to play the ungrateful part of Cassandra. In 1919, when writing of encephalitis lethargica, I drew attention to the infectivity and increasing number of cases of that disease and hazarded the opinion on the analogy of acute poliomyelitis that succeeding years might see a wider distribution of the disease in epidemic form. To my regret that prophecy has been fulfilled.

I am reluctant to seat myself again on the Delphic tripod, but the purpose of these lectures would be incomplete if attention were not again drawn specifically to the increase in epidemic nervous diseases, as displayed in recent years, an increase which the notification figures of England and Wales indicate but which must fall short of the true magnitude.

As regards cerebro-spinal fever, the notification figures since 1918 show a pleasing diminution; it is therefore to be hoped that we are now well towards the end of the epidemic period.

The prevalence of acute poliomyelitis continues and is an unwelcome portent. Still less reassuring is the increased epidemicity of encephalitis lethargica, and when thought is taken for the numerous mild and abortive forms and the many cases of epidemic hiccup which do not appear in the notification returns the increase becomes positively alarming.

It must be remembered that the mildest form of epidemic encephalitis may be followed by the most serious after-effects which cripple the individual concerned for life, either mentally or physically. The way in which epidemic nervous diseases are transmitted, above all the existence of the healthy carrier, makes, as has been shown, the application of the ordinary administrative measures employed for limiting epidemics of ordinary acute infectious disease to a large extent nugatory. Certain preventive measures that may be of service have already been considered.

At the same time the disciple of preventive medicine cannot stand aside, unfaithful to the high traditions of his calling, and watch the progress of epidemic nervous disease unmoved, until such time as the bacteriologist or biochemist supplies a serum or chemical compound to cope with the active virus. The one ray of light in this cloud of epidemicity is the fact that many persons are known to be insusceptible to infection. In the case of poliomyelitis Amoss and Taylor²⁹ have shown that certain bodies exist in the nasal secretions of certain individuals which are protective against the virus of that disease. If these protective substances are rarely found or are absent in young children the circumstance may account for the stress of the disease on the younger ages.

It may be suggested, therefore, that a closer study of the problem of susceptibility to infection may be an important means of acquiring success in coping with epidemic diseases of the central nervous system, and that the epidemiologist will do well to explore this avenue of research in the company of the clinician and the bacteriologist.

(Continued at foot of opposite page.)

LIME DERMATITIS.

By W. J. O'DONOVAN, M.D., M.R.C.P. LOND.,
CHIEF ASSISTANT, DERMATOLOGICAL DEPARTMENT,
LONDON HOSPITAL.

BOTH the mechanical and chemical sides of modern factory life are a fertile ground for new and increasing hazards to health. Old industries suddenly multiply or extend, alterations in factory processes bring in risks unrevealed by a consideration only of the chemical composition of the finished product. I wish here to show that a fuller consideration of the ill-effects of lime upon the skin is not only overdue, but that it affects a far wider industrial population than was envisaged by the leading dermatologists of the last generation.

Lime or cement is not mentioned in the index of the late Sir Malcolm Morris's text-book,¹ although in the chapter on eczema he states, "that it is by no means uncommon to see artificial dermatitis on a bricklayer's hands, followed by the development of true eczema on parts of the skin that have never been in contact with lime."

No paper on lime dermatitis has appeared in the *British Journal of Dermatology*. Prosser White² mentions that lime holes are found in the hands of pullers who scrape off hair from lime-soaked skins. Plasterers, masons, whitewashers, bricklayers, and cement-workers suffer, he says, from an eruption caused by splashes when slaking lime, in mixing Roman cement, and from the presence of lime dust,³ and he pictures the deformed nails of a plasterer. Nevertheless, there is need of an authoritative record of observed cases first to establish the modern frequency and severity of lime dermatitis, and second, for reference by any medical practitioner who may be subpoenaed to give evidence in such cases under the Workmen's Compensation Acts. The need for work along this line is stressed by Dr. Macleod in his text-book of 1920.⁴

There are underlying group resemblances between cases of industrial dermatitis of diverse origin, but when the stage has been reached when the dermatitis of a chrysanthemum grower can be distinguished at sight from that of a hop-picker, and that of an arsenic-worker from that of a pitch-breaker, it will be conceded that a close study of case-records is essential if diagnosis is to progress beyond the recognition of the action of an undefined external skin irritant. In analysing these cases the patients themselves can often give

little help owing to a congenital obtuseness or to the fact that the accepted title of their calling may be actually misleading.

Industrial Expansion of the Lime Industry.

Scattered through the chalk hills of Kent are many lime-kilns of real antiquity. One well known to me near Molash, Ashford, has not had its fire extinguished for certainly 100 years. Lime made in this traditional method has its own peculiar dangers. Tramps know the lethal end that awaits those who lie down for warmth on the earth beside the glowing tops of the kilns that are sunk into the soil in the form of narrow brick-lined cones. Farm labourers and fruit-growers are acquainted with the burns experienced when lime-washing their fruit trees. Leather gloves are habitually worn for this work on the great fruit farms about Swanley, Kent, but these men, as did the miner (Case 4), complain of great soreness of the skin on washing after the day's work is over.

The invention of cement by Aspdin in 1824 and the invention of mechanical means of manufacturing cement have enormously widened the field of possible human contact with lime or lime products.

A comparison between the first illustration of a wind-driven cement-mill on the river Medway with the photograph of the Associated Portland Cement Manufacturers' modern plant at Burham, Kent (Figs. 1 and 2), will drive home how great is the expansion that has occurred in the use of lime since a cement-making process was patented. Such factories are to be found in many places. The Associated Portland Cement Manufacturers have most kindly informed me that the annual output of Portland cement is probably about three million tons, and that of lime of all grades less than 500,000 tons.⁵ Five thousand men are regularly employed at cement factories, and there are countless piers on the banks of the rivers Thames and Medway for their export and coastal trade. The blue lias lime referred to as being used in the London "tubes" contains so much silica that it may be regarded as a hydraulic cement.⁶

Clinical Reports.

The following cases show the influence of lime in the causation of local and of generalised grave dermatitis in various occupations. Recurrent cases of severe disabling dermatitis in which neither patient nor doctor has appreciated the true aetiology make it important that this unappreciated hazard should be reported. A special form of engineering, by no means confined to London, is the boring of underground

MILROY LECTURE: REFERENCES.

(Continued from preceding page.)

1. Crookshank, F. G.: A Note on the History of Epidemic Encephalomyelitis, *Proc. Roy. Soc. Med. (Sect. History of Medicine)*, 1919, xii., 1-21.
2. Hall, A. J.: Epidemic Encephalitis, Bristol and London, 1924, 3, 30.
3. von Economo, C.: Encephalitis Lethargica, *Wien. klin. Woch.*, 1917, xxx., 581; *Neue Beiträge zur Encephalitis Lethargica*, *Neurol. Centralb.*, Leipzig, 1917, xxxvi., 866-78.
4. von Wiesner, R. R.: Die Ätiologie der Encephalitis Lethargica, *Wien. klin. Woch.*, 1917, xxx., 933.
5. Netter, A.: Sur quelques cas d'encéphalite léthargique observés récemment à Paris, *Bull. et Mém. Soc. Méd. Hôp. de Paris*, 1918, xlii., 307-10.
6. Harris, W.: Acute Infectious Ophthalmoplegia or Botulism, *THE LANCET*, 1918, i., 568.
7. Hall, A. J.: Notes on an Epidemic of Toxic Ophthalmoplegia, *THE LANCET*, 1918, i., 568.
8. Report of an Enquiry into an Obscure Disease, Encephalitis Lethargica, Reps. to Local Govt. Board on P.H. and Medical Subjects (N.S. No. 121), 1918.
9. Wilson, S. A. K.: Epidemic Encephalitis, *THE LANCET*, 1918, ii., 7.
10. Buzzard, E. F.: Toxic Encephalitis, *THE LANCET*, 1918, i., 616; Acute Epidemic Encephalitis, *ibid.*, 715.
11. Parsons, A. C.: Ministry of Health Report on Encephalitis Lethargica, Reps. on P.H. and Med. Subjects, No. 11, London, 1922.
12. For references to the work of these authors see bibliography in Dr. Parsons's Report.
13. Stallybrass, C. O.: Encephalitis Lethargica; Some Observations on a Recent Outbreak, *THE LANCET*, 1923, ii., 922.
14. Chalmers, A. K., and Macgregor, A. S. M.: A Note on Current Cases of Encephalitis in Glasgow, *THE LANCET*, 1923, i., 610.
15. Macgregor, A. S. M.: Epidemic Encephalitis: The Outbreak in Glasgow in 1923, *Pub. Health*, 1924, xxxvii., 245-248.
16. Lumsden, J.: A Case of Encephalitis Lethargica, *Med. Press and Circ.*, Lond., 1920, i., 211-2.
17. Cruchet, R., Moutier et Calmette: *Bull. et Mém. Soc. Méd. Hôp. de Paris*, 1917, xli., 614.
18. Boyd, W.: The Winnipeg Epidemic of Encephalitis Lethargica, *Canad. Med. Assoc. Jour.*, 1920, x., 117-40.
19. Netter, A.: *Bull. et Mém. Soc. Méd. Hôp. de Paris*, 1921, xlv., 38.
20. Price, G. E.: *Jour. Amer. Med. Assoc.*, 1922, lxxviii., 716.
21. Buzzard, E. F.: Rep. of Discussion on Encephalitis Lethargica, *Med. Soc. Lond.*, *THE LANCET*, 1924, ii., 1015.
22. Nonne, M., and von Economo's Discussion, *abst. in THE LANCET*, 1923, i., 867.
23. Netter, A.: Encéphalite léthargique, *Bull. et Mém. Soc. Méd. Hôp. de Paris*, 1920, Nos. 12 and 26.
24. Levaditi, C., Harvier, P., et Nicolau: Recherches expérimentales sur l'encéphalite léthargique, *Compt. rend. Soc. de Biol.*, Paris, 1920, lxxxiii., 385.
25. Reece, R. J.: Encephalitis Lethargica; Prevalence in 1918-19, *Rep. Med. Dept. of the Local Govt. Board for 1918-19*, London, 1919 [Cmd. 462], 71.
26. Kling and Lilienquist: *Compt. rend. Soc. de Biol.*, Paris, 1921, lxxxiv., 521.
27. Godfrey and Gwyn: *Canad. Med. Assoc. Jr.*, 1922, xii., 420.
28. Railliet: *Bull. et Mém. Soc. Méd. Hôp. de Paris*, 1920, xli., 1607.
29. Amoss and Taylor: *Jour. Exper. Med.*, April 1st, 1917, 507.

tunnels, with or without the aid of compressed-air shields. The men call themselves miners, or sometimes tunnel-miners, but without careful and pointed questioning it is doubtful if the causal link between the work and the disability could be determined in the consulting-room. This miners' dermatitis is a lime dermatitis. Five such cases of recurrent dermatitis have come to Dr. J. H. Sequeira's clinic this year; all have been employed in the same manner, and none volunteered any guess as to the causative factor.

CASE 1. Lime Dermatitis watched over 15 Years.—This patient (J. U.) has been three times in hospital, and the course of his industrial history is very interesting. In 1909 he was an in-patient in the London Hospital for a month and diagnosed as seborrhoeic dermatitis. Occupation: "The patient works underground and sweats considerably." He gave a month's history of an itching papular eruption on the forearms, thighs, and sternal region; the vertebral sweat furrow is free from rash. Treatment: alkaline baths, resorcin, and sulphur ointment. Discharged cured. 1911: In hospital August 31st to Oct. 2nd, with a diagnosis of exfoliative dermatitis. Occupational note: A compressed air-worker, has recently had some red-lead paint dripping

FIG. 1.



Old cement mill on the river Medway.
(By courtesy of Associated Portland Cement Manufacturers.)

from the tunnel shields on to his arms. He gave a one month's history of a red papular eruption, non-irritant, on his forearms, spreading rapidly on to arms and thighs. On admission there was a general erythrodermia and exfoliation, more marked on the face, arms, and legs. Treated by oatmeal baths, resorcin lotion, and an ointment of glycerol of lead subacetate. 1914: While working on the Post Office tunnel (as a grouter) outside the London Hospital he had a mild attack of dermatitis. As far as he can remember never acted as a grouter, except on the occasions mentioned above, and splashes of lead paint were a most unusual occurrence. 1924: Age now 47, has been a tunnel-miner for 26 years. He came to the skin out-patients' department on August 8th, 1924. All his attacks have been in the summer months, when he sweats profusely. His trouble started

about the end of May of this year. Occupational note: He has been doing grouter's work since the end of April 24th for the first time since 1914, not by intention. This work is casual piece-work, depending on the amount of tunnel engineering under construction. It consists of sealing up the space between the iron shields and the brickwork of the tunnel under construction with slaked "blue lias" lime. Lime is emptied from sacks into receptacles by the

FIG. 2.



The Associated Portland Cement Manufacturers' Works
at Burham, Kent.

grouter and conveyed by him with a hand-scoop to a tank of water. Both these operations are entirely hand processes. The lime is forced into the space by air pressure. At piece-work all work is at high pressure which increases the amount of dust formed. J. U. was working at an air pressure of 12 to 27 lb. to the square inch. After work, when home, this man cleaned by washing in soap and water with half a small spoon of soda to the gallon.

Condition on Admission (August 8th, 1924).—There were small boils and follicular pustules, discrete, but numerous, on both forearms, the legs, and a little on the hands. On the backs of the hands, on the dorsa of the feet, and around the wrists the skin was thick, dull pink, harsh, dry, finely scaling, and fissured over the knuckles. Around the neck and on the torso, arms, and thighs were numerous blotches of red skin. In and on the ear margins were adherent yellow scabs and small pink papules. The epitrochlear and axillary glands were moderately enlarged, painful, and tender. The patient's health was not really much affected; there was no fever, no sign of any visceral change, urine natural.

Differential blood count by Dr. H. A. Ash, of the Clinical Laboratory: Total white cells, 14,249 per c.mm.; poly. neutrophils, 64.5 per cent.; poly. eosinophils, 1.5 per cent.; small lymphocytes, 16.5 per cent.; large lymphocytes, 3.0 per cent.; large hyaline cells, 14.0 per cent.; coarsely granular basophils, 0.5 per cent.; Wassermann reaction positive; no leucoplakia. (Fig. 4.)

It is unique in my experience that with an account of a dermatitis extending over 15 years, recurring only when occupied on a particular process involving contact with lime, the connexion between cause and effect should never even have been suggested by the sufferer, who in this case is above the average in intelligence.

CASE 2.—A. C., aged 43, a tunnel-miner, came to Dr. Sequeira's clinic on May 10th, 1923, for a second attack of dermatitis. He said that his work was to blow lime into the casing of underground tubes. On both forearms, particularly on the hairy aspects, were many large discrete follicular pustules and scabs. The rest of the skin was unaltered in texture, there was no adenitis, the nails were unaffected. He was well in a fortnight.

CASE 3.—H. D., aged 42, has been a "miner" in tunnels for 29 years. Had a skin attack 17 years ago, and frequent attacks since. All previous attacks affected the forearms only. His present trouble started three months ago in the same sites, but has extended rapidly. On examination (Feb. 28th, 1924) his forearms were pink, dry, and scaling all over, his palms dry, thick, and hard, and his whole skin was drier than normal (ichthyosis). The skin of the scrotum and the adjacent parts of the thighs was moist, macerated, and reddened. He was treated with calamine lotion and a bromide mixture and in two months was well, save that

he had now, away from work, become more neurotic. His original lesions were gone, but he had developed pruritus and with peri-anal excoriation.

CASE 4.—W. G., aged 59, was sent to the skin clinic of the London Hospital on Oct. 14th, 1924, as a "toxic rash." By occupation he was an underground tunnel-miner and had been mixing and using "blue lias" lime for 24 years. He knew three fellow-workers affected like himself by their work. There were no facilities for washing at his job. This was his first attack, and had lasted for six weeks. The rash started on the forearms and was now widespread on the limbs and face. There was a red, oozing, and scabbed confluent rash on the forearms, most intense at the wrists, the legs a dull pink with patches of fine desquamation, there were discrete red or pink papules on the forehead, face, and trunk. There was no adenitis and no fever, no boils, the general health was unaffected. He was admitted for rest and to avoid the complications that might be set up under unfavourable home conditions. (Fig. 3.)

CASE 5. *Lime Erythrodermia*.—T. L., aged 57, has been a street mason from the age of 19, handling lime daily to make mortar. He has always had good health and, save for a few boils on the neck in the last 12 months, has had no previous skin trouble. His rash started early in July, 1924, in the form of itching red pimples on both forearms, and spread in three weeks to the thighs, head, and trunk in this order. He first came to out-patients' department on August 12th, 1924, showing then a general bright erythrodermia with scaling from his scalp to his feet with no islands of unaffected skin. He was made an in-patient on August 12th, 1924; his skin was red all over and hot to touch, it was thickened with a criss-cross exaggeration of the normal skin pattern. Desquamation was slight and was confined to the scalp and face, the feet and legs pitted on pressure. A blood examination by Dr. Ash, of the Clinical Laboratory, on

FIG. 3.



Case 4.—W. G., Scabbed and fissured erythema due to lime.

Dec. 8th, 1924, showed erythrocytes, 4,125,000; hæmoglobin, 78 per cent.; colour index, 0.98; leucocytes, 11,500 per c.mm. Stained blood: Polynuclear neutrophils, 63.5 per cent.; polynuclear eosinophiles, 6.5 per cent.; small lymphocytes, 18.5 per cent.; large lymphocytes, 2.5 per cent.; large hyaline cells, 9 per cent.

On examination I could find no physical signs of visceral disease. Examination of the C.N.S. showed an anæsthetic soft palate, insensitive sclerotics, no other abnormality. After three weeks rest in bed the colour of his skin lessened to a pink, but an evening rise of temperature to 101° F. coincided with the development of numerous boils which came out in successive crops over three weeks, after which the patient slowly and steadily recovered.

CASE 6. *Housewife's Lime Dermatitis*.—E. S., aged 32, married, a brunette, came on July 22nd, 1924, with a vesicular eruption of two weeks' standing on the backs of her hands and fingers. At the beginning it was irritating, but had now become painful. She attributed it to using chloride of lime in her washing tub. She ceased attending after a week's treatment. E. S. attended again on Dec. 2nd, 1924, with a rash on her hands, mostly the right, of four days' duration. There was a confluent vesicular outbreak, mostly on the dorsum and between the four fingers of the right hand. These vesicles were ruptured in some places, leaving red excoriated areas. The fluid in unruptured vesicles was white and opaque. On the back of the wrist and over the base of the right thumb were discrete vesicles of pin-head to millet-seed size. The right palm was sweating freely; the left hand was very much less affected, the lesions itched. There was no regional adenitis and no fever, the tongue was clean, many teeth were carious. Calamine liniment was applied and in a week all vesicles were gone, she developed no perionychia and no follicular pustules. (Fig. 5.)

S. Norman Dykes⁷ has described in a letter a case of generalised dry scaly eczema with painful fissures in a foreman "rough-caster" working in cement,

and notes his inability to find any reference to cement as a cause of occupational dermatitis. J. C. Lyth⁸ has described the case of a man, aged 38, a plasterer's labourer working chiefly in cement, who had four attacks, of increasing severity, of desquamation, at first discrete on the arms and hands, and later "both hands and forearms completely covered with a

FIG. 4.



Case 1.—J. U., Follicular pustules in a "tunnel-miner."

profusely exfoliating eczema." An unsigned letter in THE LANCET in 1917 records that Portland cement if moistened and allowed to adhere to the fingers for half an hour, blanches and shrivels the fingers, and bores pin-holes in the tips.⁹

Perforation of the Nasal Septum.

I have been unable to find any English reference to perforations of the nasal septum due to lime, but the

FIG. 5.



Case 6.—E. S., Recurrent excoriated vesicular eruption due to bleaching lime in the household washing.

following quotation, although not a case-record, is definite:—

CHAUX: Elle exerce cependant une action de brûlure sur le peau et les chauffourniers s'en garantissent en se graissant fréquemment les mains avec du suif. Ciment: La poussière de ciment, dont l'influence sur l'organisme n'est pas définie. . . . Il se produit dans le cloison nasale, à sa base, une perforation de dimension variable. . . . De plus, il est recommandé aux ouvrières d'adopter une coiffure protectrice pour empêcher l'action irritante et caustique des matières manipulées sur le cuir chevelu.¹⁰

Summary.

(1) Lime dermatitis is now to be looked for in a wide field of industrial life. (2) The patient's trade label is often a most insufficient guide to this special industrial hazard. (3) A small group of cases is recorded amongst "tunnel-miners" not hitherto reported as liable to lime dermatitis. (4) The types of dermatitis that may be seen are vesicular eruptions or cheiopompholyx, lime holes, seborrhœic eczema, exfoliative dermatitis, intertrigo, erythrodermia, pustular follicular dermatitis, and septal perforation. (5) Over-sweating or abnormal dryness of the skin are predisposing factors. (6) Preventive measures consist in frequent changes of all dust-laden under-clothing, alternation of employment on to lime-free work, and the nightly application of emollient grease to the skin of the face, hands, and forearms.

References.

1. Malcolm Morris: *Diseases of the Skin*, fourth edition, 1908, p. 278.
2. Prosser White: *Occupational Affections of the Skin*, second edition, 1920, p. 197.
3. *Ibid.*, p. 104.
4. Macleod: *Diseases of the Skin*, 1920, p. 283.
5. Letter, ACD/304/CW, Dec. 3rd, 1924.
6. Thorpe: *Dictionary of Applied Chemistry*, 1921, p. 734.
7. S. Norman Dykes: *Brit. Med. Jour.*, 1922, ii., 826.
8. Lyth, J. C.: *Brit. Med. Jour.*, 1922, ii., 1001.
9. Letter, THE LANCET, 1917, ii., 368.
10. Paraf, G. G.: *Ingénieur, Hygiène et Sécurité du Travail Industriel*, Paris, 1905, p. 319.

THE ÆTIOLOGY OF HÆMOPHILIA.

BY J. W. PICKERING, D.Sc. LOND.,

AND

R. J. GLADSTONE, M.D. ABERD., F.R.C.S. ENG.

(From the Departments of Physiology and Anatomy, University of London, King's College.)

THERE is no unanimity in the views which have been suggested to explain the delay in clotting of hæmophilic blood, and treatment remains empirical. Two cases are here recorded in which the characteristics of hæmophilic blood closely resembled those of embryonic blood. In both complete coagulation was produced by raising the temperature of the shed blood to 38° C., without the addition of coagulants.

Critical Summary of Previous Work on Hæmophilic and Embryonic Bloods.

Sahli¹ found that the same amount of fibrin can be obtained from both hæmophilic and normal blood. Adopting the theory of blood coagulation suggested by Morawitz,² he maintained that the delayed clotting in hæmophilia is due to a shortage of thrombokinase in the wounds of the bleeders. This opinion was supported by Morawitz and Lossen,³ who found that the addition of tissue extracts to hæmophilic blood hastened its coagulation. Nolf and Herry,⁴ however, maintained that the thrombokinase is altered in quality instead of in quantity. The deficiency theory is commonly accepted in current text-books, and Vines,⁵ in his recent review of the subject, classed hæmophilia with cystinuria and alcaptonuria as a deficiency disease, dependent on the lack of a ferment. No proof is, however, available that damaged cells or tissues contain a coagulant enzyme. Moreover, it is well known that contact with wounded tissues is not necessary for the clotting of blood, and recent work indicates that the detritus of leucocytes and blood-platelets, the supposed other sources of thrombokinase, is not an essential factor in the inception of blood coagulation (Pickering⁶). Addis⁷ found that hæmophilic blood is clotted as rapidly by thrombin as is normal blood, and that thrombin obtained from the blood of bleeders is as active a coagulant as that prepared from normal blood. He thus demonstrated that restraint of clotting in hæmophilia occurs prior to the formation of thrombin. This investigator

also concluded that in hæmophilics: (1) There is no substance in the blood which hinders the coagulant action of thrombin, an opinion supported by the researches of Hurwitz and Lucas,⁸ of Hess,¹⁰ and of Klinger.¹¹ (2) There is no deficiency of thrombokinase either in the body tissues or the formed elements of the blood. (3) Thrombin, and its mother-substance pro-thrombin, are present in normal quantities, a conclusion endorsed by the recent work of Wöhlisch,¹² who also found that the fibrinogen is normal in amount and behaviour.

Having found that the generally recognised factors in blood coagulation are present in their usual quantities, Addis suggested that the defect in hæmophilia is that a longer time is taken for the conversion of pro-thrombin into thrombin. Howell,¹³ Hurwitz and Lucas,⁹ and also Klinger¹¹ have, however, maintained that there is a deficiency of pro-thrombin, while Fiessly¹⁴ has recently asserted that there exists in both hæmophilic plasma and serum a substance which inhibits the formation of pro-thrombin. No indication of the nature of this substance is given.

Very little has been published on the coagulability of embryonic blood. More than 50 years ago, Boll¹⁵ recorded that the blood of embryo fowls does not clot before the twelfth to fourteenth day of incubation. Emmel, Levison, and Fisch¹⁶ recently noted that the blood of late pig embryos clots much more slowly than that of adult pigs, but is coagulated, at room temperatures, by the addition of calcium chloride. Finding the total calcium content is not below the normal, they concluded that the retardation of clotting is due to a deficiency of ionised calcium. Most investigators are agreed that there is no abnormality in the calcium content of typical hæmophilic blood, but Hess¹⁰ has recorded a case of sporadic hæmophilia in which there was a shortage of ionised calcium. The blood of this person, like that of the embryos, was clotted by the addition of calcium chloride.

Experiments on Embryonic Blood.

Whilst investigating the ontogeny of the plasma of embryo chicks, we have found: (1) The mixture at laboratory temperature (14°-16° C.) of the blood of eleventh-day embryos with an equal volume of freshly shed normal human blood inhibits clotting. Samples of human blood, which were completely clotted in open vessels at room temperature in five or six minutes, remained fluid for an hour after mixing with the embryonic blood, provided the mixture was made not later than 30 seconds after the withdrawal of the human blood from the circulation. When the embryonic blood was mixed with the human blood, which had been shed on glass for three minutes—i.e., just before the formation of clots—no suppression of clotting occurred. The blood of the eleventh-day chick does not clot either at room or body temperature, does not give reactions indicative of either pro-thrombin or fibrinogen, but contains material which coagulates when heated to 74°-75° C. (2) The blood of twelfth-day chicks remains fluid on glass at laboratory temperatures, but clots rapidly at 38°-40° C. It apparently contains fibrinogen, is clotted by thrombin, and is partially clotted by the addition, at room temperature, of considerable quantities of tissue or cell detritus—i.e., by the so-called thrombokinase. Clots do not, however, appear in the blood oozing from damaged blood-vessels. At laboratory temperatures a mixture of this embryonic blood with an equal volume of normal human blood clots at almost the same speed as human blood. A mixture of human blood with one and a half times its volume of the embryonic blood shows, however, some retardation of clotting. When two volumes of the embryonic blood are used the suppression of clotting is usually more marked. (3) The blood of fourteenth-day chicks remains fluid on glass at laboratory temperatures, but clots rapidly on the addition of small amounts of calcium chloride. In other respects it behaves like adult birds' blood.

When added to an equal volume of human blood it accelerates clotting.

It thus appears that material protective against the inception of clotting is developed in birds' blood prior to the development of its capacity to clot and that this material is not an anti-thrombin, as it does not restrain the later stages of clotting in which thrombin is developed. It seems that early embryonic blood differs from normal adult blood by the predominance of stable protective material.

Experiments on Hæmophilic Blood.

CASE 1.—Blood was obtained by finger puncture from a male, aged 20, who was suffering from an effusion of blood into the right knee-joint. Since childhood the patient had suffered from prolonged bleeding from small cuts and from the gums. Two of his brothers had suffered from protracted bleeding from small injuries, and one of them had died in hospital from hæmorrhage. The patient's blood exhibited the following characteristics: (1) It remained fluid in a glass vessel, at room temperatures (16° – 17° C.), for an hour. (2) At 38° C. it clotted in 8 minutes 30 seconds. The clot formed was firm and adhered to the walls of the containing vessel; it subsequently contracted and exuded serum. (3) It clotted immediately at room temperature on addition of the clot obtained by warming the hæmophilic blood. (4) It clotted in three to four minutes, at room temperature, after addition of the hæmophilic serum. (5) Mixed with an equal volume of normal human blood, immediately after the normal blood had been shed, it lengthened the clotting time of the normal blood from 6 minutes 40 seconds to 13 minutes 40 seconds. (6) When the mixing took place after the normal blood had been shed for four minutes no retardation of clotting occurred. (7) It was not clotted by the addition of an equal volume of 2 per cent. calcium chloride.

CASE 2.—Blood was similarly obtained from a male, aged 54, who suffered from periodic epistaxis and from prolonged bleeding from small cuts. Such hæmorrhages were, however, usually arrested in 15 or 20 minutes. Blood coagulation-times, taken by the method of Pickering and Hewitt,¹⁹ showed considerable variation during the two years the case was under observation, clotting being sometimes complete in 10 minutes, on other occasions occupying from 15 to 20 minutes. One brother and a maternal uncle were described as excessive bleeders; the sisters and a daughter appeared normal. At the time of the experiments here recorded complete clotting was obtained at 17° C., on glass, in 46 minutes 30 seconds. At 38° C. complete clotting on glass occurred in 6 minutes 5 seconds. The application of a wet bandage at 118° F. to a finger-cut completely prevented oozing of the blood in 9 minutes; oozing through a cold bandage continued for 20 minutes. (The room temperature was 15.5° C.) The addition of the patient's own fresh serum or blood-clot provoked clotting at room temperature in 5 and 4 minutes respectively. The mixture of equal volumes of the abnormal blood with normal human blood at 15.8° C. yielded a coagulation-time 2 minutes 40 seconds slower than that of the normal blood. When mixing was delayed until 4 minutes after the normal blood had been shed the coagulation-time was 3 minutes faster than that of the normal blood.

Discussion.

The preceding experiments show marked resemblances in the behaviour of the blood of early embryos and that of the hæmophiles investigated. Both the bloods, when added immediately to normal human blood, retard its coagulation, but neither inhibits the later stages of clotting in which thrombin appears. Blood from the severe case had greater protective power against the inception of clotting than was exhibited when the hæmophilia was less marked. Both early embryonic and hæmophilic blood are relatively stable at room temperatures and both clot in glass vessels at 38° C. Both are refractory to the coagulant action of tissue detritus (the so-called thrombokinase), and identity of behaviour occurs in all the other reactions recorded, except that the addition of small amounts of calcium chloride clots the embryonic blood as soon as its capacity to clot is developed, but does not clot the hæmophilic bloods. In this one respect the embryonic blood resembles the blood of the case of sporadic hæmophilia recorded by Hess¹⁰ and differs from typical hæmophilic blood. A probable explanation of the facts is that in hæmophilia there is either a partial persistence of an

embryonic condition of the plasma in adult life or a return to the embryonic state.

Evidence has been advanced in the papers of Pickering and his co-workers that there exists in normal circulating blood a protective colloid, which preserves the clotting complex of the plasma from change. It appears that when normal blood is in contact with surfaces which it wets, this protective colloid rapidly undergoes change and is disassociated from the clotting complex of the plasma. Prothrombin is then converted into thrombin, which converts the fibrinogen of the blood into the fibrin of clots. It has been shown by Pickering and Taylor^{17, 18} that the addition of various inert protective colloids to freshly shed blood inhibits the inception of clotting, but fails to suppress the coagulant action of thrombin on either blood or on fibrinogen. A similar condition to that of the blood in the milder case of hæmophilia has thus been produced *in vitro* by increasing the concentration of protective colloid in otherwise normal blood. The protective material of eleventh-day bird embryos appears not to undergo change in the act of bleeding, hence its addition to freshly shed blood suppresses clotting to a degree equal to that found in the severe case of hæmophilia. Hæmophilic blood only slowly changes towards clotting when shed, and the suppression of clotting apparent when it is added to normal blood is in like manner intelligible as due to the presence of an excess of a stable protective colloid.

Although the total protein content of hæmophilic serum appears to be less than that of normal blood, a globulin is present in excess (Hurwitz and Lucas⁹), and we have found that embryonic plasma at the time when it is highly protective against the clotting of adult human blood consists mostly of material which coagulates at 74° – 75° F., at the heat coagulation temperature of a globulin.

One of the most troublesome and apparently inexplicable features of hæmophilia is the continued oozing of blood through wounds which contain clots and presumably thrombin. The presence of unclotted blood bathing cuts, even at body temperature, is not, however, without parallel in experimental work. Pickering and de Souza²⁰ observed that if threads are introduced into the ventricles of a living heart, separated from the circulation by mass ligature, massive clots are formed, but some blood remains fluid. This clots immediately it is shed on glass. The fluidity of the blood in contact with clots is intelligible as due to the presence, *in vivo*, of undisturbed protective colloid; its rapid clotting when shed may be ascribed to disturbance of the protective colloid followed by the coagulant action of the thrombin present. In a similar but more marked manner the excess of protective colloid in hæmophilic blood prevents the thrombin formed in wound clots from acting on the fibrinogen of oozing blood. Similarly, an excess of protective colloid or the presence of a protective colloid of unusual stability would delay the conversion of pro-thrombin into thrombin, and there is no need to assume that the pro-thrombin of hæmophiles is either deficient in quantity or altered in quality. The coagulant action of tissue extracts on hæmophilic blood is also explicable without assuming a deficiency of "thrombokinase." The work of Pickering and Hewitt²¹ indicates that the detritus of cells and tissues disturbs the surface conditions of the plasma, and such disturbance accounts for its coagulant action on hæmophilic blood.

Summary.

(1) The hæmophilic bloods examined coagulated in 6–8 minutes at 40° C. This property may possibly be utilised in controlling oozing from wounds and epistaxis. (2) Hæmophilic plasma exhibits most of the characteristics of early embryonic plasma. (3) The protective power against clotting of both hæmophilic and embryonic blood is not due to the presence of an anti-thrombin. (4) It appears probable that the delay in the clotting of the

hæmophilic bloods examined is due to the persistence or reappearance in adult life of an embryonic condition of the plasma, and that in both hæmophilic and embryonic blood there is present a relative excess of a stable protective colloid. This conclusion is concordant with the theory of the fluidity and clotting of blood enunciated by one of us.

It is hoped that those in touch with cases of hæmophilia will communicate with us (at King's College, W.C. 2) and thus assist in this inquiry.

References.

1. Sahli, H.: *Zeit. f. klin. Med.*, 1905, lvi., 264.
2. Morawitz, P.: *Beiträge*, 1904, v., 133.
3. Morawitz, P., and Lossen, J.: *Deutsch. Archiv klin. Med.*, 1908, xciv., 110.
4. Nolf, P., and Herry, A.: *Revue de Méd.*, Paris, 1909, xxix., 841; *Ibid.*, 1910, xxx., 106.
5. Vines, H. W. C.: *Quart. Jour. Med.*, 1920, xiii., 265.
6. Pickering, J. W.: *Brit. Jour. Exper. Biol.*, 1925, ii., No. 2.
- 7 and 8. Addis, T.: *Quart. Jour. Med.*, 1910-11, iv., 14, and *Jour. Path. and Bact.*, 1911, xv., 427.
9. Hurwitz, S. H., and Lucas, W. P.: *Arch. Intern. Med.*, 1916, xvii., 543.
10. Hess, A. F.: *Johns Hopkins Hosp. Bulletin*, 1915, xxvi., 372.
11. Klinger, R.: *Zeit. klin. Med.*, 1918, lxxxv., 335.
12. Wöhlisch, E.: *Zeit. f. d. ges. Exper. Med.*, 1923, xxxvi., 3.
13. Howell, W. H.: *Arch. Intern. Med.*, 1914, xiii., 76.
14. Fiessly, R.: *Schweizer. Med. Woch.*, 1924, liv., 81.
15. Boll, F.: *Archiv Anat. u. Physiol.*, 1870, p. 718.
16. Emmel, V. E., Levison, S. A., and Fisch, M. E.: *Jour. Exper. Med.*, 1920, xxxi., 177.
- 17 and 18. Pickering, J. W., and Taylor, F. E.: *Biochem. Jour.*, 1923, xvii., 916, and *Roy. Soc. Proc. B*, 1924, xcvi., 1.
19. Pickering, J. W., and Hewitt, J. A.: *Roy. Soc. Proc. B*, 1924, xcvi., 77.
20. Pickering, J. W., and de Souza, D. H.: *Biochem. Jour.*, 1923, xvii., 747.
21. Pickering, J. W., and Hewitt, J. A.: *Ibid.*, 1921, xv., 710.

HÆMORRHAGE DURING DISSECTION OF THE FAUCIAL TONSILS.

A SCHEME FOR CONTROLLING THE VESSELS BEFORE DIVISION.

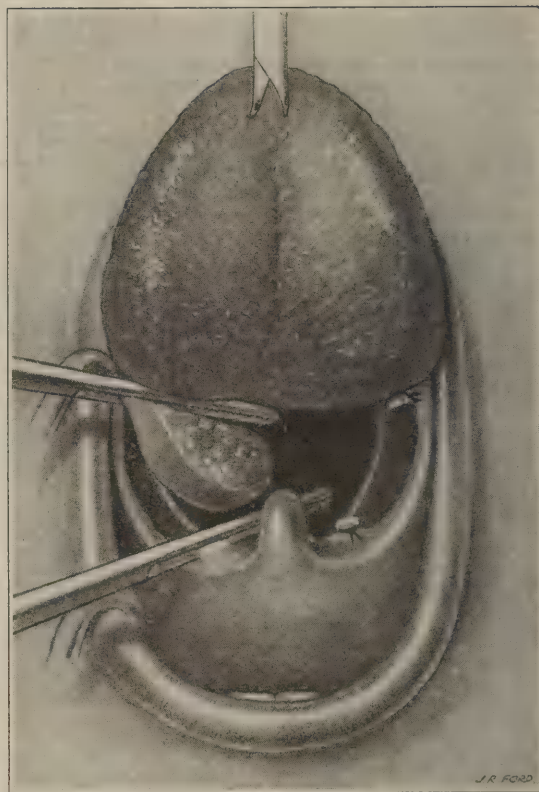
BY NORMAN PATTERSON, F.R.C.S. ENG.

ENUCLEATION by one method or another is now the routine practice in dealing with enlarged or septic tonsils. Each surgeon soon acquires a technique of his own, which from time to time he may modify. So long as the tonsil in its capsule is removed with as little damage as possible to the mucous membrane and muscles, and the resulting fossa is absolutely free from bleeding at the end of the operation, the procedure can be pronounced as satisfactory.

Technique.

As far as the exposure of the capsule is concerned, the technique which I adopt is much the same as that generally practised. It is important to preserve not only the pillars, but also any mucous membrane lying between the pillars and the tonsil, including the plica semilunaris. The mucous membrane is first of all divided in front, above, and behind, and the capsule exposed, keeping as close as possible to the tonsil and generally well behind the edge of the anterior and in front of the edge of the posterior pillar. The next step is the separation of the lateral part of the tonsil from the bed in which it lies, making no attempt to free either the upper or lower poles from their attachments. It is mainly in the region of the upper pole that the blood-vessels run to and from the tonsil, and an attempt even by blunt dissection to free this pole will probably result in tearing vessels with resulting hæmorrhage. When the middle portion of the tonsil in its capsule has been freed from the pharyngeal wall, the tonsil itself is drawn medially and forwards with a vulsellum. One blade of a large pair of artery forceps, which may conveniently be curved, is then passed through the opening which now exists between the capsule of the tonsil and the pharyngeal wall; the other blade of the forceps lies in front of and internal to what may for convenience be called the upper tonsil "pedicle." Half an inch or more of the blades should project beyond the clamped portion of the tissue. The tonsil is again dragged somewhat forcibly forwards and medially, and the forceps are closed, taking care that no tonsillar tissue is included between their blades. With a pair of scissors the "pedicle" is now severed on the tonsil side of the forceps. The tonsil

is then freed in a downward direction towards the base of the tongue by blunt or swab dissection. In using a metal dissector it is important to work at right angles to the plane of cleavage, and, so to speak, to tease the capsule from its surroundings. In this way bleeding is much less likely to occur. Occasionally a moderate-sized vessel will be seen and can be clamped before division. The dissection is continued in a downward direction till a "pedicle" attaching it to the tongue appears. This "pedicle" is clamped with a pair of stout artery forceps, the points passing downwards and backwards towards the epiglottis. The tonsil is cut across on its own side of the forceps. It is now only necessary to secure each "pedicle" with a ligature, and, if the points of the forceps have been left free, no difficulty will be experienced in passing this ligature.



Left side.—The tonsil is now separated and ready to be cut away.

Right side.—The ligatures are shown in position. At the end of the operation the one on the lower tonsil "pedicle" is generally out of sight.

Any redundant tissue which is present, if desired, can be cut away, but if stout forceps have been used, and if the ligature is tightly tied, the remains of the "pedicles" will slough.

Remarks.

In simple cases, if this method of removing the tonsils is adopted, there will be very little hæmorrhage since the main vessels are clamped before they are cut; there will be no danger of the ligatures slipping, as they surround substantial portions of tissue, and much time will be saved as all searching for bleeding and retracted vessels is avoided. It may not be possible to carry out this manoeuvre in every case—e.g., if the tonsil is very adherent, or its capsule partially destroyed as the result of one or more attacks of quinsy, or owing to previous and unsuccessful attempts at removal. But even in such cases the principle can be adopted of trying where possible to apply a clamp before cutting any structure that is likely to bleed. It is advisable to perform the operation deliberately, and to avoid all tearing. Any attempt at rough manipulations will be followed, most probably, by hæmorrhage, and

much time may be lost by searching for bleeding vessels after the operation is virtually completed.

The writer carries out the whole of the dissection with one instrument—namely, a pair of long blunt-pointed scissors curved on the flat.

Clinical and Laboratory Notes.

DUODENAL ULCER IN A CHILD OF TWO MONTHS.

By J. A. L. LOUDON, M.B., CH.B. EDIN.

THE following case presents some features which, in the light of the post-mortem findings, seem worthy of record.

The child, a male, was the first child of a mother aged 37. The father is 36. The labour was normal and the child weighed 6½ lb. at birth. From the first the child was difficult to rear. The breast milk was very poor in quality and quantity, and it was immediately apparent that artificial foods would have to be resorted to. The baby was accordingly put on to cow's milk and water, with added sugar, of rather under the normal strength. He was fed three-hourly.

During the first few days the child cried incessantly and had difficulty in passing urine. Circumcision was performed and thereafter the baby seemed brighter, cried less, and took his feeds satisfactorily though slowly. The stools, however, were slightly green and streaked with mucus, and there was vomiting in a mild degree of a regurgitant character. For the first month the baby put on weight very slowly. The stool varied in character from slight greenness to greenness throughout. There was always mucus present. The feeds were taken very slowly. The baby was sometimes as long as three-quarters of an hour over his feed. He cried a great deal and in any circumstances would never lie on his back without crying. He almost invariably slept for seven hours during the night without a break. The weight at the end of the first month was 7½ lb.

On account of the evident pain and the condition of the stools I decided to try glaxo. This was given, and the strength of the feeds kept below normal. The stools then assumed a brownish character and were slightly constipated. The mucus, however, entirely disappeared. The child occasionally gave a loud cry which lasted only a few moments. Weight was gradually lost; the extremities became cyanosed and the child became pinched and cried continuously even during the night. The vomiting returned after every feed, and I advised alternating feeds of albumin-water and glaxo. For a day or two there was some improvement. Pressure on the abdomen seemed to give relief to the child and he would lie contentedly enough on his stomach. After 12 days on glaxo I put the child on nothing but albumin-water for two days. There was then no sickness and very much less crying. Having had poor results with glaxo I tried Nestlé's, again in reduced strength. The result was disastrous, though I am sure any kind of food would have produced similar results. More weight was rapidly lost; the crying was incessant, and the vomiting was almost, if not quite, equivalent to the entire feed.

In despair I called in Dr. Lewis Thatcher in consultation, and on his advice the child was put on to equal parts skimmed milk and water with no added sugar. There was slight improvement for four days, and emboldened by this I added a quarter of a teaspoonful of glucose with each feed. On the third morning before the child died the stool looked suspicious. It was dark brown, constipated, and on one part of the napkin there was a hint of altered blood. The temperature was 96.4° F. in the rectum and the child was wasted. Next morning a typical melena was observed—a dark tarry stool with much almost unaltered blood. Dr. Thatcher again saw the child, who was removed to the Edinburgh Royal Hospital for Sick Children, and the same evening transfused. Another hæmorrhage occurred and the child died.

Post-mortem Examination.—On the posterior wall of the first part of the duodenum there was an acute ulcer, ½ in. in length, square, ½ cm. distant from pyloric sphincter, and having the long axis parallel with that of the bowel. The margins were clearly cut and sharply defined and there was no evident induration of the floor or edges. The floor was smooth and seemed to be formed of submucous coat, and on it several minute bleeding-points could be seen. There was a second small ulcer situated nearer the pylorus on the anterior wall of the duodenum; this affected the mucous

membrane only. There were also several mesenteric cysts containing yellowish or turbid fluid.

To Dr. J. S. Fowler, whose ward the child was in, and to Miss A. R. MacGregor, pathologist to the hospital, I am indebted for the post-mortem report. Edinburgh.

A CASE OF CEREBRAL ABSCESS COMPLICATING EMPHYEMA:

OPERATION AND RECOVERY.

By ARTHUR F. HURST, M.D. OXF., F.R.C.P. LOND.,
PHYSICIAN AND NEUROLOGIST TO GUY'S HOSPITAL.

IN THE LANCET of Jan. 17th last Mr. Seymour Barling described a case of cerebral abscess complicating abscess of the lung in which recovery followed operation, the patient being at work and in good health some months later. Although operations have been performed on a few cases of the kind before, Mr. Barling was unable to find any previous record of recovery. The following case appears therefore to be worthy of publication, particularly in view of the fact that the patient is still alive and well 13 years after the operation.

Mr. T., aged 57, consulted me on Jan. 31st, 1912. In the previous August he had had an attack of acute appendicitis, a gangrenous appendix having been removed on the second day. Seven weeks later pleurisy developed, and on Oct. 6th, 1911, an empyema was discovered and three quarts of foul pus were evacuated. The wound continued to discharge until Jan. 25th, 1912. Ever since the first operation the patient had felt very slack and disinclined to do anything for himself. He could only be persuaded with great difficulty to dress or go for a short walk. On Jan. 14th he was sick several times after supper, and his left hand and arm were drawn up, his left leg twitched, and his eyes were directed towards the left, but he did not lose consciousness. During the next three days he had hallucinations, and from this time his temper became very bad. On the 28th he dropped his cards whilst playing bridge and dropped his food on to the floor during meals, but, though dazed, he did not lose consciousness. His mental capacity was unaffected; he was quite rational when discussing business and his memory remained excellent. His temperature had been slightly raised at times ever since the first operation; it had reached 100° F. on Jan. 26th and 28th. He had complained at times of a pain on the top of his head.

On examination he was found to have complete left-sided hemianopia, with incomplete left hemianæsthesia, touch being more affected than pain. There was very slight weakness of the left arm and leg, but the left hand was extremely clumsy owing to well-marked arterognosis. The deep reflexes of the two sides were equal. The left plantar reflex was extensor, the right flexor. The left abdominal reflex was absent, the right brisk. The optic discs were normal, except for some venous engorgement. A diagnosis was made of an abscess just behind the centre of the right ascending parietal convolution. This having been confirmed by Dr. E. Farquhar Buzzard, to whom I am indebted for allowing me to see his own notes of the case, Mr. Percy Sargent operated. An abscess was found in the area indicated just below the surface, the brain substance superficial to it being red and cedematous; about two ounces of yellowish-green, foetid pus were evacuated. The abscess was drained and improvement was rapid, but was interrupted on March 24th, 1912, by an attack of acute mania, lasting ten days, just after the patient returned home.

Recovery from this was complete, and now, at the age of 70, and 13 years after the operation, he is still perfectly well in every way.

ROYAL LIVERPOOL CHILDREN'S HOSPITAL.—The annual meeting of the hospital on Feb. 26th was made the occasion of the announcement of extensive plans for extension. At the Myrtle-street city branch further accommodation for nurses and new residents' quarters are being provided, incidentally freeing space which is to be utilised for a ward devoted to accidents and minor operation cases. At the Heswall country branch a new wing is in contemplation with 60 beds. The year's expenditure was balanced as follows: Subscriptions, &c., 25 per cent.; dividends from investments, 20 per cent.; parents' contributions, 40 per cent.; the remaining 15 per cent. being deficit.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED MEETING OF THE SECTIONS OF COMPARATIVE MEDICINE, TROPICAL DISEASES, OBSTETRICS AND GYNÆCOLOGY.

A MEETING of these combined Sections was held on March 12th, Prof. L. S. DUDGEON, President of the Section of Tropical Diseases, in the chair, when Prof. J. H. EYRE opened a special discussion on

Infective Abortion in Cattle and its Relation to Mediterranean Fever.

Prof. Eyre commented upon the relationship of the *Bacillus abortus* to the *Micrococcus melitensis*, which was so close that American observers had classified them in the same genus—*Brucella*, a method he considered cumbersome and unpractical. The clinical picture of contagious abortion in cattle, he said, was a clear-cut one. There were no premonitory symptoms till abortion took place, then a vaginal inflammation was noted, together with a discharge which contained pus cells and the specific organism; moreover, the animal which had once aborted in this manner appeared liable to do so at some future period. The path of entry of the organism appeared to be via the mouth, as a general rule, but male ruminants appeared to be carriers of the infection and thus communicated the disease during coitus. The *Micrococcus melitensis*, on the other hand, did not seem to produce any specific clinical appearances in goats; but an animal once infected with the organism remained capable of infecting others for the remainder of its life. Undulant fever in man was a very definite entity; it was a septicæmia which might run an acute or subacute course. As in goats, the path of infection was by the alimentary tract, though it might take place by inoculation. The goats themselves might be originally infected by the goat-herd and the infection was thus passed on from one animal to another. Contagion from one goat to another might also take place by sexual contact. In *Micrococcus melitensis* infection the period of incubation in the goat was about 7 days; in man 5–16 days. In freshly infected herds, he said, abortion in pregnant goats was liable to take place, while Evans, in America, had produced abortion in a cow by intravenous injection of *M. melitensis*. The speaker did not agree with American workers that the two organisms were morphologically identical. It was stated by Bang that *B. abortus* behaved like a bacillus when freshly isolated, but he (Prof. Eyre) considered that the bacillary forms which had been noted in *M. melitensis* cultures were merely involution forms, such as commonly occurred among the coccaceæ, and that these were not, as American bacteriologists asserted, the characteristic shape of the organism. Under the dark-ground illumination the behaviour of the two organisms is quite different. The correlation of the two organisms, and the diseases they produced, had arisen from a number of fortuitous circumstances; thus, Bassett-Smith originally showed that the milk of some London cows would agglutinate *M. melitensis*; but Nicolle and Conseil injected men with *B. abortus* without producing any untoward symptoms, though recently, on epidemiological grounds, Bevan had suggested that in Rhodesia undulant fever in man was due to infection with *B. abortus*; and by serological reaction Evans considered the two organisms identical.

Mr. L. E. W. BEVAN, F.R.C.V.S., whose paper was read in his absence, directed attention to his original observations published in the Transactions of the Roy. Soc. Trop. Med. and Hyg., vol. xv., No. 7, p. 230, that the serum of animals suffering from epidemic abortion would agglutinate cultures of *M. melitensis*, and he suggested that undulant fever

in Rhodesia, as it occurred in man, was in fact due to *B. abortus*, and quoted a case from Baltimore, recorded by Evans, in which the organism isolated from a human case of undulant fever was shown to be due to this organism. On the whole, he said, veterinarians did not consider the two diseases identical, mainly on the ground that milk from cows suffering from contagious abortion was used very extensively without producing any ascertainable disease in man in England; but in Southern Rhodesia a great number of cases of undulant fever in man came from districts known to be infected with contagious abortion in cattle, and the serum of these patients agglutinated *B. abortus*. Though considered by the majority of settlers to be a disease of recent introduction, he had evidence that the infection had long existed in native stock in the country. He was of the opinion that *B. abortus* and *M. melitensis* were identical and belonged to the same genus—"alkaligenes." He thought that possibly through long contact with goats and cattle the natives of Rhodesia were immune, but the first cases of undulant fever in European settlers were noted in the vicinity of Salisbury in 1921, and there were many districts where contagious abortion was common and undulant fever unknown. So far 35 human cases had been reported, 26 in men, 4 in women, and 5 in children, and the disease had occurred in all professions, not necessarily farmers. It was generally believed that the disease was contracted through infected milk, but so far no casual visitor to the country had become infected. Orpen and others had suggested that in Rhodesia the infection might be spread by biting insects. The clinical symptomatology of undulant fever in man in Rhodesia did not differ from that observed elsewhere, though it had been noted in one case that the vesiculæ seminales were affected, a complication commonly noted in bulls infected with *B. abortus*. Prophylactic measures were now being actively employed; all breeding bulls were being tested and those whose sera reacted were being removed, while heifer herds were being immunised by a specially prepared vaccine of *B. abortus*. Undulant fever in man had been declared a notifiable disease. A short addendum to this paper described the clinical symptoms of the disease in man as observed by Drs. Huggins and Howarth.

Sir P. W. BASSETT-SMITH referred to the spread of undulant fever from the Mediterranean littoral all over the world and how the infection was spread by the milk of apparently healthy animals. He had found that cows, mares, asses, and dogs were susceptible to infection, though unable for a long period to actively spread the disease. The probability was that undulant fever and contagious abortion were two separate diseases, for in Europe proper undulant fever was practically unknown, while contagious abortion had existed in our herds for a very long time. Pregnant women who contracted undulant fever occasionally did abort.

Prof. LOUISE McILROY, on the gynaecological side, spoke of her investigations on the possibility of an infective organism causing abortion in women, but her results had been entirely negative; nor were female farm and dairy workers more liable to abortion than other women. She pointed out the close similarity of the course of contagious abortion in cattle and syphilis in women.

Colonel J. C. KENNEDY, R.A.M.C., recounted some investigations he had conducted in Malta in 1914, where he had found that the serum of cows in Malta would agglutinate *M. melitensis*. As a general rule, infected goats in Malta did not abort.

Dr. J. T. DUNCAN gave a brief résumé of his work on the isolation of an organism, apparently more closely allied to *B. abortus* than *M. melitensis*, from the blood of a patient who had originally contracted undulant fever in Salisbury, Rhodesia. The patient was afebrile and had suffered from no symptoms for over a month. He considered that growth on

alkaline potato might be a means of discrimination, for on this medium *M. melitensis* formed a pigmented growth, while *B. abortus* did not.

Dr. H. HAROLD SCOTT referred to the work of Fical and Alessandrini, two Italian observers, who claimed that immune serum heated above 65° C., would differentiate the organisms, *B. abortus* being clumped above that temperature, while *M. melitensis* was not.

Mr. LESLIE SHEATH, F.R.C.V.S., considered that many of the statements made on the clinical aspects of contagious abortion were incorrect, for in his experience a large proportion of animals which did not abort were infected, while the bacillus appeared to be quite incapable of evoking any clinical symptom except during pregnancy.

Prof. EYRE and Colonel KENNEDY, in replying, terminated an interesting discussion.

SECTION OF OTOTOLOGY.

A MEETING of this Section was held on March 7th, Dr. KERR LOVE, the President, being in the chair.

Dr. T. RITCHIE RODGER (Hull) read a communication entitled

Intracranial Infection by Erosion from Subperiosteal Abscess.

The object of the paper was to show, by the narration of cases which had come into the author's experience, that suppuration was able to extend, from a subperiosteal abscess, by a circuitous route, through the outer bony covering of the cell and a re-entry through the thickness of the cranium into the brain, and erode thence at some distance from the primary focus. A typical case in illustration was the following: A girl, aged 7, was seen by Dr. Rodger in March, 1921. Four months earlier her doctor had opened an abscess over the squamous portion of the left temporal bone and evacuated some pus. The probable cause of the infection was a coincident impetigo of the scalp. Tardy healing led to the belief that the condition was tuberculous. Two months later she complained of failing vision, and bilateral optic neuritis was found to be present. A tuberculous tumour of the brain was diagnosed, and she was referred to Dr. Rodger because of meningeal signs, with high temperature, unconsciousness, and delirium, Koenig's sign being positive. The tympanic membrane on both sides was intact and normal in appearance. There had been pain in the left ear and slight discharge for one day just prior to the temporal abscess forming. Exploration revealed a temporo-sphenoidal abscess, and from it 4 oz. of pus were evacuated. This was recovered from without incident, but the vision had not improved when she left the hospital. He considered that there had been in this case an acute, short-lived mastoiditis, resulting in a subperiosteal abscess, but without gross erosion of the cortex; that the pus then tracked upwards to the squama and there produced erosion, resolution occurring in the mastoid cells and the middle ear. In another case a subperiosteal abscess had apparently formed in the floor of the frontal sinus following an acute sinusitis, but without causing any gross erosion, and the pus had tracked beyond the limits of the sinus in an inward direction. In none of the cases narrated was the subperiosteal abscess accompanied by any gross erosion of the outer cell wall. Often in such cases there was no evidence of the path of infection, and it had probably been either via bone or the blood-stream. If the pressure was being relieved, perhaps by a free discharge into the ear or the nose, there might not be high subperiosteal pressure. When there was no such outlet, the high pressure conditions favoured erosion at some other site.

Discussion.

Mr. G. J. JENKINS thought another possible route ought to be considered—namely, between the layers of the diploetic squama in the presence of osteitis.

Mr. T. B. LAYTON said the cases exemplified the fact that it was difficult, under many conditions, to know when bone was inflamed and diseased simply by naked-eye inspection, and the difficulty was increased in the case of denser bone. He asked what was the character of the bone in the cases narrated.

Sir JAMES DUNDAS-GRANT alluded to two classes of cases. One was that in which extra-dural abscess had eroded through the bone, and its presence was indicated by oedema and bagginess at a much higher level than in simple erosion from the mastoid antrum. The second class, described by Grüber, was that in which there seemed to be no connexion with the mastoid cells, and the pointing of the abscess was at a higher level. He had seen such cases clear up following the making of a counter-opening in the roof of the meatus.

Dr. DAN MCKENZIE suggested that some of the cases of the kind were instances of osteomyelitis in which the infection travelled up and produced extra-dural and subperiosteal abscess simultaneously.

Mr. SYDNEY SCOTT spoke of two fatal hospital cases. In one, a man had had middle-ear disease, and during his convalescence from that, multiple abscesses appeared on both sides of the scalp. These were beneath the periosteum and contained a streptothrix. They were very chronic. The mastoid and ear conditions ran a fairly normal course, but the patient eventually succumbed to the abscesses, one in the frontal region leading to a localised osteomyelitis. In the second case the patient had had a large molar tooth removed some weeks before the speaker saw her. She complained of local pain and headache, and a deep-seated abscess formed in the region of the internal pterygoid, and burst in the meatus. The drum was intact, and there was no evidence of mastoid disease; but there was swelling above the zygoma, and it was thought there might be disease of the cells there. She became seriously ill, developed paralysis of the external rectus, and quickly had complete ophthalmoplegia externa, and there was tenderness in the masseter region extending to the zygoma. He explored above the zygoma and found an abscess in the region of the spheno-maxillary fossa. She suddenly developed hemiplegia and became unconscious, and Mr. Scott therefore immediately opened the temporal bone and found a large abscess in the temporal lobe. It had not made itself obvious, but had probably been present through the illness. There had been no middle-ear disease.

Dr. RODGERS, in his reply, said that in all the cases narrated the mastoids consisted of cellular bone. The intervening bone appeared to be healthy.

Otogenic Pterygo-Maxillary Abscess.

Dr. DAN MCKENZIE described the case of a woman, aged 29, to whom he was called to do a mastoid operation, the acute symptoms having come on a fortnight after the left ear had been syringed for the removal of a supposed ceruminous plug. When seen there were great pain and swelling in front of the ear. The swelling prevented the tympanic region being seen. The temperature was 100° F. Pressure in front of the ear led to copious pus being discharged from the meatus. A probe passed into the meatus led through a fistula in the bony floor into a large abscess cavity, and could be passed as far as the submucosa of the pharynx. A radical mastoid operation proved that the original disease was cholesteatoma; and the pterygoid abscess was successfully drained by enlarging the fistula in the meatal floor.

Sequestra of Labyrinth.

Mr. F. W. WATKYN-THOMAS exhibited a girl, aged 18, who, following scarlet fever, developed a swelling over the right mastoid and temporal region, and complete right facial palsy, with deafness on that side. A radical mastoid operation showed cholesteatoma, and a sinus deep to the lateral sinus led to sequestra, which were removed. The facial palsy was slowly recovering.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on March 4th, Sir DAVID WALLACE, the President, being in the chair, when a communication was read by Dr. R. A. FLEMING and Dr. JAMES DAVIDSON on a

Case of Neurocytoma.

It was stated that lately the interpretation of tumours of the nervous system had undergone many changes, and that the present case would previously have been termed a small round-celled sarcoma. It was now recognised that neoplasms of the nervous system might be composed of developing cells of the various parts of that system. Tumours might be formed of the neuroglia, of ganglion cells with nerve fibres, or of comparatively undifferentiated antecedent cells. Tumours were found composed of the forerunners of the sympathetic and chromaffin systems, of the ganglion and neuroglial cells. In 1907 Hutchison recorded ten clinical cases varying in age from 9 months to 9 years, describing a "clinical syndrome" met with in children, which he termed sarcoma of the suprarenal capsule with metastases in the bones of the skull. The onset was usually ascribed to an injury, and the first thing noticed was swelling about the bones of the skull. Other symptoms were ecchymosis of the eyelids, profound secondary anaemia, and signs of increased intracranial pressure, such as torpor and optic neuritis, together with marked proptosis. These cases proved fatal in from 1 to 6 months. The histological appearances in these cases corresponded to the neuroblastomata, but were then classified as sarcomata. Kretz in 1902 suggested that the cells of the suprarenal neoplasm might be of sympathetic origin. This was confirmed by Kuster, who called them "malignant gliomata," while Wiesel in the same year noted the structural similarity in these tumours to the developing sympathetic and suprarenal medulla of the foetus. The varied positions of these tumours could be explained by the fact that the primitive nerve cells wandered out everywhere to form the sympathetic nervous system.

The case in question was that of a boy aged 4, who gave a history of a fall from bed two months previously with no apparent immediate ill-effects. A day or two later slight deafness and swollen veins of the forehead were noticed, and after a week undue paleness caused the mother to seek medical advice. Pains in the head developed, with nausea and vomiting, which, with persistent "black eyes," proptosis, and increase in the size of the head, caused further advice to be sought. Blindness subsequently supervened. On admission to hospital he had marked local prominences of the vertex, especially on the right, suggestive of tumour formation. The veins over the vertex were distended, and oedema of the scalp was noted. There were ecchymoses of both eyelids, and the eyeballs were markedly prominent. The boy was quite blind. The cranial sutures were open, and both fontanelles patent. He sat up in bed with his chin resting on his chest. The spleen was slightly enlarged and there was slight enlargement of the lymphatic glands. The blood showed progressive severe anaemia with leucopenia, and high colour-index with a film similar to pernicious anaemia. His intelligence was good, and his nervous system unaffected, there being no paralysis. X rays showed a woolliness of the frontal and occipital bones. After seven weeks in hospital his temperature rose, he had pains throughout the body, his head increased in size, and he died one and a half months after admission. On post-mortem examination the whole of the subcutaneous tissue of the scalp was replaced by tumour growth up to 1.5 cm. in thickness. The surface of the bone was soft and much eroded. The neoplasm had penetrated the bone and filled most

of the extradural cavity, but was nowhere subdural. The growth had extended through the orbit, enucleating the eyeballs. There was no alteration in the substance of the brain. The marrow of the long bones of the upper and lower limbs was almost entirely replaced by growth which had invaded the shaft of the bones. The left suprarenal was replaced by a large dark mass. Specimens of the case were shown, together with lantern slides of the histological appearances.

Discussion.

Prof. E. BRAMWELL had not met with a similar case. He quoted a case seen recently where tumour formation in a woman of 38 had caused separation of the bones of the skull. It could be felt distinctly, and was confirmed by X rays. Regarding signs of increased intracranial pressure, he had seen a case recently of a glioma without headache, though sight was failing fast, and he mentioned a case in which accident had apparently determined the onset of symptoms of a brain tumour.

Dr. STEWART FOWLER said when this shape of cranium was seen the diagnosis rested between suprarenal tumour and sarcoma. In the former the blood picture greatly assisted the diagnosis. He had seen five cases with enlargement of the head, two of which he had correctly diagnosed. In one case of chloroma the symptoms commenced after a fall.

Dr. JOHN EASON commented on the course of the condition not being as rapid as might have been expected. He had seen the case in life and suspected that it might be a suprarenal tumour.

Dr. FLEMING, in reply, said in his case the injury, a fall, was a severe one; he thought that this had stimulated the condition. He did not think the condition in life to be one of chloroma.

The So-called Parkinsonian Syndrome and Epidemic Encephalitis.

Prof. BRAMWELL then read a paper on the So-called Parkinsonian Syndrome with especial reference to Epidemic Encephalitis. It was pointed out that the number of cases of epidemic encephalitis notified to the Ministry of Health had risen from 541 in 1919 to 1025 in 1923 and 4605 in 1924, an increase not to be explained by the facts that the disease was more generally recognised and that some of the reported cases were probably instances of remission. Among the sequelae of epidemic encephalitis the Parkinsonian syndrome, which derived its name from its resemblance to paralysis agitans, was the most frequent and characteristic. Parkinson in 1817 defined the shaking palsy or paralysis agitans as follows: "Involuntary tremulous motion with lessened muscular power in parts not in action and even when supported, with a propensity to bend the trunk forward and to pass from a walking to a running pace; the senses and intellect being uninjured." But paralysis agitans might be recognised in the absence of tremor; Erb, for instance, among 183 cases met with 37 instances of *paralysis agitans sine agitatione*. Charcot found fault with the term paralysis agitans since weakness was a noticeable feature of the later stages only, while tremor might be inconspicuous or absent; and a relevant objection might be taken to the application of the term Parkinsonian syndrome to this post-encephalitic symptom-complex, since in these cases the rhythmic tremor was seldom observed, while, in addition, Parkinson made no mention of the immobile face and scarcely referred to the peculiar rigidity which characterises the syndrome.

The evidence bearing on the nature and mode of production of the Parkinsonian syndrome was discussed, and Prof. Bramwell remarked that had he known of the brilliant work of the late Prof. Irvine Hunter he would have hesitated to bring this communication before the Society, for Hunter in his

lectures, the first of which appeared after the title of this paper had been intimated, had not only marshalled in great detail the available information bearing on muscle tone, but had also succeeded here in replacing much interesting speculation by proved fact. The effect on muscle tone which resulted from lesions of the motor nerves, of the posterior roots, of the cortico-spinal nerves, and of the cerebellum were referred to. Decerebrate rigidity was briefly considered, and Sir Charles Sherrington's conclusions as to the existence of two features of muscle tone, firstly "contractile" tone, which determines the position of extension of the limbs and reflex standing, and, secondly, "plastic" tone, whereby if the contractile tone were overcome the limb tended to remain in the position in which it was placed. Similar phenomena had been described in man by Kinnier Wilson and others. It had long been known that in certain animals there were two kinds of muscles—viz., the red muscles, the fibres of which, smaller in size and richer in sarcoplasm, exhibited on stimulation a slow and prolonged contraction, and the pale muscles which contracted energetically. Gruetzner in 1887 suggested that the function of some muscles was that of active contraction, that of others intrinsic support. In man the two kinds of fibres were probably intermixed in different muscles in varying proportion. Again, it had been demonstrated by Boeke that the non-medullated nerve-fibres, which Tahiriev had previously shown as proceeding to the thin (red) muscle-fibres, were really sympathetic nerve-fibres, while Kulchitsky's histological observations upon the nerve-endings, published in January of last year, had demonstrated that the medullated (somatic) and non-medullated (sympathetic) nerve-fibres never terminated in the same muscle-fibre. Hunter confirmed Kulchitsky's conclusions from a study of the nerve-endings in skeletal muscles, the sympathetic and somatic nerve-supply to which had been separately divided, while further he showed the effect on muscle tone which resulted in decerebrate animals after division of the somatic and sympathetic nerve-supplies. Hunter concluded from his observations on animals and man that the function of the sympathetic nerve-supply of skeletal muscle was the maintenance of posture once the position was attained, or, in other words, that it was responsible for the property of plastic tone described by Sherrington. Further, he demonstrated that plastic or sympathetic tone was subserved by reflex arcs, the afferent limbs of which passed upwards in the lateral column to the brain stem, while further he suggested that the efferent limbs were constituted by the ponto-spinal tracts described by Buzzard and Collier. The peculiar rigidity met with in the Parkinsonian syndrome Prof. Bramwell held would appear to be an exaggerated plastic tone, of the nature of a release phenomenon, due to cutting off of cerebral impulses, as was the increase of contractile tone or spasticity which resulted from interruption of the cortico-spinal neurons, the responsible lesion being situated in the corpus striatum. It was further of interest to note that the experimental observations of Warner and Olmsted indicated that the frontal lobes inhibited decerebrate rigidity. Schuster had reported a case of frontal tumour presenting symptoms resembling paralysis agitans. From an anatomical study of this case and others reported in the literature Prof. Bramwell was of opinion that the symptoms in question are probably to be explained by pressure or other involvement of the basal ganglia, and that there was no anatomical evidence to prove that they were directly attributable to involvement of the fronto-pontine tracts.

Discussion.

Prof. W. RUSSELL remarked on the connexion between the voluntary and involuntary supply to muscle, a point of great interest, which had been worked upon to a great extent by Gaspard and lately by I. Hunter. He commented on the extent to which

nerve paths had been mapped out of late years, and suggested that there might be in these conditions some interference with the psychic control in addition. Concluding, he said that these discoveries helped in the understanding of the conditions but not in therapeutics.

Dr. EASON said considerable difference existed in ideas regarding the sympathetic system. On the one hand it was taught that stimulation of this system by a flow of adrenalin caused increased action, on the other it was said that increased plastic tone was produced with immobility.

Dr. BRYCE said this sympathetic immobility might be the factor which caused a frightened hare to crouch.

Dr. FLEMING commented on the difference in mentality in the two conditions, paralysis agitans and epidemic encephalitis. In the former the mentality was alert, in the latter dull. He also referred to Hunt's work on juvenile cases of paralysis agitans.

Prof. BRAMWELL, in replying, claimed no originality for his communication. He agreed that the difference in mentality in the two conditions was great, and helped greatly in diagnosing between the conditions. Hunt's work he did not think had been corroborated. He thought the psychic point of view important, and recent work had been rather along physiological lines. He hoped that as a result of investigation some means of treatment might be arrived at.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

A MEETING of this Section was held in the Royal College of Physicians of Ireland on March 6th, Dr. F. C. PURSER, the President, in the chair.

Dr. L. ABRAHAMSON read a paper on two cases of

Congenital Dextrocardia.

The first was a case of complete transposition, with sino-auricular block. The patient, aged 43, female, consulted a doctor because of pain referred to the right præcordium and of palpitation. Her previous illnesses included two attacks of pleurisy and several attacks of gastric trouble. When 9 years of age she complained of pain in the right præcordium and was found on examination to have dextrocardia. She had had several similar attacks, and on one occasion developed a convulsion and became unconscious. On examination the pulse varied in rate from 42 to 60 beats per minute. There were frequent pauses occurring at irregular intervals. The apex beat was found in the fifth right interspace. Cardiac dullness was elicited on the right side, liver dullness on the left side, and gastric tympany on the right side. X ray examination showed complete transposition. Electrocardiograms, demonstrated by lantern slides, showed inversion of waves in lead I, and frequent pauses due to the presence of sino-auricular block.

The second case was one of complete transposition. The patient, a male, aged 43, complained of no symptoms referable to the heart. Previous history and family history were negative. On examination the apex beat was found in the fifth right intercostal space, just inside the nipple line. Cardiac dullness and gastric tympany were elicited over the right side, liver dullness on the left side. X ray showed complete transposition. Electrocardiograms showed inversion of waves in lead I.

In reply to Dr. T. G. MOORHEAD, Dr. ABRAHAMSON said that he had seen one case of isolated dextrocardia, and four cases of transposition of the heart and transposition of the viscera.

Dr. ABRAHAMSON also made some observations on a case of

Auricular Fibrillation with Slow Ventricular Rate.

The patient, aged 61, male, had suffered for many years from cough with expectoration. For three years prior to admission to Mercer's Hospital the cough had become associated with increasing breathlessness. On examination the patient showed orthopnoea with some cyanosis. The pulse was regular, rate 50 beats per minute. Blood pressure: 190 systolic, 85 diastolic. There was evidence of emphysema and of chronic bronchitis. The heart did not show any apparent enlargement; a systolic murmur was audible over the mitral area and was not conducted. There was some tenderness over the liver. A course of squills and digitalis had been administered before the patient came under observation. An electrocardiogram taken on Feb. 14th showed the presence of auricular fibrillation with complete regularity, rate 50 approx. Digitalis was discontinued. A tracing taken a week later showed auricular fibrillation with slow but irregular rhythm. Quinidine treatment was commenced. After a total dosage of 345 gr., fibrillation disappeared and an electrocardiogram showed return of the "P" wave, whilst there was a clear picture of incomplete heart-block with periodic dropped beats. Subsequent tracings all showed incomplete heart-block. Illustrative tracings were demonstrated by lantern slides. The case was accordingly reconstructed as follows: (1) Myocardial disease with incomplete heart-block; (2) supervention of auricular fibrillation, rate slow owing to the incomplete heart-block; (3) heart-block becoming complete, probably as a result of administration of squills and digitalis. As a result the rhythm was slow and quite regular. The case showed clearly that the slow rate during the stage of fibrillation was due to heart-block. Injection of atropine did not quicken the heart-rate.

Dr. W. M. CROFTON said it was a remarkable thing that these cases of heart-block could become unblocked. He had recently seen a case somewhat similar to the one described by Dr. Abrahamson, but the patient had rheumatism as well as the heart trouble. The patient was treated by the usual methods and improved, although irregularity was still present. He had found *B. coli* in the urine and had made a vaccine, and the patient was having injections of it. He drew attention to the possibility of making the cure in these cases more permanent by the use of vaccines, as very often only temporary improvement was got by giving quinidine.

Dr. MOORHEAD asked if the patient's clinical symptoms disappeared when the fibrillation disappeared.

Dr. ABRAHAMSON replied that cases of rheumatic heart-block generally recovered, and he thought that Dr. Crofton's case would have become free from heart-block without the use of vaccine, as in these cases the heart-block disappeared of itself. The patient's clinical symptoms had not improved from the use of quinidine, but he had not really expected that they would. He had employed the drug more from an experimental point of view. He thought the patient would always have incomplete heart-block, but this of itself would not be harmful. He had seen one case in which there had been evidence of cerebral embolus resulting from the use of quinidine, but this case had made a complete recovery. He had also seen one case in which the patient had died after receiving 3 gr. of quinidine, but he did not think that the quinidine had had anything to do with the result in this case, as the patient was of the type in which sudden death was not uncommon. The interesting point in his (Dr. Abrahamson's) case was not that the digitalis had produced heart-block, but that it had produced complete heart-block with regular rhythm. This could not have been diagnosed as a case of auricular fibrillation had it not been for the electrocardiograms.

Dr. CROFTON read a paper on Encephalitis Lethargica.

Reviews and Notices of Books.

THE CHEMICAL ASPECTS OF IMMUNITY.

By H. GIDEON WELLS, Ph.D., M.D., Professor of Pathology, University of Chicago; Director of the Otho S. A. Sprague Memorial Institute. American Chemical Society Monograph Series. New York: The Chemical Catalogue Co., Inc. 1925. Pp. 254.

THE object of these monographs is to show the relation of chemical science to other branches of work, and to demonstrate the fact, sometimes not appreciated even by chemists, that "their investigations may be connected with other work which on the surface appears far afield from their own." When one reads the list of monographs already published, and of those in the course of preparation, it is clear that the American Chemical Society have set themselves a heavy task, and provided that the monographs in themselves are of a high standard, the benefit conferred upon readers will be great.

The present volume deals with the chemical basis of immunity. The style is condensed and a great deal of information has been included in the 254 pages. In places the book resembles a catalogue of scientific facts and observations, and thus it cannot be said to form attractive reading. Prof. Wells obviously found himself faced with the alternatives of a general account in an easy style, or of a more or less complete summary of the work done in this field. He chose the latter course. Looked at from the standpoint of the experienced worker in pathology, there can be no doubt but that the monograph in its present form is the more valuable. After a general introduction and a definition of terms, the author deals with the chemical nature of antigens. The whole question is treated very fully; it is astonishing to find no reference here to the Wassermann antigen, which is discussed under another heading. The next chapter deals with immunological specificity. The author here emphasises the fact that immunity reactions, such as precipitin formation and anaphylaxis, are capable of demonstrating differences between proteins which are indistinguishable by chemical means. The modification of specificity by the introduction of various radicles into the protein is also dealt with. The chapter upon the chemical nature of antibodies is, of necessity, unsatisfactory, since nothing is definitely known concerning these bodies. The chapter consists mainly of a list of the physical properties and immunological reactions of sera containing them. The section dealing with the various theories upon the neutralisation of toxins by antitoxins is very complete; the recapitulation is judicial. Arrhenius' and Madsen's, and Bordet's views are admirably and fully set out. The theory of Ehrlich is hardly given a fair description, and it would appear that Prof. Wells either intends to ignore these views or assumes that his readers are fully conversant with them. The next chapter deals with agglutination and precipitation reactions. These have received much attention elsewhere, consequently the chapter has less general interest than some of the others. The next two chapters, dealing with "lytic reactions" and the Wassermann reaction, are the most disappointing. The general description of hæmolytic systems is almost elementary. The section upon the Abderhalden reaction is non-committal. Surely we have a right to expect an authoritative statement from a writer of such wide experience on a reaction that continues to be perpetuated in all books, though few experienced workers will sponsor its claims. It is also surprising that no mention is made of the recent work in Germany of Paul Hirsch, who employs an interfereometer to interpret the reaction. The Wassermann reaction is dealt with in an almost superficial manner. The work of J. McIntosh is only very briefly referred to, and that of Heizfeld and

Klinger and of many other observers completely ignored.

The last chapter deals with anaphylaxis and allied phenomena. Each chapter is followed by an excellent recapitulation and a series of references. The amount of work put into the book must have been enormous, and Prof. Wells has undoubtedly done a great service to those seeking information in this field. But the present volume seems to lack that personal touch which is so characteristic of the author's splendid works on "Chemical Pathology" and "Chemistry of Tuberculosis."

AN X RAY ATLAS.

An X Ray Atlas of the Normal and Abnormal Structures of the Body. By ARCHIBALD MCKENDRICK, F.R.C.S.E., D.P.H., F.R.S.E., Surgeon-in-Charge of the Surgical X Ray Department, Royal Infirmary, Edinburgh; and CHARLES R. WHITTAKER, F.R.C.S.E., F.R.S.E., Assistant Lecturer in Anatomy, Surgeons' Hall, Edinburgh. Edinburgh: E. and S. Livingstone. 1925. Pp. 222. 25s.

IN the first paragraph of the preface of this work it is stated: "In this atlas an attempt has been made to provide a series of radiograms illustrating the normal and abnormal structures of the body, and also the more common injuries and diseases. To lend interest to the work a few rare conditions have been added." This is an ambitious programme, and if the authors have not quite succeeded in the formidable task they have set themselves, they have at least collected together an admirable and representative collection of radiograms. It would have been an improvement from the student's point of view if a little more trouble had been taken to make clear which are the rare conditions pictured. The book is divided into four main sections—normal joints and limbs; injuries and diseases of the limbs; head, neck, thorax, and spine; abdomen. In each section radiograms are reproduced with either very brief descriptions or diagrams of the normal, or both. The pictures which illustrate the chest section, which is a region of great importance in this connexion, are too few in number. Doubtless the authors have verified their diagnoses, and have information at disposal that the reader cannot have, but the reproduction on p. 128 of a film of a case of achondroplasia looks very like that of a case of rickets, while the case of cyst of the humerus (p. 136) appears to be complicated by the presence of an exostosis. In a subsequent edition the authors could, with advantage, be somewhat more precise in the description of normal conditions if the work is to be of real value to the student.

The atlas, as a whole, is excellently produced and should make a wide appeal.

PHYSIO-THERAPY IN GENERAL PRACTICE.

By E. BELLIS CLAYTON, M.B., B.Ch. Cantab., Director of the Physio-Therapeutic Department, and in Charge of the Massage and Electrical School, King's College Hospital. London: Baillière, Tindall and Cox. 1924. Pp. 174. 18s. 6d.

THE author states in his preface that this book "has been written for the medical practitioner and the masseuse." It includes, he says, "descriptions of treatments . . . which a masseuse . . . should be able to give though she may have learnt slightly different methods. The treatments described . . . are based on the methods used at King's College Hospital." Practitioners who have no extensive physiotherapy experience will find the explanatory chapter which begins the book of great value. A section is devoted to crawling exercises, a study which

Dr. Clayton has made essentially his own. An excellent series of photographs illustrate the text. The book, as a whole, is an epitome of physical treatment. The masseuse will find an indication of the broad lines she should follow, and the physician a fair idea of what he might prescribe. But there is a certain lack of precision in some of the statements. For example, anyone reading p. 96 might conclude that the iliac colon is frequently distended with faeces, while pp. 94 and 97 read together do not give a convincing account of the rationale of the treatment advised. The author expresses doubt whether electrical stimulation through the abdominal wall ever produces direct contraction of the muscles of the stomach or intestines, while three pages later he advises the application of faradic stimulation along the course of the colon for the relief of constipation. He advises that a case of empyema should be treated with breathing exercises as early as possible after the operation. He treats dislocation of the shoulder-joint by bandaging the arm to the side for two or three days, abduction being prohibited for a week after the accident. No guide is given as to the choice of splintage after injury. That the author has conservative views with regard to the use of physical treatment after fracture may perhaps be gathered from his advice that massage and movement will probably have to be delayed till at least three weeks after fracture of the surgical neck of the humerus.

This little book should be pleasantly read, for the wide range of physical treatment at his disposal is not sufficiently appreciated by the practitioner.

THE CHILD AND HIS PROBLEMS.

By ALICE M. HUTCHISON, M.D., M.R.C.P. London: Williams and Norgate. 1925. Pp. 168. 5s.

THIS book, which is introduced to the reader by Dr. Crichton Miller, is intended for parents and teachers. The factors which influence the development of the child are discussed in simple and homely language which should be comprehensible to a wide circle of readers. The author's standpoint is decidedly that of the environmentalist, and those who regard heredity as the major factor will not always agree with her views as to causation. Some, for instance, may regard the statement that "the difficult child is the product of his environment" as a half-truth of doubtful value, and that "he is absolutely certain to be transformed again into a normal child once he finds himself in the right atmosphere" as likely to cause some disappointments. Such criticisms as these, however, do not touch the main scope of the book, which is not theoretical instruction, but practical advice; the latter is sound and reasonable throughout, and its acceptance by parents should obviate a large measure of domestic discord.

SMOKE RINGS AND ROUNDELAYS.

Blendings in Prose and Verse since Raleigh's Time. Compiled by WILFRED PARTINGTON. Woodcuts by NORMAN JANES. London: John Castle. 1925. Pp. 320. 7s.

THIS compilation is dedicated to "A Thousand and One Nights spent over Pipe, Cheroot, and Cigarette with Many Good Friends, East and West," and comprises a large number of passages, many of them drawn from well-known literature, and all having the common design to exalt the humanising influences of tobacco. The excerpts are of varying literary merit, but their range will surprise many readers, for, while there are some poems and prose passages universally familiar, there are others which few will have remembered and many that will be new to most. The symposium introduces us to many new advocates of nicotine, whose praise is introduced

from many novel points of view. It is good to have brought together under the title of "A Pipe of Tobacco" the six imitations due to Isaac Hawkins Browne; they are often referred to and seldom seen in print. Both Mrs. Piozzi and Boswell testified to Johnson's admiration of this author, but it would seem from what is known of him that he could not smoke without drinking, and that in that connexion he smoked too much. A favourite passage from Thomas Carlyle's "Frederick the Great" is quoted wherein the sage points out that tobacco smoke is "the one element in which by European manners men can sit silent together without embarrassment, and where no man is bound to speak one word more than he has actually and veritably got to say"; this use of tobacco is very well known at committee meetings, where the man who is smoking is neither supposed to speak if he does not want to, nor expected to answer questions on the spot, as he has to attend to whatever he is smoking. He thus obtains time to make up his mind.

An amusing little book.

JOURNALS.

QUARTERLY JOURNAL OF MEDICINE.—The January number contains the following articles: Some Factors of Significance in Adolescent Goitre, by H. Gardiner-Hill, P. C. Brett, and J. Forest-Smith. A series of 100 cases of goitre occurring in patients between the ages of 10 and 20 years were the subject of this investigation. Of these, 79 per cent. were of a colloid type, 16 per cent. exophthalmic goitres, 3 per cent. adenomata, and 2 per cent. endemic goitres. The investigations included clinical observations, physical measurements, basal metabolism, and sugar-tolerance estimations. Thyroid function was found to be apparently normal in 42 per cent. of colloid goitres, but in 32 per cent. there was evidence of hyperthyroidism, and in 26 per cent. of hypothyroidism. The blood-sugar curves were delayed in both hyper- and hypo-thyroidism, and the blood-sugar content was raised in hyperthyroidism.—A Case of Virilism Associated with Suprarenal Tumour: Recovery after its Removal, by Gordon Holmes. The patient, whose case is here recorded, had a tumour arising from the cortex of the right suprarenal. It was found to be innocent, and nine years after its removal there was neither local recurrence nor metastases. The operation was performed when the patient was 26 years old. Her health had been normal until the age of 17, when menstruation ceased, and when 19 years old hair began to grow on the chin and upper lip. This was followed by a growth of hair on the legs, loss of feminine contour, and alteration in her mental state. Removal of the tumour was followed 36 days later by reappearance of menstruation, which had been absent for nine years, and by the return of her feminine physical and mental characteristics. A plate is included showing the microscopical appearance of the tumour, and for comparison those of a somewhat similar tumour which is preserved in the museum of the Royal College of Surgeons of England—a case recorded by Knowsley Thornton in 1890.—Epidemic Encephalitis: the Second Winnipeg Outbreak, by William Boyd. There have been two outbreaks of epidemic encephalitis in Winnipeg, one in 1919–20, and the other in 1922–23. Clinically, the former was of a somnolent and the latter of an excited type. A detailed description is given of the main features of the disease, and the special points of its pathology are considered. Acute calcification of the small arterioles of the basal ganglia was noted in young subjects, the larger arteries at the base of the brain being free from atheroma and calcification. The microscopical appearances of the calcareous deposits are shown in the two plates.—The Sugar Content of Blood in Normal and Under-nourished Children, and the Effect of Fat on the Absorption of Carbohydrate, by Muriel J. Brown. The blood-sugar content was studied in normal and

under-nourished children. Using MacLean's method the normal blood-sugar in infants up to the age of 2 weeks varied between 0.072 and 0.097 per cent., and between the ages of 6 weeks and 1 year from 0.086 and 0.116 per cent. In conditions of under-nutrition the blood-sugar lay between 0.072 and 0.116 per cent. Whereas vomiting causes a fall in the blood-sugar level, it is unaffected by diarrhoea. Sugar-tolerance curves were also worked out and similar results were obtained in the normal and under-nourished child.—Progressive Lipodystrophy, by W. N. Boog Watson and W. T. Ritchie. Three cases of this rare condition are here described. No light can as yet be thrown upon its pathology. The characteristic features are well shown in the plates. The journal concludes with an account of the proceedings of the Association of Physicians of Great Britain and Ireland, whose eighteenth general meeting was held at Bristol in June, 1924.

The Geographical Distribution of Exophthalmic Goitre in the British Isles, by J. M. H. Campbell. In this paper the author has amplified his work (*Quarterly Journal of Medicine*, 1921–22, xv., 64) on the distribution of exophthalmic goitre in England and Wales by including the figures for Scotland and Ireland as shown by the death returns in the Registrar-General's annual reports. The distribution of deaths from exophthalmic goitre in Great Britain and Ireland is indicated in two maps. One is divided into 11 areas, each with a population of 2,000,000 or over, and in the other the county boundaries are shown. It is seen that Graves's disease is especially prone to occur in the West of England and in the central part of Wales. The town incidence of Graves's disease is also discussed. With regard to endemic goitre there is very little accurate knowledge of its distribution in England, although certain parts are associated with it. On the evidence at hand it appears that in the British Isles exophthalmic goitre is more liable to occur in districts where simple goitre is endemic. On comparing the death-rate from Graves's disease with the birth-rate in different towns it was found that a low birth-rate is associated with a high death-rate from exophthalmic goitre, and vice versa.

New Inventions.

AN IMPROVED RUGINE OR RASPATORY.

THE rugines illustrated are a modification of Ollier's original pattern. The handles give a more comfortable grip than those of the original model. The shaft has been specially lengthened and the finger rests placed

FIG. 1.



near the handles so as to obviate the risk of accidentally introducing the fingers into the wound in plating and bone-grafting operations. The edge of the rugine is of razor-like sharpness. These rugines were copied from a pair devised by Major H. Pierpoint, I.M.S.,

FIG. 2.



and made under his direction at the War Hospital, Ambala, in the hospital workshop by Indian labour from materials available in the bazaar. I have found them invaluable in bone-grafting and bone-plating operations.

Messrs. Down Bros., St. Thomas's-street, S.E. 1, are the makers. H. HALLILAY, Lieut.-Colonel, I.M.S.

THE LANCET.

LONDON: SATURDAY, MARCH 21, 1925.

MEDICAL PARTNERSHIPS.

IN an action tried recently in the Chancery Division a medical man sought dissolution of partnership from a medical colleague upon grounds which, if they had been established, would no doubt have entitled him to succeed. The plaintiff's evidence, however, failed to make out his case to the satisfaction of the judge and the action was dismissed with costs, his Lordship saying that all the charges, and some of them were grave, preferred by the one partner against the other had been disproved. It was apparent to those of our readers who gathered the details of the case from the daily press that the ventilation of the dispute in public was prejudicial to the interests of both parties to it, and no doubt this consideration prevents similar actions from being tried, but no other course may be open to those who find themselves unfortunately linked together in the conduct of a medical practice. Some sort of an arbitration clause may be attempted, but, as occurred in the case referred to, it may not provide for the reference to an arbitrator of the points that are at issue. The dissatisfied party is then obliged to have recourse to Section 35 of the Partnership Act, 1890, which enables a partner in any kind of business to apply to a court of law for dissolution in various cases which include conduct such as "in the opinion of the court, regard being had to the nature of the business, is calculated to prejudicially affect the carrying on of the business, or when in matters relating to the partnership business a partner's conduct is such that it is not reasonably practicable for the other partner or partners to carry on the business in partnership with him." In the ordinary agreement between medical partners, a form of which will be found in "Barnard and Stocker's Medical Partnerships," arbitration upon any dispute touching the partnership is included, and we do not know whether this published form was used or not in defining the relations in this particular case. But, anyhow, the plaintiff's counsel found the arbitration clauses, if any, in the deed of partnership not to be full enough to render arbitration obligatory in lieu of the trial in open court which took place.

No one who is acquainted with the business side of professional life, and who knows the difficulties which surround the conduct of, and the arrangements for, medical partnerships, will be surprised that the deed of partnership was found ineffective. These difficulties may arise in ways that can hardly be contemplated in any uniform manner by those who draw up deeds of partnership, so that troubles occur which are not familiar to lawyers, and only vaguely guessed at by medical men, while it would seem that medical agencies have also much to learn in this direction. Therefore, regrettable though such legal actions as that which was recently tried are from some points of view, the publicity serves a good purpose in making all concerned careful about the terms of partnership to which they are asked to subscribe. There are situations, easily to be thought of, whose risks can, none the less, only be provided against with great skill in draftsmanship, while the mention of

these risks might be considered as insulting and prejudice mutual good feeling at the outset. Perhaps such things as we have in mind may not happen often, but when they do they constitute a tragedy, incompatibility of temperament and outlook making of medical partnership a weakness instead of a strength, a farce instead of a contract. It may be granted that, as a rule, two or more fair-minded men can arrange so that the interests of their patients, which is another way of saying the proceeds of their professional work, shall benefit by collaboration and even by the personal contrasts which they may display. But where collaboration is impossible and partnership becomes a misery, the only way out appears to be a dissolution of partnership. Few deeds of partnership answer in a satisfactory way the crucial problem of who shall stay and who shall go, for it may be assumed that separation of interests usually implies separation of locality. Both partners may see that they had better separate, but each will consider that it is the other who should be paid out, while there is usually no arrangement by which the exact sum to be paid can be calculated. Nothing can constrain the partner who is reluctant to go to accept the sum of money that is offered to him, which in such circumstances is generally quite inadequate. And nothing can constrain the man who would pay his partner out to pay the right price, where the deed gives no basis for a detailed arrangement.

It would seem, therefore, desirable in deeds of medical partnership to have a full and explicit clause which would provide that all disputes, including those which arise out of quarrels or out of the alleged conduct of a partner, should be referred to an arbitrator. It might be desirable to state in the clause expressly that such an arbitrator should have power to dissolve the partnership, and to define the kind of arbitrator to be appointed as well as the manner of his appointment. In medical partnerships questions of the proportional return of premiums, of practice in the same neighbourhood, as well as questions of medical ethics and appropriate conduct, point naturally to the necessity for an arbitrator well acquainted with all the conditions of medical practice. The Court in the recent case, to quote the judge's words, "heard with some surprise that a life-long partnership was by no means unknown in the profession," but it is not an uncommon expression in partnership deeds.

SCIENTIFIC COPYRIGHT.

IN the history of scientific investigation there are not a few instances in which a research worker has seen others grow rich by the industrial exploitation of some discovery which he has made but from which he has been unable to derive financial profit. Should there not be copyright in scientific as in literary or artistic work? Nearly 50 years ago the law courts decided that the mere discovery of a natural law was not patentable; the chemical truth that pure sulphides will absorb the sulphur compounds was held not to be a proper subject-matter for letters patent; and we have hardly made much progress beyond that position to-day. Yet there is some encouragement in the recent report of the British delegates upon the general work of the Fifth Assembly of the League of Nations. The Committee of Intellectual Coöperation, it appears, has been requested to consult with the Economic Committee and to organise this year a conference of experts to consider recent proposals on the question of scientific property. The proposals referred to are those of

Senator RUFFINI, who has reported to the Committee of Intellectual Coöperation in terms discussed in an interesting article contributed by an American legal writer, Mr. E. S. ROGERS, to the recent issue of our learned contemporary the *Journal of Comparative Legislation*. Senator RUFFINI has been pointing out the injustice of our present system which recognises the two extremes of intellectual work, the base and the summit. The man who invents a new india-rubber heel can patent his invention and make his fortune. At the opposite end of the scale the musical composer who can give to the world a Ninth Symphony can secure the pecuniary profits which are his due. Between the two extremes is the worker in the field of scientific research who observes a truth from which mankind will derive immense and everlasting advantage: to him the law gives nothing. The Senator remarks that such a worker might be recompensed in either of two ways. He might be given the right to exploit his own discovery, but, since the gifts which bring success in the laboratory are seldom accompanied by those which bring fortune in the market-place, this privilege might be illusory. Alternatively he might be given the right to a sort of royalty on profits made by the industrial application of his discovery within a specified period, the suggested period being the discoverer's life-time and 50 years thereafter. As Senator RUFFINI suggests, the objections to recognising any legal right of the research worker in the creations of his mind may be expected to be exactly the same objections as were formerly raised against the claims of the artist and the inventor. Mr. ROGERS pleasantly develops the suggestion. He narrates the long campaign against literary copyright from the time of JOHN MILTON to the time of SAMUEL JOHNSON. He bids us prepare for just the same outcry against monopoly and the same enthusiasm for the interests of the people as DICKENS satirised in the speeches of Mr. GREGBURY, M.P., to NICHOLAS NICKLEBY. "The creations of the pocket," said that great statesman, "being man's, might belong to one man or one family; but the creations of the brain belong to the people at large." Those who write for posterity should be content to be rewarded by the approbation of posterity; "anything put strongly about the people comes out very well at election times"; nobody need consider the feelings of the authors—"I believe the greater part of them live in lodgings and are not voters."

If history is going to provide a parallel between literary and scientific copyright, then the period of hostility will end in the ultimate recognition of the justice of the claim. The administrative difficulties of protecting scientific discovery will doubtless be formidable, but the task of protecting industrial inventions by the issue of letters patent must have seemed at one time equally impracticable and yet has not been found impossible. It would be rash to prophesy in what form the change of law will come. It may come in the form of a Convention on Scientific Property approved by the League of Nations after patient search for an acceptable formula. The English statute book has shown in the last few years that many legislative projects approved at Geneva are being incorporated in our law, especially, for example, in relation to regulating the conditions of labour. Or the change may come more gradually by the slow enlargement of the scope of patentable processes and methods. Signs of a movement in this direction are occasionally visible in Germany and elsewhere when the results of bacteriological work begin to be patented. By whatsoever means the change may come, it is hard to believe that in ten years' time

the law will not ensure some measure of protection and recompense to scientific research such as it now gives both to artistic and literary work and to industrial inventiveness.

STUDIES IN COMPENSATORY HYPERTROPHY.

THE determination of what degree of functional derangement may be expected to follow definite organic lesions is difficult. There appears to be only a loose correlation between the bulk of an organ and the work it can perform. It is known, for example, that an animal can live in perfect health with only a quarter of the normal amount of renal tissue. Yet we have the curious anomaly that if one kidney is destroyed by disease the other tends to undergo a very considerable hypertrophy. V. R. KHANOLKAR'S¹ work suggests that only limited areas of each kidney function simultaneously, and that the functioning areas shift continuously so that no part of the organ is overworked. In response to extra demands other areas become active, and in this way the kidney is capable of a wide range of activity. This probably explains the necessity for compensatory renal hypertrophy. But the principle cannot be of universal application, for as A. E. BOYCOTT and C. H. KELLAWAY have shown,² removal of one suprarenal gland is not followed by hypertrophy of the other.

PEYTON ROUS and PHILIP MCMASTER have published³ some interesting observations bearing on the question of compensatory hypertrophy of the liver. It has been shown that three-quarters of the liver can be removed without causing more than temporary circulatory derangements, but rapid regeneration of the remaining quarter takes place till the original bulk of the organ is restored. If instead of ablation the circulation is diverted from part of the organ, the anæmic part atrophies and the remainder hypertrophies; and the changes take place concurrently so that at any particular time the total bulk of the liver is approximately that of the entire normal organ. Further, if compensatory hypertrophy is prevented in the unaltered moiety, atrophy fails to occur to any degree in the anæmic portion. It has been suggested that these curious phenomena are brought about in response to some functional demand of the body, and the question immediately arises, Which particular function of the liver is particularly essential to the body? Is it one or is it all of the normal activities of the organ which are so necessary?

In order to settle this question ROUS and MCMASTER repeated the experiments, using fasting animals so as to eliminate any functional stimuli due to the assimilation of food from the alimentary tract. Rats were the animals of choice for various reasons, one of the most important being that liver regeneration in them is extremely rapid, being complete in about two weeks. In rats receiving water but no food the liver diminishes in size to a remarkable degree; of all the other tissues, adipose tissue alone loses more weight. Two explanations for this have been suggested—one, that the liver is actually utilised as food; the other, that the loss in weight is due to a lessened functional demand due to the fasting. If the former explanation is correct, then compensatory hypertrophy after partial ablation of the organ should not

¹ *Journal of Path. and Bact.*, 1922, vol. xxv., No. 4, p. 414.

² *Ibid.*, 1924, vol. xxvii., No. 2, p. 171.

³ *Studies from the Rockefeller Institute for Medical Research*, 1924, vol. i., p. 27.

occur if the animals are starved subsequently to the operation. But if the liver is really functionally necessary to the body, even though fasting, then some recognisable degree of compensatory hypertrophy should occur under the conditions of the experiment. Putting this to the test, ROUS and McMASTER found that hypertrophy did, in fact, occur. They removed by operation more of the liver than persists in the starved but intact animal, and found that the fragment left did actually undergo hypertrophy. In the starving intact animal some of the liver is, no doubt, utilised as food; the fat and glycogen stored up in it are certainly mobilised for the purpose. But the main loss of bulk would seem to be due to the lack of normal functional stimuli from the alimentary canal. That stimuli exist, other than those arising from the digestion of food, is conclusively shown by these experiments. The exact nature of these stimuli is as yet uncertain, but it may be hoped that further work will clear up this important point.

Annotations.

"Ne quid nimis."

THE NEED FOR A NEW FACTORIES BILL.

THE conditions under which workers in factories are employed form one of the most important questions in our national life. Our present legislation with regard to factories is based on the Factories and Workshops Act of 1901, and although many progressive changes have been made under its powers, our industries, and indeed our whole social outlook, have developed and changed to such an extent since the beginning of the century that the need for new legislation has become an important issue. A year ago in these columns we published a series of articles on changing factory conditions, their rising standards and future developments,¹ in which we advocated the introduction of a new and comprehensive Factory Bill at the first good opportunity. Such a Bill was drafted when Mr. Bridgeman was Home Secretary, and received a first reading under the Labour Government. When that party went out of power Mr. Baldwin in his election address pledged himself to give the Bill a second reading, and mention was made of it in the King's speech. So far, however, nothing further has been done, but the new Bill does not lack enthusiastic support. On March 10th a deputation organised by the Industrial Bureau of the Young Women's Christian Association attended on the Home Secretary, Sir William Joynson-Hicks, to urge upon him the introduction and passing of the Bill. The deputation was composed of members of 28 societies, mainly women's organisations, and was representative of many different aspects of industrial and social life. The deputation was introduced by the Bishop of Winchester, the various speakers being Miss Gertrude Tuckwell, vice-chairman of the Bureau, Lady Ware, vice-chairman of the Executive Committee of the Conservative Women's Reform Association, Mrs. C. D. Rackham, late Inspector of Factories, a working woman whose name was withheld, and Miss Knight Bruce of the Industrial Christian Fellowship. The general aim of the measure to which it is sought to give effect is to amend the Act of 1901 and to consolidate with it eight other Acts which have been added to the Statute Book between 1901 and 1924—it simplifies while it combines the mass of existing factory legislation.

Among the features of the new Bill are the provision of a 48-hour week for protected persons as against a 60-hour week under the old Act, improved regulations in regard to safety, temperature, and ventilation, regulations regarding lighting, fire, and

welfare, certification of the fitness of young persons, and weight-lifting by women and young persons. In reply to the deputation, the Home Secretary pointed out that the Government had also to consider the employers', the commercial, and the financial sides to the problem. He pledged himself that a Bill would be introduced into Parliament this summer to deal with factory legislation, but that Bill, he said, would not necessarily be the measure proposed by the last Government. There was no doubt that it would be a consolidation Bill, and it would also bring the position in regard to the safety and efficiency of factories very much farther than did any existing laws. Several debatable points still remained to be decided, particularly in regard to the regulation of adult hours of labour by Act of Parliament, and, he said, the Government would have to consider whether to include in a factories Bill a clause of such far-reaching importance as the regulation of women's hours of labour by legislation. He pointed out that while he did all he could to improve the position of the workers, he had to take care that he did nothing which would cripple our own industries in competition with the industrialists of other countries. The welfare of the workers has at least not been shelved, and we trust that the present Government will spare no pains to promote—to use the the pregnant word of the Home Secretary—the "efficiency" of our factories.

THE INFECTIVE FILTRABLE VIRUSES.

THE difficulties inherent in work upon the infective filtrable viruses is known to all who have touched even upon the edge of the subject. That they are not of the sort which when faced flee away is obvious from the paucity of results attained to the present, in spite of the keen and unremitting work which is proceeding upon the subject in all parts of the world. Careful and painstaking attempts to isolate the virus of varicella are reported by Dr. Thomas M. Rivers and Dr. William S. Tillett from the hospital of the Rockefeller Institute.¹ By intratesticular inoculation of blood from patients suffering from chicken-pox into rabbits these authors were able to isolate a filtrable virus which they passed in series through nearly 70 rabbits. This they called Virus III. Although it never gave rise to any lesions clinically resembling those of varicella, it behaved in a definite and specific manner upon intratesticular, intradermal or intracerebral inoculation. Introduced by the first route it gave rise to pyrexia and malaise; intradermally it produced a characteristic local lesion, while on intracerebral inoculation it gave rise to histological appearances and clinical symptoms resembling those produced by the introduction of the virus of symptomatic herpes, but differing from this latter in never causing death. After inoculation by any of the above routes rabbits developed an immunity as demonstrated by failure on their part to show symptoms on subsequent inoculation. All these results appeared to point to the conclusion that in Virus III. Dr. Rivers and Dr. Tillett had indeed laid their hands upon the virus of varicella. In accordance with the high traditions of the Rockefeller Institute, however, these workers did not allow the matter to rest there. Further researches showed that the blood of patients convalescent from chicken-pox conferred no immunity upon rabbits against the virus. Finally, two healthy volunteers, one of whom had had chicken-pox and the other of whom had not, were inoculated in the arm with the virus. The subject who had never had chicken-pox developed no symptoms, while, on the other hand, the one who had had the disease, and was presumably immune against it, suffered from a severe disorder associated with malaise, fever, and swelling of the arm and regional lymph-glands, which took five days to subside. On the basis of their present data the authors are forced to the conclusion that Virus III. bears no relationship to clinical

¹ THE LANCET, 1924, i., 304, 354, and 411.

¹ Studies from the Rockefeller Institute for Medical Research. Reprints, vol. II., p. 325.

varicella. Where it came from and what, if any, is its bearing upon human disease is another and at present unsolved question. To the two filtrable viruses of which at present most is known—those of vaccinia and of symptomatic herpes—it apparently bears no relationship. In spite of these results, negative so far as varicella is concerned, the work of Dr. Rivers and Dr. Tillett is of the utmost importance, for they have succeeded in demonstrating yet one more of the filtrable viruses; how many more may exist and what are their relationships to each other and to human disease no one can yet even guess, but their nature and distribution is obviously a problem which cries out for elucidation.

In the same volume of studies from the Rockefeller Institute Dr. E. N. Cowdry and Dr. F. M. Nicholson make a further contribution having important indirect bearings upon this question. These authors show that in a certain proportion of supposedly normal laboratory mice encephalitic lesions are present in association with infection of the brain by a protozoan parasite. Attention has been drawn to this same phenomenon in the case of rabbits by a number of authors, including Da Fano in this country, within the last few years. A peculiar point, and one to make epidemiologists ponder, is that this widespread incidence of protozoan encephalitis affecting rabbits and mice in laboratories throughout the world is a new thing. The condition is known to have existed in 1921, but there is good reason to believe that it has appeared since 1917. It is apparent that not only the human mammal has been afflicted with new plagues in the last seven years.

SURGICAL HEADACHE.

THERE appear to be a certain number of headaches which are amenable to surgical treatment. The characteristic nature of such headaches is that they are usually severe, subject to exacerbations, increased by movement or excitement, and frequently limited to definite areas of the head. A. R. Campbell and C. K. Fuller¹ have recently drawn attention to this variety of headache which they classify as being due, with few exceptions, to pressure, inflammation, or the two combined. They point out that the principle of referred visceral pain, so thoroughly applied in abdominal surgery, should be extended to cover intracranial lesions. The symptom-complex of neuralgia, superficial tenderness, and segmental headaches should be looked upon as indicating some localisable intracranial lesion. They classify these segmental areas, which overlap to a certain extent, as frontal, temporal, vertical, parietal, and occipital, and for each of these situations is set out a list of lesions which may cause a headache. For example, the causes of a vertical headache are described under the headings of posterior ethmoid sinus disease, sphenoidal sinus disease, enlarged turbinates, deviated septum, middle-ear disease, depressed fracture, tumour, cyst or abscess at the base of the brain, pituitary disease, and aneurysm. In some of these lesions the headache may be unilateral or it may be universal, but headache from the same lesion is stated always to occur in the same situation in the same patient. Intervals of freedom from the pain may occur and it may only come on during certain times of the day or night. The application of adrenalin and cocaine to the nose may relieve the headache, indicating that nasal or sinus disease is the cause, and such headaches usually become worse during acute nasal catarrh. The use of the ophthalmoscope is advocated as essential in cases of severe continued headache, so that optic neuritis may be detected early, before irreparable damage has been done to the vision. It will be seen that the complaint of headache must very frequently come under the surgeon's notice, and Campbell and Fuller consider that there is need for greater emphasis being laid upon the differential diagnosis of this most common symptom.

¹ Canadian Med. Assoc. Jour., February, 1925, p. 144.

THE WORKMAN AND THE HOSPITAL.

IN the annual reports of hospitals which are just now being presented in such profusion to their supporters, nothing is more significant than the almost unbroken series of records of the success of workmen's hospital funds. Wherever they have been established they have almost invariably produced results that at the worst have been satisfactory, and at the best have been brilliant. It is a mistake to suppose that this method of bringing under contribution the classes which most frequently have resort to hospitals is something new, a product of the after-war crisis in hospital finance. These funds have, no doubt, greatly increased in number during the last few years, but a fair proportion of them have moved well into maturity. Thus the Workpeople's Hospital Fund at York was started nearly a quarter of a century ago. Last year it provided the York County Hospital with one-third of its income, and since it began it has contributed a total of nearly £60,000. This is merely one outstanding instance among many. All over the country we hear of "record" years of similar funds, of totals nearly doubled in 12 months, of the readiness of the artisan to take his share of the burden of maintaining the voluntary system. In more than 1600 places of business in Manchester and Salford there are penny weekly collections, and similar schemes are at work not only in many other large towns but in rural districts. Organisation and time are the two essentials of success—experience shows that enthusiasm is engendered without difficulty. In view of the vast amount of re-building and re-equipment which the hospitals, having, broadly speaking, surmounted their current difficulties, now have to face, these funds are certain to be of vital importance in the near future. They may not be able to provide the tens of thousands of pounds required for the provision of new wings, but they can, and do, act as splendid stimulants to the entire community.

VACCINATION AGAINST TUBERCULOSIS.

IT has long been the aim of many workers, and particularly of the French school led by Calmette, to obtain some method of vaccination against tuberculosis which should imitate in a scientific manner the natural process of vaccination by means of which so many individuals, inoculated by a small dose of tubercle bacilli in childhood, develop a complete and lasting immunity to the disease. Indeed, so effective is this natural process in the majority of cases that the fear has been expressed that if we completely stamped out bovine tuberculosis in this country we should remove the chances of this inoculating dose of tubercle bacilli from many children and tend to rear a race which would present a "virgin soil" to infection in later life with disastrous consequences. But the dose of bacilli obtained by the ingestion of dairy produce contaminated by bovine tuberculosis is very uncertain and for some children unfortunately proves fatal. Calmette has therefore devoted a long period of time to producing a type of tubercle bacillus which could be inoculated in a living form without giving rise to any local or focal lesions. After 230 successive cultures on a medium consisting of 5 per cent. glycerine potato and ox-bile, over a period of 13 years, he believes he has obtained a tubercle bacillus which is living but not "tubercul gene."¹ This bacillus, known as the bacillus-Calmette-Guérin (B.C.G.), is apparently avirulent, while it secretes a "normal" tuberculin. Weill-Hallé and Turpin² have employed the bacillus for vaccination since 1922 in 300 children born into tuberculous families. Following Calmette's teaching that the ingestion of tubercle bacilli is the principal mode of infection in the natural process, they give the B.C.G. by the mouth in doses of 1 cg. half an hour before food for three doses either on the third, fifth

¹ Calmette and others: Presse Médicale, July 2nd, 1924.

² Weill-Hallé and Turpin: Paris Médical, Jan. 3rd, 1925.

and seventh or the fourth, sixth and eighth days after birth. Treatment at this early age is important, for, according to Calmette, this method should only be used where there is no chance of previous infection with the tubercle bacillus. The device is usually employed where tuberculous parents refuse to be separated from their children. Of the first 178 cases, which have been closely followed up with monthly medical examinations, nine have died—a mortality rate of 5 per cent., and the remaining 169 continue to be well and healthy in spite of the fact that they are subject to constant infection in the home. In this country Eric Pritchard has reported somewhat similar work.³ He has been using prophylactic injections of tuberculin at weekly intervals for the first six months of life in the case of infants born into a tuberculous environment. He has thus treated 40 cases during the past 13 years and all are alive and well, the eldest being 12 years old, although in each case either the mother or the father was suffering from active tuberculosis. It is obviously too early yet to estimate the value of such prophylactic measures, but the results both here and in France will be watched with interest.

TRADE DERMATITIS.

AN article on Lime Dermatitis by Dr. W. J. O'Donovan, which we publish on another page of this issue, calls attention to an interesting form of trade dermatitis—an important section of occupational disease. It is difficult to estimate accurately the extent to which trade dermatitis is responsible for attendances at clinics for diseases of the skin; it differs in different clinics according to the occupations followed by the local population, and variations in the figures given by different authors must occur. Lane⁴ considers that from 4 to 5 per cent. of all patients admitted to the skin department of the Massachusetts General Hospital were suffering from lesions due to their occupation. Fordyce⁵ gives 2 per cent. for his own clinic, but quotes H. H. Hazen, who considered that 20 per cent. of his cases were due to the patients' occupations. Frank Crozer Knowles,⁶ in a review of nearly 25,000 skin cases, concluded that about 16 per cent. of all skin cases were due to the patients' work. MacLeod, in his textbook, "Diseases of the Skin" (p. 283), says, "a considerable percentage of the skin cases in adults in hospital practice are due to their occupations." He gives a list of 33 common occupations in which dermatitis is liable to occur, whereas Herxheimer⁷ enumerates 74 trades provocative of eczematoid dermatitis, and the trades included in Prosser White's "Occupational Affections of the Skin" (second edition) must number well over 100. As would be anticipated from these figures, and as is confirmed by fact, new causes of dermatitis are constantly arising owing to the invention of new chemical processes or the modification of old ones. A comparatively slight change in a process may make a large difference in the incidence of dermatitis caused by it.

That a dermatitis is one of occupation may be easily missed in diagnosis, because many different agents produce a dermatitis superficially similar, or one resembling some common skin condition not regarded as due to an external irritant—witness the first case of lime dermatitis quoted in Dr. O'Donovan's article, where, in the original attack, the patient's trouble was diagnosed as seborrhœic. Secondary infections with staphylococci or streptococci are frequently superimposed on a dermatitis originally due to occupation and still further confuse the issue. Some types of trade dermatitis are, however, well marked and easily recognisable when once known to the observer; such are "chrome sores," "lime holes,"

"pitch skin," "tar acne," and "mule-spinners' cancer," whose names suggest their origin. The agents causing trade or occupation dermatitis are numerous, and many attempts to classify them satisfactorily have been made by different authors. They may, for instance, be divided into physical, chemical, and parasitic groups. The physical would include such causes as mechanical injury, wind, light, X rays, extremes of heat and cold, of dryness and moisture. The chemical group is by far the largest and requires much subdivision; it includes both organic and inorganic chemicals and the toxins of certain plants and trees. The parasitic group includes infections due to bacteria and fungi, and the attacks of animal parasites, such as mites. Causes coming under two or more of these headings may act together. The points of attack of the chemical irritants are almost invariably, in the first instance, the mouths of the hair follicles, the sebaceous glands, and the sweat pores, with, in addition, the natural furrows on the skin and any accidental abrasions. The maceration of the epidermis by the action of alkali materially increases the danger of attack by chemicals. In many industries certain workers seem to be naturally immune to the risks involved, others acquire an immunity, and it is important for all concerned for the employer to build up an immune personnel by the discharge of workers whose skins prove sensitive. In some cases, however, in workers who have appeared immune for years, the immunity breaks down under temporary ill-health or excessive exposure to the irritant. The treatment of trade dermatitis resolves itself primarily into removal of the patient from exposure to the irritant, and secondarily in protective or antiseptic treatment of the lesions, the possibility of malignant disease being remembered. The adage, "A stitch in time saves nine," applies with particular force to trade dermatitis, where early and accurate diagnosis is of such vital importance if the patient is to be speedily cured.

THE THERAPEUTIC ADMINISTRATION OF GLUCOSE.

CONSIDERABLE interest has been aroused by an article on the oral administration of large quantities of glucose, by Dr. T. Izod Bennett and Dr. E. C. Dodds, which appeared in THE LANCET of Feb. 28th. It will be remembered that these workers, impressed by the physical transformation often produced in diabetics by the administration of insulin, sought to ascertain whether improvement in the nutrition of wasting non-diabetic patients could be obtained by feeding them with glucose, possibly in association with injections of insulin. Benefit could not, of course, be anticipated if the ingestion of large quantities of glucose were found to give rise to corresponding glycosuria; but preliminary experiments on 15 normal volunteers showed that up to 500 g. of glucose in one dose could be taken without more than a trace of glycosuria. Clinical observations were then made on cases of acute infection, cases where hamatemesis was the main symptom, and cases of marked under-nutrition. Distinct benefit appears to have resulted from the addition of large quantities of glucose to their diet and no ill-effects were observed. The glucose used by the authors was commercial glucose (glucose B.P.), which they describe as a viscid syrup, prepared by the hydrolysis of Indian corn or other cereal starch with mineral acids. Glucose B.P. is guaranteed to contain less than two parts per million of arsenic; a number of samples from various sources gave negative reactions to Marsh's test. The cost of this commercial glucose is only about 6d. a pound, and when one pound is dissolved in a quart of water to which two lemons are added it makes a palatable drink. The price of this product is contrasted by the authors with that of pure glucose, which, they state, costs about 8s. 6d. a pound, whether in crystalline or anhydrous form. More than one of the large drug manufacturing firms have written to inform us that this statement stands in need of revision. The

³ Brit. Med. Jour., August 30th, 1924.

⁴ Archives of Dermatology and Syphilology, 1922, p. 565.

⁵ Jour. Amer. Med. Assoc., 1912, lix., 2043.

⁶ Ibid., 1917, lxxviii., 79.

⁷ Deut. med. Woch., 1912, xxxviii., 18.

large hospitals purchasing the substance in hundred-weight quantities are able to procure it at less than half the price mentioned, while the rate even for small quantities is not much more than half this price. The statement that "pure glucose is little used save in chemical laboratories" has also been questioned, since apparently there is a demand for this product in considerable quantities from a large number of hospitals and public institutions. Commercial glucose is a heavy chemical; it is well known that the drug firms do not manufacture heavy chemicals and are therefore powerless to vary them or to control their composition. The difficulty of precise analysis of commercial glucose is admitted; it is not a single substance, but is a very variable mixture of glucose, dextrines, and other carbohydrates, and, according to one of our correspondents, it invariably contains objectionable quantities of sulphites. Pure medicinal glucose, on the other hand, is a fine chemical, manufactured by the fine chemical makers under rigid conditions of control, and the composition of it can be guaranteed. We are not convinced that the oral administration of the crude commercial product is likely to do any harm, but are glad to give publicity to the fact that pure medicinal glucose can be obtained cheaply by those who prefer to use a finer product.

PLAGUE IN THE ORANGE FREE STATE.

OUR South African correspondent states that the presence of plague in the Orange Free State is undoubted, and creating uneasiness. The Union Department of Public Health, in a bulletin published on Feb. 18th, reported nine cases in Europeans of plague in the Boshof district of the Orange Free State. Of these cases, four proved fatal. There was also one fatal case on another farm in the same district. The investigations carried out in the Boshof district by a health officer of the Department of Public Health have now resulted in the confirmation of the diagnosis of the disease being plague. A big campaign against plague, conducted along education lines, has been entered upon at Kimberley. It will embrace the extensive areas of Griqualand West, the Orange Free State, and the Cape Province. The Red Cross Society is coöperating with the Union Public Health Department to this end, and has placed a huge motor demonstration van at the disposal of the Department. Lectures and demonstrations are being given by Mr. Austin Roberts, of the Transvaal Museum.

THE PHILOSOPHER LOCKE AND THE UPBRINGING OF CHILDREN.

MODERN pedagogues hold that to spare the rod does not so much spoil the child as save him from a group of the more startling "complexes" that may dog his future. The attitude of many up-to-date instructors of infancy is not to impress upon the *tabula rasa* of the infant mind such forms and habits as appear proved by experience to be helpful, but rather to stand aside and watch a miracle unfold from within. Opportunities of studying the evil effects of the "impression" method have been given to many medical men, while no modern book of memoirs fails to bewail it in the interests of hero or heroine under the name of the "repression" method; a future generation will have to examine the results of a training by "expression." Meanwhile many parents of to-day stand bewildered.

That the subject is one of high interest to medical men was shown by the size of the audience which gathered at the social evening of the Royal Society of Medicine on Monday last to hear Dr. H. C. Cameron expound the views of Locke the philosopher. The philosophical and political achievements of Locke have to some extent obscured in the public mind the fact that he was an active member of the medical profession. In the intervals of writing metaphysical treatises, restoring the finances of this country after the great Revolution, taking a

part in the foundation of the Bank of England, instituting reforms in the administration of the Poor-law, and assisting in the framing of the Constitution of the State of Carolina, Locke found time to conduct a successful general practice. Indeed, for such a life, as one of his biographers has remarked, there would be no better preparation than an acquaintance with the "fugitive and often equivocal phenomena of disease which resemble more nearly the phenomena about which metaphysics, ethics, and logic are concerned" than do the more precise investigations of physics or mathematics. That he was no mean surgeon also is shown by his treatment of that "imposthume in the breast" from which Pepys records Lord Ashley to have suffered in June, 1668. "He hath been fain to be cut into the body," remarks Pepys, and it was Locke who undertook this operation, sterilising the skin by free application of the cautery and evacuating what we now know as a hydatid cyst through a silver tube. When such a man as Locke turned his attention to the problem of the upbringing of children it might safely be assumed that his opinions would be worthy of note, and his little book on the subject went through 12 editions in some 50 years. He knew that crying babe who renders the night hideous, the neighbours furious, and the doting parents distraught. Crying, he observed, was of several sorts, but the worst of all was the "stomachful cry," the cry purposive, the deliberate attempt to disturb and distress the parent. Such children are invariably the offspring of parents who are most susceptible to the disturbing effects of such crying. It is remarkable how a child divines the weak point in its mother's armour and then seems impelled to keep on exploiting that discovery, like the insane patient who appears forced to wound most those whom he most loves and depends on. For excessive corporal punishment Locke had little use. Children are susceptible, earlier than we think, he said, to praise and commendation, and much may be done to mould them to the parent's will by a consistent attitude of pleasure or displeasure according as the conduct is right or wrong. Blows should only be administered when the child offers a challenge—what the modern psychologist would call a "power claim"—"the obstinate or stomachful cry should by no means be permitted," least of all should a hasty correction be allowed to end in such obstinate bawling, for then the good of the punishment would be all undone. Chastisement should be delivered calmly and with observation of its effect on the mind and brought to an immediate close when the child has been rendered pliant. "To put their bodies in pain without doing their minds any good is more cruelty than correction."

Locke knew also that older problem child, the subject of those familiar school reports: "Could do better," "Lacks concentration," and "Will not attend"—the child whose zest is choked by the consciousness of his failure at everything and his interest thwarted by the very eagerness of his efforts to attend. Locke understood and pointed out how hard it was for any to learn when pressed by strong emotion, such as fear. "It is impossible," he said, "to trace fair or regular characters on a trembling mind as it would be to trace them on a trembling paper." In this connexion Dr. Cameron recalled aptly the case of a surgeon, a friend, who brought to his consulting room a small son who did not progress at school. The surgeon began to appreciate the difficulties of the child's situation when it was suggested to him that a similar régime to that of the school might be introduced at his hospital; when the governors might summon him periodically to the board room, intimate that they were dissatisfied with his work, that the weekly lists of operation results showed his name invariably lower than that of his colleagues, that his marks for asepsis were consistently poor, and, as a final suggestion, that he might go to the hospital on Saturday afternoon and do 50 hernias as an incentive to future effort. The parable worked its effect.

PREJUDICE AGAINST WELFARE CENTRES.

UNDOUBTEDLY prejudice sometimes exists, generally in rural districts, against the valuable ministrations of welfare centres. It frequently takes the form of resentment by mothers against interference in behalf of their children, but the usual cause of friction between a mother and a welfare centre has its roots in the belief that a woman who has had children must know how to bring them up. Last week at Loughborough an unfortunate mother, at an inquest upon her child, in whose behalf the ministration of the welfare centre had been refused, defended her inaction upon exactly that ground, when the coroner told her that she had erred in relying upon her own judgment. The jury rightly returned a verdict of death from natural causes, but it is a little surprising that the benefits that can be derived from the systematic work done at welfare centres are not more immediately recognised. Undoubtedly some welfare centres are better managed than others, and now and again absence of tact on the part of some welfare worker may alienate the sympathy not only of those for whose use the centres have been designed, but of the medical men in the locality. Of such a situation, however, we do not hear often, and when it has been created it should be capable of quick remedy. And against the views of mothers who employ as proof of their experience the classic argument, "I've had six children and buried four," can be set the enlightened gratitude of very many homes.

AUGUST VON WASSERMANN.

FROM Berlin comes the announcement of the death, on March 16th, of August von Wassermann, whose name is so familiar in the medical vocabulary of the world. Wassermann was born in Bamberg, Bavaria, in 1866, and studied medicine in Munich, Strasburg, Vienna, and Berlin, obtaining his degree at the University of Strasburg in 1889. In Berlin he was one of Koch's pupils, and in 1891 became his assistant at the Koch Institute for Infectious Diseases (with which institution he remained associated throughout his entire career), and he was appointed as physician to the staff of the Royal Charité Hospital. In 1898 he obtained a titular professorship and settled at Berlin University as lecturer, being appointed ordinary professor in 1903. Four years later he was placed in charge of the University department for therapeutic and serum research, and in 1913 he became director of the Kaiser Wilhelm Institute for Experimental Therapeutics at Dahlem, near Berlin. Wassermann's great contribution, along with Neisser and Bruck, to medical science, the discovery of the complement-fixation test in syphilis which bears his name, was made in 1906, one year after Schaudinn had found the parasite of the disease. The value of this test has been enormous. The grounds upon which Wassermann and his colleagues based their experiments were rigidly scientific. In accordance with the observations of Bordet and Gengou they deemed it necessary to use as antigen an extract of syphilitic liver, and they assumed that a positive reaction meant the presence of specific antibody in the blood of the patient. But it was soon found that the specific antigen was unnecessary. An alcoholic extract of normal liver or heart, even from a guinea-pig, was found to serve just as well, and, indeed, solutions of known chemical composition—e.g., of lecithin and cholesterol—were proved capable of acting as antigen, and this without any impairment of the diagnostic value of the test. Thus the scientific basis of the reaction was shattered, but the test, interpreted empirically, did not lose validity. The investigation has since been taken up by biochemists, and it is possible that this serological problem may ultimately receive a physico-chemical explanation.¹ Syphilis

¹ THE LANCET, 1920, ii., 78.

was not the only field in which Wassermann conducted his researches. Early in his career, together with Ehrlich, he studied the antitoxin treatment of diphtheria, and he also did important work in connexion with inoculation against typhoid, cholera, and tetanus. Latterly he had been working on tuberculosis, and at the German Medical Congress in October, 1924, he reported on the possibilities of sero-diagnosis in cancer. A fluent and lucid writer and lecturer, Wassermann made many valuable contributions to scientific and medical literature.

THE LONDON INSURANCE COMMITTEE
IMPASSE.

IN THE LANCET of March 7th we reviewed an embarrassing situation arising from the withdrawal of the medical members from the deliberations of the Medical Service Subcommittee of the London Insurance Committee. The Subcommittee has been unable to obtain a quorum for three months and important work has been held up. At a special meeting of the London Insurance Committee held on March 14th the following resolution was carried:—

That, in order to overtake the arrears of work existing at the present time and subject to the consent of the Minister of Health, the Insurance Committee for the County of London do constitute a second Medical Service Subcommittee to sit and act concurrently with the first, such subcommittee to be appointed purely as a temporary measure and in no case for a period beyond June 30th, 1925.

One of these subcommittees has as medical members Dr. H. J. Cardale and Dr. E. A. Gregg, as the representatives of the Panel Committee, and Dr. T. M. Ness, as the representative of the Local Medical Committee, and will function under the chairmanship of Mr. David Davis. The medical members of the other subcommittee are Dr. R. L. Bell and Dr. W. C. Goodden, representing the Panel Committee, and Dr. K. McFadyean, as the representative of the Local Medical Committee, and the suggested chairman is Mr. H. Mills. It is hoped that the appointment of a second subcommittee will mean that the accumulated work will speedily be dealt with.

THE delivery of the third Lettsomian Lecture by Sir Bernard Spilsbury has been postponed.

THE Wellcome Historical Medical Museum will be closed for cleaning and decoration from April 1st to April 30th inclusive.

DONATIONS AND BEQUESTS.—Miss Rose Esther March, of Leeds, left £21,000 for charities, including £2000 each to the Leeds General Infirmary and Leeds Maternity Hospital, £1000 Leeds Public Dispensary, £500 each Leeds Women's and Children's Hospital, Leeds United Institution for the Blind, Deaf, and Dumb, Leeds District Nurses' Institute, Church Army Home, Leeds, and several benevolent institutions.—Lord Bearsted has promised to give £10,000 for the provision of a new clinical theatre at the London Hospital. The income of the balance not required for the cost of the theatre to be used for purposes of research and the investigation of disease. Mr. Alfred Williams has also promised £10,000 in memory of his son, Owen, the income of this money also to be spent in the investigation of disease.—Mr. Robert Henry Carpenter, solicitor, Bristol, left £500 each to the Royal Infirmary and the Bristol General Hospital, and £250 to the Bristol Dispensary.—Mr. John Macfarlane, Brough, Yorks, left £1350 each to the Port of Hull Society's East Coast Mission and Sailors' Orphan Homes, and the General Infirmary, Perth, £500 to the Young People's Christian and Literary Institute, Hull, £450 to the Hull Infirmary, and £250 to Dr. Barnardo's Homes. After the fulfilment of other bequests, half of the residue of the property, which was of the gross value of £18,356, will go to the Hull Royal Infirmary.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXIV.—THE TREATMENT OF SPRUE.

SPRUE, formerly, and, in fact, until comparatively recently, a disease of the tropics, is coming to assume an ever-increasing importance for medical practitioners in this country. Whether the disease ever occurs in an individual who has not at some period resided in the tropics is not certain, but in the same way as pellagra was found to exist in England, when it was looked for, so may it turn out to be in the case of sprue. Apart from this, however, patients return home from the tropics in large numbers on account of sprue; after apparent cure they relapse while at home, for, at all events, until recently, a sprue patient was always advised against returning to the tropics; and, lastly, cases undoubtedly occur where persons who have lived abroad enjoying good health begin to show symptoms of the disease months, even years, after they have retired and settled down at home. For these reasons it is important that the practitioner at home should know something about sprue, and, further, that the diagnosis of the condition should be based upon a sure foundation. This point is essential, since some of the symptoms present in true sprue, such as loss of weight and fatty diarrhoea, are found in other diseases, and also, a matter of greater moment, because recent, rational methods of treatment bring about a rapid and, so far as we can judge at present, a permanent cure if the case is taken in hand early—a marked contrast to what occurs under the older, empirical methods of treatment, which lead usually to temporary improvement only, with the risk of relapses and in many cases to death, with symptoms indicative of pernicious anæmia after a varying period of partial invalidism.

Empirical Methods.

The empirical methods of treatment most generally employed are as follows:—

Dietetic.—Some patients are kept on milk, at first solely, later chiefly, for weeks, and even months, and on leaving hospital are given a fairly rigid dietary, which they are warned against infringing at their peril. Others improve on the Salisbury treatment (hot water and scraped meat), being unable to tolerate milk in the quantities necessary to form the main article of food. Whichever line is adopted it is found that mixed diet in the early stages is not good. Others, again, pin their faith to liver soup, and some patients may even come to like it, but man cannot live by soup alone. It is, perhaps, given on the idea that bile is absent from the white frothy stools, and that the hepatic functions may be stimulated thereby. The "strawberry cure" must also be mentioned under this head. Well-to-do patients have been known to travel about from place to place in order to keep in touch with the fruit; poorer persons who have to stay in England take strawberries in season, then pass on to raspberries and next to loganberries and, when these can no longer be obtained, to bottled fruit and strawberry jam until the next crop is gathered. As the fruit constitutes only a small part of the dietary, its value in sprue cannot be accurately estimated.

Vaccines.—The administration of these is in some cases attended by good results; the rationale of this is explained later. That the organism cultivated is not the one causative of sprue as an entity is proved by the fact that different vaccines will in various hands produce equally beneficial effects—monilia, coliform bacilli, streptococci—while others record no benefit from the use of any of these.

Drugs.—Santonin was in considerable vogue for a time, but it was said to be a requisite that the drug must have been sent on a voyage to tropical countries in order that the white crystals might take on a brilliant yellow by exposure to tropical sunlight, otherwise it was ineffectual. It is now but little used, and is most uncertain in its effects. Emetine, also, has been, and is now, used in sprue, and some cases with sprue symptoms undoubtedly improve and even get well with it; in others it proves quite useless. Many sprue patients give a history of previous dysentery, and it is probably some residual effect of that disease which the emetine clears up, since dysentery is one of the conditions whose later symptoms may in some respects resemble sprue. Such cases as have come within the knowledge of the writer do not answer to the laboratory tests for sprue.

Calcium-Parathyroid Treatment.

The most recent form of treatment, based on the results of laboratory tests, is that by calcium and extract of parathyroid gland. This is, at least, founded on rational grounds and the progress and results of the treatment can be tested in the laboratory. The fatty diarrhoea, the cramps which are often present, the cedema and tetany seen in late and severe cases are some of the symptoms which may be ascribed to faulty calcium metabolism. The total calcium in the blood is, however, normal or very nearly so, hence absorption of calcium is little if at all interfered with. It has been shown that, normally, calcium is present in the plasma in two forms: some 6 mg. per cent. (i.e., per 100 c.cm.) being in what H. W. C. Vines¹ describes as the free or ionic form, and readily precipitable by its chemical equivalent of ammonium oxalate solution; the remainder, 4 mg. or a little more, is bound and requires, perhaps, three times its equivalent. This he calls the combined or coagulative calcium, since it is closely concerned with blood coagulation. Normally, when coagulation takes place, practically the whole of the calcium is found to be in the ionic form in the serum. In sprue, but in no other sprue-like conditions in which similar tests have been carried out, the ionic calcium in the serum is reduced, in severe cases, by as much as 30–40 per cent. Although absorption of calcium does not appear to be interfered with to any extent, since the total is within the normal limit, the regulation of this element is upset. By flooding the system with calcium, as by giving large quantities of milk, by the use of pulvis Bataviæ, by the administration of powdered cuttle-fish shell (as used in China), this deficiency is temporarily made good and improvement ensues, but, and this is the important point, the improvement is not stable. The regulator of calcium metabolism is believed to be the parathyroid glands, and this is borne out by the fact that if parathyroid extract is given in doses of one-tenth of a grain twice daily, the symptoms of sprue have been shown to clear up with marvellous rapidity. The ulcerative stomatitis may disappear in ten days or so, the diarrhoea is replaced by constipation, the colour begins to return to the stools in two to three weeks, the patient puts on weight, often 3 to 4 lb., sometimes as much as 7 lb., in a week by the end of a month, and his sense of well-being is restored.

The technique of estimating the ionic calcium by Vines's method is as follows: Blood is taken in a glass tube, about 1.5 to 2 c.cm., and allowed to clot. The serum, of which about 1 c.cm. is needed, is then separated and heated in a water-bath to 56° C. for an hour. The steps in the test are three: In the first, by adding fixed amounts, 4 vols., of various dilutions of ammonium oxalate to 10 vols. of fresh normal blood (usually that of the person carrying out the test) and placing the mixture in the thermostat at 37° C. for ten minutes, that strength of oxalate is found which just prevents clotting under the terms

¹ The Parathyroids in Relation to Disease, 1924, Arnold.

of the experiment. The next step is to find out, by adding 2 vols. of various dilutions of calcium chloride to fresh arrangements of the above mixture (4 vols. of the determined oxalate dilution and 10 vols. of blood), what dilution of calcium chloride just suffices to bring about complete clotting of the blood. The third step consists in carrying out tests similar to the last but replacing the calcium chloride solution by the same volume of dilutions of the patient's serum, prepared as previously described. By a calculation the calcium content of this serum is thus determined, and in normal subjects will be found to be somewhere between 10.4 and 11.4 mg. per 100 c.cm. In severe sprue it is about 6.5 mg., and after the treatment to be detailed shortly is begun, if this test of blood is carried out weekly, a steady progress is noted, till, at the end of four to six weeks, it is found to reach normal. The theory in part is that one of the actions of the parathyroid glands is to counteract intestinal toxins; that it carries on this work until the toxins are too great for it to cope with. Under these conditions, if the toxins can be reduced, as by careful dietetic regulation, the glands can recover and perform their function again, at least for a time. If, by good fortune, one of the chief causative organisms is isolated and a vaccine made, the administration of this may relieve the gland for a time, hence the good results of some vaccines in some cases and of other vaccines in other cases, as mentioned above; hence, also, the failure of vaccines in the hands of many, some other than the toxin-producing organism having been isolated.

The usual line of treatment by this most recent method is to put the patient to bed for the first 14 days, allowing milk only, beginning with $3\frac{1}{2}$ to 4 pints a day, taken warm (not hot) with a teaspoon, at regular intervals, and increasing by $\frac{1}{2}$ pint in the 24 hours, till at the end of the fortnight 7 to $7\frac{1}{2}$ pints are taken daily. Calcium lactate is also given in cachets containing 15 gr. each, thrice daily, and parathyroid extract gr. 1/10 twice daily. It is absolutely essential that the extract be free from thyroid. If there is constipation a small dose of liquid paraffin is probably the best aperient. From the tenth day onwards some plain biscuits may be allowed, such as water biscuits or Mellin's food biscuits. By this time the ionic calcium has probably increased to between 7 and 8 mg. per cent., and gradual increase in food may be allowed and the patient permitted to be up for an increasing time each day. At the end of three weeks the patient, unless a very severe case or one of long standing, can take milk-puddings, eggs, fish, potato, carrot, bananas, and in the fourth week chicken and non-acid fruits. The calcium can be reduced in the third to fourth week and probably stopped altogether at the end of the fourth. The parathyroid extract should be continued in full doses till the fifth week, then reduced to half doses for a week, and in most cases further reduced until it in turn is stopped altogether at the end of six to seven weeks. This, however, can only be gauged with certainty by the blood test, and the drug must be continued until this shows that the ionic calcium has reached the normal.

It will be found that any return of symptoms, whether due to dietetic or other indiscretion, will be evidenced also by a fall in the ionic calcium, hence the enormous value of the test as a gauge of progress in this disease.

Though it is, perhaps, too early to claim permanency of cure, several of those who had been invalided home and forbidden to return to the tropics have, nevertheless, gone back and remained perfectly well, and equally good results have been recorded of patients treated in the endemic centres of the disease.

H. HAROLD SCOTT, M.D., M.R.C.P. Lond.,

Milner Research Fellow in Comparative Pathology, London School of Hygiene and Tropical Medicine.

Special Articles.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(Continued from p. 512.)

THE Commission resumed its sittings on March 10th under the chairmanship of Mr. H. P. Macmillan, K.C.

Evidence of the Mental Hospitals Association.

Alderman J. G. Taggart (Liverpool) and Alderman Sir William Hodgson (Crewe) attended to give evidence on behalf of the Mental Hospitals Association.

Alderman Taggart said the body he represented wished to eliminate the element of pauperisation from lunacy administration, remarking that but for their mental illness less than 5 per cent. of the persons concerned would be pauperised. Cases of incipient insanity should be admissible to hospitals which were supported by the public health authority; mental illness should be provided for by public health authorities, in the same way as tuberculosis and venereal disease. These clinics would be in the nature of receiving houses, and would relieve the asylum population. It might need but little structural extension to existing hospitals. In each county, or in the less populous areas each two or three counties, there should be such a clinic, the present 50 per cent. grant for present clinics being extended to mental disorders of this nature. He suggested a modified form of provisional order, more on the lines of that required in the case of infectious diseases. Though himself a magistrate, he thought the governing authority should be medical. Also, in the matter of discharge, the medical superintendent's views should never be over-ridden by visiting committees; in one instance ten discharges took place under these circumstances, and most of those patients had to return.

Sir William Hodgson supported the idea of giving early treatment of mental cases in clinics. In the case of Cheshire, the proximity of Liverpool and Manchester would facilitate a smooth working of such a scheme. No man should be appointed a medical superintendent unless he had special psychological qualifications. To secure such diplomats was now much easier than it had ever been before. Owing to the depressing character of the medical work, he thought there should be interchange of service; also, there should be a shorter period of service for them, and the retiring age should be younger than at present. The administrative business of a mental hospital should be, in his view, entirely separated from the medical side of the work.

The Mental Treatment Bill.

The witness said that he approved of the general principle embodied in the Mental Treatment Bill. The Mental Hospitals Association had passed resolutions to that effect. That body considered that for a long time there had been necessity for such a Bill. It might have relieved many cases which in acute bodily illness were badly affected temporarily in mind.

The Chairman said he took it that Sir William Hodgson wanted to fill up the gap in treatment by some such scheme as that embodied in the Mental Treatment Bill, and the witness replied that this was so, but he disagreed with some of the machinery and methods proposed. He took exception, as did both the bodies he represented, to the clause dealing with the constitution of visiting committees, and particularly the provision for cooption. They said that these visiting committees should be strictly representative of elected bodies, as that was the only representation which was of value.

The Chairman pointed out that there might be persons interested in the welfare of the mentally afflicted and who were prepared to devote much time and work to the subject, and who, therefore, might be very useful in that branch of work.

Sir William Hodgson replied that that was always the argument used in favour of coöption. He had had much experience of coöption on public bodies, and he could not say it had been entirely of a satisfactory character. Some of the coöpted members were very enthusiastic persons, but in the promotion of the interests on particular lines the costs were not considered. As a rule, the most expensive members were the coöpted members. Moreover, these people were very easily approached by sympathetic appeals made on behalf of suffering people. Unless they had a full responsibility as to cost these appeals were, mostly, likely to succeed.

Lord Russell pointed out that coöption was a permissive function.

Asked about the influence of ladies as coöpted members, Sir William Hodgson said they had great powers of persuasion over the council.

Miss Symons asked whether one or two women were likely to persuade so many men, and the witness replied in the affirmative, remarking that he had often seen it done.

The Chairman suggested that the presence of women on these committees was very desirable as they had a better knowledge of household concerns and were probably better critics of administration, and he asked how they could be secured without coöption.

The witness replied that on most authorities women were now coming on in an elected capacity, and both his Associations agreed to women being included when they were elected by the ratepayers.

Lord Russell suggested that if there had been women on the visiting committee of Prestwich Asylum many of the criticisms of that institution might have been avoided.

The witness replied that he did not think he ought to be asked about Prestwich.

The witness was then asked his views as to the prosecution of research at asylums, and the line he took was that the impetus for research among workers in asylum laboratories ought not to be smothered by interference from the Board of Control or other central authority. He contended that the inventive discovering mind was of a peculiar type, and was not necessarily revealed in team-work. He favoured strongly giving asylums with well-equipped laboratories a free hand in their researches.

The Chairman suggested that the requirement of the approval of a central body would prevent unnecessary duplication of research and undesirable overlapping. It also might project research into one particular class of diseases in one centre and another in another centre, and not only avoid overlapping, but help to concentrate the work. The representatives of the ratepayers of a particular district in which an asylum was situated should have the power, he thought, to decide unhampered what researches should be carried out, as the ratepayers paid for it.

Sir Humphry Rolleston asked whether the Board of Control had exerted any action which was derogatory to research.

The witness answered in the negative, but said it was because they had not the power, and they were anxious to get that power.

Sir Humphry Rolleston then asked whether it was not an advantage to have the advice of the Board of Control, and their function of ascertaining what work had been done.

The witness said he did not think so. When the Association discussed the matter it said it was not in favour of having State grants if that would mean more control by the Board of Control. If it were said that there would be larger grants but more grip on the work being done, the attitude was "Take your grants, we would rather not have them."

The Chairman asked whether the witness's view was that there should not be interference, but some coördination, and the reply was, "We welcome advice, but we say the tendency is to be too much governed." He went on to say that the central body had done nothing for research.

The Chairman pointed out that the Board of Control had to deal with not only large up-to-date laboratories and asylums, but with places where the zeal was not so keen.

The witness replied that the Mental Hospitals Association was brought into being for the purpose of meeting and discussing the problems connected with the various asylums, and to deal with difficulties.

Asked as to his views on the appointment of district commissioners and inspectors, he said it was the multiplication table in the wrong direction.

Sir Humphry Rolleston asked whether the witness thought the Board of Control should be dispensed with.

Sir William Hodgson replied that he did not think anything he had said called for that question, but he would reply that he did not think they were doing any effective good work, and he would not be sorry to see the Board of Control scrapped.

The Chairman asked whether if the Board of Control were scrapped some other body should not be substituted for it, and the witness replied that he thought the committees elected and appointed by the people, if in direct touch with the people, would afford the best system of control. He agreed there should be central bodies directing and diffusing information, but when it came to controlling, he said "No."

On Wednesday the representatives of the British Medical Association continued their evidence. The following gentlemen attended: Dr. Langdon-Down (Chairman, B.M.A., Lunacy Committee), Dr. J. W. Bone, Dr. C. O. Hawthorne, Mr. E. W. G. Masterman, Dr. C. Murrell, Sir J. Verrall, and Dr. C. C. Lord.

The Position of the Licensed House.

The Chairman said he assumed that the objection, in principle, to this kind of institution which was held by some was, that it might possibly cause conflict between duty and interest on the part of the management. Dr. Langdon-Down said he thought that was the basis of the theoretical objection, but in the main the reports concerning those houses were by no means adverse. Critics probably overlooked some other considerations, such as the desire of people to do a good thing and do it well, and the great stimulus of maintaining a good reputation. Answering the Chairman's remark as to suspicion based upon large profits made by these institutions, the witness said he knew nothing of the profits, but he did not think there was justification for the suggestion of exploitation.

The Chairman said that in the case of persons in these institutions who were possessed of some means, the suggestion had been that there might be a motive on the part of relatives to keep them under detention, and that those running the institution might have a pecuniary interest in the same direction. Dr. Langdon-Down rejoined that if a thing was wrong it should not exist at all, but if it was right to have such institutions the supply should meet the demand. If the safeguards were adequate, the Association thought this kind of institution should be encouraged, though that body did not wish to fortify a monopoly as such.

Functions of the Medical Superintendent.

Dr. Langdon-Down, in answer to the Chairman, said he did not think the Association had discussed the point whether the superintendent's medical work was interfered with by his administrative duties. In his own view, all the circumstances and environment of the patient were involved in his treatment. He thought the supreme authority in an asylum

ought to be its medical superintendent. Mr. Masterman gave some of his experiences as medical superintendent of a Poor-law hospital of 800 beds.

The Question of After-care.

The witness said he thought it would be well if those concerned in the working of mental institutions were to take a larger share in the after-care arrangements, especially by habitual communication with the patient's doctors after the patient had left the institution.

Sir Humphry Rolleston asked whether the Association would support any scheme for social service connected with mental hospitals whereby cases might be visited afterwards by friendly people who were virtually on the staff of the institution. Dr. Langdon-Down said he did not see any objection to this, which would be a reasonable extension of after-care. His Association, however, had not considered the matter. Dr. Murrell hoped that if such a recommendation was made by the Commission the patient's consent should be necessary, as the patient and his people might not wish to be followed to his home. He agreed that, with such a proviso, the medical value of such a scheme would be great.

Treatment of Mental Cases at General Hospitals.

Dr. Langdon-Down said he thought some provision for early treatment of mental disorder in clinics—admitting in-patients as well as out-patients—might with great advantage be linked up with teaching hospitals. And these would afford instruction in mental disorder for those entering the profession. He thought there was a tendency to encourage mental departments in general hospitals. The Chairman said he thought some form of constraint would be necessary in such a case, and this might be resented by the general hospital management. The witness pointed out that at Utrecht, in the psychiatric clinic there, though the patients came voluntarily, they were detainable. He wished to say, in emendation of a statement he made when last he attended before the Commission, that there were several institutions for the treatment of mental conditions which were not actual insanity; among them being Chichester House, Maudsley Hospital, and an Edinburgh institution. Maudsley Hospital was a model of what might be done.

Protection of the Doctor Certifying.

Dr. Hawthorne pointed out the differences existing between a lunacy certificate and a certificate given in, say, a case of small-pox. In the latter the doctor offered himself as one willing to certify and do what was necessary in the matter; but in the other case the doctor was very reluctant to certify a person as a lunatic, and he acted as a public servant, while in the other case he acted in the ordinary pursuit of his profession.

The Chairman rejoined that the doctor was a professional man who held himself out as one who was able to perform certain things in which he was skilled, and that was the criterion on which he must be judged. He thought it was asking much that the Commission would recommend the certifying doctor to have the same protection as a witness who gave oral testimony in court.

Sir Jenner Verrall suggested that there was a risk that doctors might not be doing their duty if their protection in this matter were not increased.

LIVERPOOL: NEW HOSPITAL FOR WOMEN.—Plans for a new building, estimated to cost £120,000, are now before the joint committees of the Hospital for Women, Shaw-street, and the Samaritan Hospital for Women, who are co-operating in the appeal for funds which is about to be launched. The new hospital, with the additional accommodation so urgently required, will provide the most modern facilities, and along with the new maternity hospital should place the treatment of diseases peculiar to women on a very high level.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 565.)

THE APPROVED SOCIETIES AND THE MONEY BENEFITS: CONTROLLER'S EVIDENCE—(continued).

How an Approved Society may be Formed.

(App. B. 1-6.) Any body of persons may make application to become an Approved Society, and on receiving approval may undertake the business of National Health Insurance. Two principal conditions must, however, be complied with. The society must not be carried on for profit, and its constitution must provide for its affairs being subject to the absolute control of its insured members.

Types of Societies.

Though there are many varieties of Approved Society, they fall into two main classes—namely, centralised societies (societies with central government and without branches) and societies with branches, commonly called "affiliated orders." These branches are variously termed lodges, courts, or tents. Each branch is self-governing in nearly every respect provided it avoids serious mismanagement, and it is a separate and independent financial unit. Employers' provident funds are in another class and may be approved, even though the employer is entitled to representation on the committee of the society.

There are many varieties of type and organisation which may affect the quality of administration, the expenditure on benefits, and the financial results of Approved Societies. For example, the field of operation may be limited to a village, town, country, or wider area. The class of members may be restricted in respect of sex, occupation, religion, or social habits. The origination of the society may also determine the membership according to the peculiar traditions of the parent body—trade union, dividing club, co-operative organisation, or some kind of federation.

Numbers and Membership.

(App. B. 32-38.) The number of Approved Societies in England at the end of 1923 was just under 1000, of which 28 were societies with branches. The number of branches was about 6100. These numbers (societies and branches) are about one-half of the numbers approved at the outset. As to the number of members in any society, the variations extend from eight societies each with less than 50 members, to two societies each with over a million members, and one with approximately two and a quarter million members. Two and a half per cent. of the societies contain no less than 76 per cent. of the total number of members. The reduction in the number of societies has been effected mainly by a transfer of their engagements. (App. B. 61.) This has come about because the intricate provisions of National Health Insurance proved too much for many small and inadequately equipped societies; they were unable to compete with the more effective organisations; the smallness of their membership handicapped them in regard to initial and continuing expenditure on administration; inability to check improper claims for benefit led to excessive expenditure and further weakened their financial resources; and they were largely unable to find competent officers to carry on the business. (Q. 610-615.) Administrative failure has, therefore, been responsible mainly for transfers of

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8); The Provision of Medical Benefit (Feb. 7th, pp. 301-3; Feb. 14th, pp. 355-6; Feb. 21st, pp. 403-5); Financial Provisions of the Act (Feb. 28th, pp. 454-7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508-9); The Approved Societies and the Money Benefits (March 14th, pp. 564-5).

References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

engagements. No difficulty has been experienced in finding societies willing to take over what might be regarded as derelict concerns.

A Unique System.

(Q. 511-512.) The Controller agreed that the system of administration by Approved Societies is unique in this country, being essentially different from the systems in force in regard to Public Health, Poor-law, and Unemployment Insurance. The Insurance Act did not, however, set up an entirely new machine. In addition to creating some new organisations it grafted a scheme of State Insurance on the existing arrangements of Friendly Societies, Trade Unions, &c.

(Q. 515, 516.) As a general rule the great majority of insured persons take little or no interest in the government of their society.

(Q. 514.) I suppose that, even with the provisions for self-government contained in the rules, the control of societies, especially the larger societies, must necessarily in practice fall very largely into the hands of the officers?—That is true of certain societies and especially of the larger ones, but it is not confined to the larger ones.

Further, although in theory subject to the absolute control of their members, societies are of necessity guided and supervised to a large extent by the Department.

Sir Walter Kinnear was asked :—

(Q. 519.) What do you consider the relative merits and defects of the large and the small centralised society as regards efficiency, cost of administration, financial stability, and so on?—That is a very large question, and I am very anxious not to appear to bias the minds of the Commission as regards any particular type of society. I should prefer that the members of the Commission were left with entirely open minds on the subject.

(Q. 520-528.) The present system whereby numerous societies operate in the same town undoubtedly adds to the cost of administration. The following figures were given for six towns taken at random: In the city of Liverpool, 488 societies have members; in Bolton, 285; in Brighton, 304; in Norwich, 213; in Reading, 245; in Tynemouth, 168.

The Defects of Segregation.

By the system of water-tight compartments members of particular trades may be worse off than under a universal system of insurance. The Controller said :—

(Q. 543.) I am bound to say that as a result of the amount of segregation which has taken place, the problem of a certain number of the societies, composed largely of persons belonging to industries where the standard of health is not particularly high, is becoming rather a serious one.

Valuation.

(App. B. 153.) Societies and branches are required to be valued every five years by a valuer appointed by the Treasury. The process of valuation consists of a measurement of the value at the valuation date of future benefits and of future receipts from contributions, &c.

(App. B. 159, 160.) The accumulated funds of societies at the date of the last valuation were about £120,000,000. The valuation showed a net surplus of £17,000,000. (App. B. 178-9.) This amount must be distinguished from the disposable surplus, which it is the valuer's responsibility to determine. This amounted to £9,000,000, the balance of £8,000,000 forming a reserve which the valuers considered it important to maintain.

(Q. 796-7.) On the first valuation were the financial results much better than were expected; . . . will you explain broadly the reasons for this?—The chief contributory causes of the large surplus were, first of all, a low claims experience, especially during the period of the war; a high interest yield on investments; a high average of contributions received by societies during the period; and, as regards men's societies, a high rate of mortality among men during the war, which had the result of reducing the liabilities of societies and releasing substantial reserves.

The Controller said that the first valuation covered such an exceptional period that it would not be safe to draw any definite inference from it.

(Q. 803.) Do you expect the results of the valuation now proceeding to be as favourable as those of the 1918 valuation? Can you give us any approximate estimate of the expected surplus as compared with the 17 millions of the last one?—I understand that the results of the valuation now proceeding promise to be very satisfactory. But the Department has as yet received no reports from the Treasury valuers, and until we do so it is impossible for me to give you any figures.

(Note.—Since this evidence was given it has transpired that the new valuation is producing results even more favourable than the 1918 valuation.)

Sickness Experience.

(Q. 831-2.) The sickness experience on which the Act was based was the Manchester Unity experience of 1893-7. Partly because this was not up to date, sickness experience proved to be much less than expectation. The general view is that the standard of health of the people has greatly improved.

(App. B. 169.) As most societies do not impose any occupational restriction on their members, and even trade-unions and other similar Approved Societies are not always limited to members following exclusively any particular occupation, the records of societies cannot indicate with any precision, if at all, the sickness or invalidity experience according to occupation.

Additional Benefits.

(App. B. 180.) The disposable surplus may be distributed by societies in the form of prescribed additional benefits, of which there is a pretty wide range. They consist chiefly of increases in the normal cash benefits, in payment of the whole or part of the cost of dental or optical treatment, maintenance and treatment in hospitals or convalescent homes, medical and surgical appliances, provision of nurses, and other benefits of the same character (conveniently described as "non-cash" or "treatment" benefits).

(App. B. 185-190.) Of the £9,000,000 disposable surplus the proportion belonging to societies with head offices in England is £8,000,000. It is interesting to note that of this amount nearly three-quarters was applied in additional cash benefits, and one-quarter only in non-cash benefits. The societies had almost a complete discretion as to the way in which they should apply their disposable surpluses, and there appears to have been a general plumping for cash benefits, and, on the other hand, a considerable absence of uniformity both in regard to the scope of particular non-cash benefits, and as to the proportion of cost borne by the societies.

(Q. 880.) The benefits under the first valuation have been to some extent experimental, and there has been a danger of societies adopting a benefit without devoting enough money to it. The Controller said :—

We are very anxious that societies should not be allowed to adopt additional benefits for window-dressing purposes; that they should not be able to advertise that they are giving additional benefits for which the sum of money allotted is not sufficient to meet the normal application.

(Q. 883.) In connexion with the new valuation results, the Department will probably insist in regard, e.g., to dental benefit, on a uniform definition so as to avoid friction and misunderstanding.

Distribution of Insured Persons amongst Societies.

From the tables accompanying the Controller's evidence one very short extract follows. The membership of societies of different types for the whole of Great Britain was for the year 1920 :—

Type of society.	No. of members and percentage of total.
Friendly Societies with Branches . . .	3,290,000 (22·7)
Friendly Societies (centralised) . . .	3,451,000 (23·8)
Trade Unions . . .	1,449,000 (9·9)
Employers' Provident Funds . . .	120,970 (0·8)
Industrial and Collecting Societies . . .	6,211,000 (42·8)
Total membership . . .	14,521,970

It will be seen that nearly one-half of the insured persons are members of the Industrial and Collecting Societies. Of the total membership of all the societies about 9½ million are men and about 5 million are women.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Glasgow University.

Medical Benefactions.—The late Dr. John Hall, of St. John's Wood, London, who died in 1909, left the reversion of one half of his residuary estate to the University of Glasgow for the endowment of certain "tutorial fellowships" in medicine, surgery, and midwifery, and for the better equipment of practical teaching in these departments. The reversion has now accrued through the recent death of Miss Hall, the testator's sister, who has added half her own estate for the increase of her brother's benefaction. The whole endowment will amount to about £50,000; but some months must elapse before it is realised, and a scheme is formulated for its application. In view of the large clinical schools connected with the University at the Royal, Western, Maternity, Sick Children's, and other hospitals in Glasgow, the foundation will be a notable addition to the medical resources of the University.

The Gifford Lectures.—Dr. John Scott Haldane, F.R.S., Fellow of New College, Oxford, has been appointed Gifford Lecturer at Glasgow for 1926–27.

Zoology and the Medical Curriculum.

Prof. J. Graham Kerr made some interesting general remarks on this subject at a recent meeting of the Glasgow Royal Medico-Chirurgical Society, with Prof. Archibald Young, the President, in the chair. It was now generally recognised, he said, that zoology was one of the important basic sciences in the training for medicine. Perhaps the most important object of the zoological course was the training in biological method—which was the method used later on in the general work of the practitioner. It was not the method of the "exact" sciences, consisting mainly of measurement and calculation, but rather the method used in early childhood when by far the greater part of the mental development took place. In ordinary school training this method was excised and in its place was put training in the gulping down without question of information served out by the teacher. The result was apt to be disastrous to the development of the powers of observation and reasoning upon observation, and to undo this harm and to develop further these powers was the greatest function of the introductory zoological part of the curriculum. Emphasis was laid upon the special importance of drawing as a means of developing the scope of observation. The part played by the course in zoology in leading up to courses in anatomy, physiology, and pathology was emphasised, and Prof. Kerr concluded by accentuating the importance of turning out the fully qualified practitioner at the end of his curriculum as a naturalist who would view the problems before him with the eye of the naturalist. Many of the greatest triumphs of medicine in the past—the solution of such problems as inflammation, malaria, yellow fever—had been reached by tackling particular problems as problems in natural history, and who could doubt that the same would be the case in the future?

The Expectation of Life in Glasgow.

At the closing ceremony of the winter session of Anderson's College of Medicine, Glasgow, on Thursday, March 12th, Captain Walter Elliot, M.P., Parliamentary Secretary to the Scottish Board of Health, gave an address on the prevention of infectious diseases and the direction in which we may look for advance in this field of public health. During the past century, he said, preventive medicine had achieved some of the greatest triumphs that any department of science had ever been able to place to its credit. The problems it had had to face and solve were created by the great development of urban life. In illustration of this he mentioned that between

1801 and 1851 the population of Glasgow had increased by 346 per cent.—that is to say, from a population of 77,000 to one of 345,000. Another 650,000 came in the second half of the century. The first quarter of a million was accompanied by a tremendous increase in the death-rate, but the last 600,000 was accompanied by an equally striking decrease. In the years 1821–27 the expectation of life of a 10-year old boy in Glasgow was 42 years, while from 1832–34 it had fallen to 37 years. It was not until 1881–90 that it came up above what it had been in the 'twenties of the century, and it then had risen to 44 years. At the present time the high-water mark was 50½ years. With regard to an elderly man the Biblical three score and ten still ruled, but the conservation of life applied to many who formerly died off in early manhood or womanhood. Even as late as 1870, of 1000 boys in Glasgow, half of them were dead by the age of 25, while of the same number to-day half of them were still alive at the age of 58. Put in another way, the present population of Glasgow would live 20 million years more than a similar number half a century ago, and the increase of the life capital of Glasgow was estimated at 1000 millions sterling. That, said Dr. Elliot, was a very great achievement for preventive medicine, not only in the humanitarian but in the economic field.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Royal College of Surgeons in Ireland.

THE Charter Day dinner of the Royal College of Surgeons in Ireland was held on Saturday, March 14th, in the hall of the College, when Mr. R. C. B. Maunsell, President, presided over a company of 100 Fellows and their guests. Lord Glenavy, Chairman of the Senate, was principal guest, and responded to the toast of "The Governor-General and Prosperity to Ireland," the Governor-General himself being unable to be present. Among other guests who spoke were the Provost of Trinity College and Mr. Justice FitzGibbon.

Honorary Degrees at Dublin University.

The Senate of Dublin University met last Saturday to consider graces for certain honorary degrees. Among those approved by the Senate were graces to confer the honorary degree of D.Sc. on Sir Frederick G. Hopkins, of Cambridge, and the degree of M.Ch. on the famous Americans Dr. G. W. Crile and Dr. Charles Mayo.

Medical Men Elected to the Dail.

His many friends have welcomed the return of Mr. T. Hennessy, F.R.C.S.I., as deputy for the South Dublin City constituency, by an unexpectedly large majority. He polled some 5000 votes more than the combined poll of his two opponents. Mr. Hennessy has been honorary secretary of the Irish Medical Committees for many years, and his presence in Parliament should be of service to the profession. In a bye-election in Cavan last week Dr. O'Reilly was elected.

Mercer's Hospital.

Every year one or more of the Dublin hospitals has to make its special appeal for funds to enable it to carry on its work. Last year it was Sir Patrick Dun's Hospital and the Royal City of Dublin Hospital. This year Mercer's Hospital is before the public. Last week a meeting of its friends was held in the hospital to make its needs known. The chair was occupied by Lord Glenavy, a governor of the hospital, and the Governor-General was present. It was stated that recently a new system of heating had been installed, and a new X ray apparatus had been purchased. These changes had not been undertaken until they were necessary, and further changes would soon compel the governors to further expenditure.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Experimental Syphilis.

THE Institut Pasteur of Paris has extended a welcome to two Argentine scientists, Drs. Jaurégui and Lancelotti, to enable them to continue the experimental researches on syphilis in llamas at which they have been working for the past 12 years. Arrangements have been made for the transport from Bolivia to Paris of a number of llamas, some of them vaccinated and others entirely untouched. The two doctors have discovered that syphilis develops in the llama on the same lines as in man, but with much greater rapidity, and completes its course at the end of three weeks by causing serious nervous symptoms which have a fatal issue in a few days. A culture of the specific organism has been prepared in human serum under anaerobic conditions, and after gradual attenuation by heat this culture has been used to vaccinate the experimental animal. From the animal thus immunised it has been possible to prepare a serum which cures the primary and secondary stages of syphilis in the llama. The cure is complete in a few weeks, and is verified by the fact that at the end of four months the animal is again liable to contract the disease. Although at present vaccination has produced temporary effect only and must be repeated after a time, nevertheless the serum does effect a definite cure. Animals treated in this way over seven years ago have remained absolutely free of infection. Encouraging results have already been obtained in human subjects, but the proof of time is still necessary, and the experiments require further rigid control. The existence of syphilis in llamas is of interest in relation to the old legend that the disease was first brought to Europe by the discoverers of the Americas.

The Function of the Larynx.

Dr. Marage, of Paris, demonstrated recently to the Academy of Medicine the results of experiments he conducted to determine the precise rôle of the larynx and the mouth in the formation of vowel-sounds. In his first experiment he occluded the mouth by filling it with the substance which dentists use to take impressions of the buccal cavity; under these conditions he found that the subject could pronounce the five fundamental vowel sounds perfectly. In his second experiment he found that if the larynx of a chloroformed dog were removed, the organ remained alive for a few minutes. If the various muscles were made to contract by the application of an electric current, and if at the same time a blast of hot moist air were passed through the larynx, the noise of barking was produced just as if the animal were alive. The whole organ changed its shape at each note. Therefore the larynx alone, apart from the mouth, can produce these vibrations. Finally, in order to investigate the actual working of the larynx, he obtained a cinematographic picture of the vocal cords. This film enabled him to demonstrate the vocal cords very clearly to his audience, and further permitted a detailed study of the vibrations of the cords, their changes in length and breadth, and the variations in the shape of the larynx during phonation.

Memorials to Two Surgeons of Lyons.

Two monuments were unveiled in the large amphitheatre of the Faculty of Medicine of Lyons on Sunday, March 8th, in memory of two great French surgeons who had lived and worked in Lyons. The one, Poncet, was for 30 years a distinguished Lyons surgeon; it is to him that we owe the conception of tuberculous rheumatism, the existence of which he supported energetically and persuasively, particularly before the Academy of Medicine. The other, Jaboulay, was his pupil, a skilful operator who did important work in the surgery of the nervous system. Among the speech-makers at the ceremony were Prof.

Lépine, Dean of the Faculty of Medicine of Lyons, Dr. Jean Louis Faure, of Paris, in the name of the Academy of Medicine and of the Société Nationale de Chirurgie, and Dr. Ierich, of Strasburg, one of Poncet's former pupils.

The Danger of Radio-active Substances.

The Academy of Medicine has had under consideration the danger involved in the handling and transport of radio-active substances, and as a result recently made the following recommendations: (1) That the industrial preparation, handling, or transport of radio-active substances be classified among the noxious trades, not as regards the neighbourhood of the factories, but from the point of view of the workers; and (2) that strict supervision of the hygienic conditions obtaining in such establishments be instituted, together with suitable rules and regulations, on the findings of a scientific and technical commission.

RUTHERFORD MORISON TESTIMONIAL.

THE following is the second subscription list for the Rutherford Morison Testimonial Fund, the inauguration of which was announced in THE LANCET of Jan. 17th, p. 146:—

£25.—Mr. G. W. Richardson, Keswick; Mr. S. S. Whillis, Newcastle.

£10 10s.—Drs. Baigent and Hutchinson, Northallerton; Dr. J. J. Campbell, Newcastle; Dr. J. Charles, Stanley; Mr. J. Clay, Newcastle; Dr. W. S. Dickie, Middlesbrough; Dr. A. Duke, Newcastle; Dr. C. W. M. Hope, London; Lieut.-Colonel A. H. Proctor, Darjeeling; Dr. Fred. Proud, Newcastle; Mr. S. Raw, Sunderland; Dr. W. L. Ruxton, Newcastle.

£8.—Dr. G. W. Pailthorpe, London.

£5 5s.—Dr. H. H. Aitchison, Wallsend; Dr. J. Anderson, Seaton Delaval; Dr. W. D. Arnison, Newcastle; Dr. V. F. Badcock, Cornhill-on-Tweed; Dr. J. Bannerman, Stanhope; Mr. James Berry, London; Dr. H. S. G. Boswell, Hartlepool; Dr. C. E. L. Burman, Ladysmith, Natal; Dr. Mabel Campbell, Newcastle; Dr. W. S. Campbell, Sidmouth; Prof. Sir David Drummond, Beal; Mr. Horsley Drummond, Newcastle; Dr. H. A. Fielden, Torquay; Dr. Garson, Sacriston; Dr. J. C. Hamilton, Sunderland; Mr. J. Hamilton-Barclay, Newcastle; Mr. N. Hodgson, Newcastle; Dr. J. A. McLeod, Alnwick; Dr. S. D. Metcalfe, Newcastle; Dr. H. B. Ord, South Shields; Dr. H. W. T. Russell, Trimdon Station; Dr. T. Russell, Trimdon Grange; Dr. W. Seymour, Newcastle; Dr. J. S. Taylor, Vryheid, Natal; Dr. R. Walker, Wooler; Dr. R. J. Weidner, North Shields; Dr. J. Whyte, South Shields; Surg.-Comdr. F. G. Wilson, R.N.

£5.—Dr. E. Davison-Smith, Whickham; Dr. Ruth Nicholson, Liverpool; Mr. A. S. Percival, Newcastle (second donation); Dr. Olive Wilson, Newcastle.

£3 3s.—Dr. N. R. Beattie, Walker Gate; Dr. E. C. Braithwaite, Warri, Nigeria; Dr. H. P. Bennett, Newcastle; Dr. Craven, Bensham; Dr. A. J. Dale, Worcester; Dr. W. H. Dickinson, Newcastle; Dr. A. Fairlie, Blyth; Dr. J. Gilmour, Newcastle; Dr. Harland, South Shields; Dr. S. McCoull, Wylam; Dr. Angus Martin, North Shields; Dr. E. Farquhar Murray, Newcastle; Dr. G. R. Murray, Manchester; Dr. G. R. Newsome, Manchester; Dr. J. C. Norman, Hebburn; Dr. Freda Ramsay, Beckenham; Surg.-Comdr. B. Robson, H.M.S. *Princess Margaret*; Dr. H. L. Rutter, Newcastle; Dr. W. Stimpson, Newcastle; Dr. J. Swanberg, London; Mr. G. Gordon Taylor, London.

£2 2s.—Dr. T. Aitchison, Willington Quay; Dr. M. A. Archdale, Ryhope; Dr. T. H. Bates, Newcastle; Dr. Frank Beaton, Ashington; Drs. W. A. and E. G. Benson, Stanley; Dr. J. S. Brogdon, Hartlepool; Dr. J. R. Burn, Easingwold; Dr. A. Campbell, Heaton; Lieut.-Colonel T. T. Coates, Woolwich; Dr. H. Crichton, South Shields; Dr. H. I. Daggett, Boroughbridge; Dr. T. Dixon, Earsdon; Captain H. H. Elliott, Bombay; Dr. Anne Fairweather, Birmingham; Dr. Gardner, Darlington; Mr. W. A. Hewitson, Newcastle; Dr. W. Holmes, Ponteland; Dr. M. Jacobs, Hull; Dr. Lillie Johnson, Jarrow; Dr. Leishman, Barnard Castle; Dr. J. Macfadyen, Newcastle; Dr. D. R. MacGregor, Wallsend; Dr. McCullagh, Bishop Auckland; Dr. T. W. Maddison, London; Dr. W. Martin, Newcastle; Dr. D. M. Millar, Felling; Dr. I. M. Pirrie, Maldon; Mrs. E. Pirrie, Maldon; Mr. F. W. Ramsay, Bournemouth; Dr. Margaret Ranken, Sunderland; Dr. N. R. Rawson, Whitley Bay; Dr. D. R. Roberts, New Tredegar; Dr. R. Sanderson, Maryport; Dr. A. F. Bernard Shaw, Newcastle; Dr. Sparks, Whitley Bay; Dr. F. S. Walker, Newcastle; Dr. N. B. Walley, Dudley; Mr. C. Hamilton Whiteford, Plymouth; Dr. G. S. Woodman, Baghdad.

£2.—Dr. S. Louise Rook, Bradford; Dr. L. H. Walker, Dinnington; Dr. Edith S. Williamson, Newcastle.

£1 1s.—Dr. E. C. Abraham, Wolston; Dr. A. Angus, Tyne-mouth; Dr. F. Barrow, Rothbury; Dr. J. L. Blandford, Henwick; Dr. H. C. Broadhurst, Hebburn; Surg.-Comdr. H. M. Braithwaite, H.M.S. *Valiant*; Dr. M. Brennan, Gateshead; Dr. J. F. Bridge, Leamington Spa; Dr. Brown, Newton Abbot; Dr. J. Ferens Colman, London; Dr. Corben, Cheam; Dr. Hedvig K. Cyriax, Nuneaton; Dr. H. G. Dodd, Hove;

Dr. Dougall, Gateshead; Dr. W. A. Elliott, Southampton; Dr. A. L. Fairlie, Cowpen; Dr. C. F. Fairlie, Blyth; Dr. H. E. Fellowes, Newcastle; Dr. W. Gibbons, Gateshead; Dr. Gilbert, Gateshead; Dr. J. E. Goffton, Paignton; Dr. W. Graham, Linthorpe; Dr. John Gray, Stanhope; Dr. Barbara N. Grinling, Newcastle; Dr. F. W. Gunn, Ashington; Dr. Helen Gurney, Newcastle; Dr. W. Hall, Sacriston; Dr. Norah Hamilton, Sunderland; Dr. A. S. Hedley, Rothbury; Dr. L. F. Hemmans, Lewisham; Dr. C. J. Henderson, Lancaster; Mr. J. P. Higham, Middlesbrough; Dr. R. S. Hindmarch, Gateshead; Dr. M. Hunter, Ferryhill; Dr. R. Hunter, Brampton; Dr. G. E. Hyden, Blackhill; Dr. J. A. Kendall, Brixton; Dr. H. Kerr, Newcastle; Dr. H. H. Laurence, Shotton Colliery; Dr. F. S. Leech, Gateshead; Dr. H. L. de Legh, Shincliffe; Dr. D. J. Lewis, Machynlleth; Dr. F. J. Lidderdale, Cheltenham; Dr. W. G. Lidderdale, Cheltenham; Major W. E. C. Lunn, Netley; Dr. G. McCoull, Prudhoe; Dr. J. R. McCurdie, Middlesbrough; Dr. McElroy, Blackhill; Dr. Mackenzie, Consett; Dr. H. E. Mather, Pemberton; Dr. N. A. Martin, Tunbridge Wells; Dr. F. W. Melvin, Oswestry; Dr. Jean M. Morton, Nottingham; Dr. S. E. Murray, Leicester; Dr. H. Newsome, Pill; Dr. D. F. O'Kelley, Boldon Colliery; Drs. MacRae and Raine, Corbridge; Dr. S. Phillips-Bedson, London; Dr. T. Brice Poole, Westcliff-on-Sea; Dr. Smallwood, Gateshead; Dr. A. Smith, Swallow; Dr. J. L. Spiers, Gateshead; Major T. W. Stallybrass, Hounslow; Dr. Russell Steele, London; Dr. J. B. Tighe, Stannington; Dr. Dorothea M. Tudor, Leamington Spa; Dr. W. A. Tweddle, Newcastle; Dr. W. Vincent, Sheffield; Dr. Olivia N. Walker, Plymouth; Dr. G. W. Weir, South Shields; Dr. J. Whillis, Gosforth; Dr. A. F. Wilkin, Yarm-on-Tees; Dr. H. A. Wilson, Newcastle; Dr. W. Q. Wood, Edinburgh.

41.—Dr. Soliman, Birmingham.
10s. 6d.—Dr. Christina Barrowman, Newcastle; Dr. R. E. Brown, Willington; Dr. Craig, Dudley; Dr. H. W. Eyres, Richmond; Dr. T. M. Kimpster, Gateshead; Dr. N. C. Leinard, Bristol; Dr. G. H. Lowe, Middlesbrough; Dr. H. H. Maidlow, Ilminster; Dr. Moore, Gateshead; Dr. H. Munro, Nettlesworth; Dr. E. R. Pantcheva, Buckhurst Hill; Dr. M. Scoresby-Jackson, London; Dr. Weldon Watts, Newcastle.

10s.—Dr. Florence B. Lambert, London; Dr. J. W. Sandhoe, Broad Clyst.

5s.—C. F. D. H.
Subscriptions promised, but amounts not specified.—Dr. Modlin, Sunderland; Dr. Norris, Gateshead; Dr. W. Smith, Gateshead.

The sum of £1143 7s. has been subscribed to date. The Committee has decided to close the Fund on March 31st, until which date subscriptions may be sent to the hon. secretary and treasurer, Mr. R. J. Willan, at 9, Kensington-terrace, Newcastle-upon-Tyne.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. (D) G. W. E. Holloway to be Surg. Lt.-Comdr. (D).

ROYAL ARMY MEDICAL CORPS.

Maj. and Bt. Lt.-Col. C. W. Holden to be Lt.-Col., vice Lt.-Col. J. Dorgan, to ret'd. pay.

Capt. T. V. Oldham retires, receiving a gratuity, and is granted the rank of Maj.

The undermentioned Capt. retire: H. G. Dresing, receiving a gratuity; J. B. Williamson, on account of ill-health.

SUPPLEMENTARY RESERVE OF OFFICERS.

H. L. Oldershaw to be Lt.

TERRITORIAL ARMY.

2nd Lt. K. V. Milburn (late R.F.A., T.F.) to be Lt.

ROYAL AIR FORCE.

Flight Lt. A. F. Rook is promoted to the rank of Squadron Leader.

Group-Capt. N. J. Roche is placed on half-pay, Scale A.

INDIAN MEDICAL SERVICE.

G. J. Smith to be Capt.

C. A. Bozman, A. Rosenbloom, M. P. Conroy, W. Scott, S. C. H. Worseldine to be Lts.

The King has approved the retirement of Lt.-Col. A. E. Walter and of Maj. J. H. Horne (on account of ill-health).

MENTIONED IN DESPATCHES.

The names of the undermentioned officers of the Indian Medical Service have been brought to notice for distinguished service during the operations in Waziristan, April 21st, 1923, to March 31st, 1924: Capt. T. R. Birmani, C. M. Ganapathy, D. V. O'Malley, M. V. Pathak, B. Prasad, and R. V. Rau.

MEDICINE AND THE LAW.

HARNETT v. BOND AND ADAM.

THERE has been furnished in these columns a very full account of this important case. It will be remembered that an original judgment awarded immense damages against Dr. C. H. Bond and Dr. G. H. Adam for the alleged wrongful detention of Mr. W. S. Harnett in a lunatic asylum. The trial lasted 16 days and we published a full summary of the evidence, speeches, and summing up in THE LANCET of March 8th, 1924. On appeal the judgment was set aside, and in THE LANCET of May 24th, 1924, will be found the considered judgments delivered in the case by Lords Justice Bankes, Warrington, and Scrutton. This week the House of Lords rejected the appeal of Mr. Harnett against the reversal by the Court of Appeal, while the importance of the case is recognised by the fact that the Lord Chancellor has stated that time would be taken to put their Lordships' reasons in writing.

THE LONDON SOCIETY OF APOTHECARIES RECOVER A PENALTY.

In the county court at Nuneaton the London Society of Apothecaries recently obtained judgment for £20 and costs against Mrs. Ashton, the Coton Drug Stores, Nuneaton. The defendant, having no qualification to act as an apothecary, had treated a child suffering from small-pox as if for a cold, with the result, it was alleged, that other persons had come in contact with the patient and had been infected. The sum of £20 thus recovered is the penalty prescribed by Section 20 of the Apothecaries Act of 1815, authority to sue for which is given by that Act to "The Master, Wardens and Society of the Art and Mystery of Apothecaries of the City of London." The penalty is not often sued for by the Society, presumably because practising as an apothecary without having the Society's certificate is an offence not easy to detect and prove without an elaborate system for that purpose. It will be observed that the proceedings in these cases are taken in a civil court and are not "prosecutions."

A notice of appeal has been entered.

ACTION ARISING OUT OF BARBER'S ITCH.

The probable origin of a case of tinea sycosis, or barber's itch, was recently the subject of conflicting medical evidence in the Court of Appeal. Barber's itch is a disease of the bearded parts of the face and neck, caused by *Trichophyton tonsurans* and marked by the formation of reddish concentric patches covered with dry fragile hairs and yellow scales or pustules. The appellant was a hairdresser, against whom judgment had been obtained in the Birkenhead county court for £19 15s., the plaintiff's case being that he had been shaved on a certain Saturday in the appellant's shop, and on the next day had developed a rash which had been diagnosed later as "barber's itch." It was submitted on behalf of the barber that there was no evidence of negligence on his part, and none that the disease could not be contracted otherwise than by shaving; and that the evidence was consistent with the disease having been contracted elsewhere than in the barber's shop. The medical evidence called had ascribed the disease to the shaving, but medical evidence for the defence had contradicted this. Lord Justice Bankes, in giving judgment, said that there could be no question that if the plaintiff had become infected through being shaved it must be due to negligence on the defendant's part in not taking proper precautions. There was a conflict of evidence as to whether the disease contracted had in fact been barber's itch, but the county court judge was entitled to come to the conclusion at which he had arrived. There was evidence as to the defendant not being shaved daily, but going to the defendant's shop of a Saturday night, and evidence of the state of his skin on the evening in question. Upon such evidence it was open to the judge to find that the plaintiff had contracted barber's itch as claimed by him. The appeal was therefore dismissed.

THE CROWBOROUGH TRAGEDY.

The long trial of John Norman Thorne for the murder of Elsie Cameron at Crowborough on Dec. 5th, 1924, came to an end on Monday night last with the verdict of Guilty. The verdict was determined by the general circumstances of the case, but at one point the medico-legal evidence was of great significance, and not unanimous. Full consideration was given to detailed testimony in opposition to Sir Bernard Spilsbury's reasoned view, expressed for the Crown, that the bruises on the corpse were caused shortly before death and that there were no discoverable signs of hanging. The jury set aside the defence of an attempt at suicide by hanging. It is understood that an appeal is to be entered.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Amount already received and acknowledged	353	14	6
Dr. Henry Russell Andrews	5	5	0
J. T. R.	5	5	0
Mr. Tyrrell Gray	5	0	0
Dr. A. Graham-Stewart	2	2	0
Dr. Joseph A. Arkwright	1	1	0
Dr. T. C. Blackwell	1	1	0
Dr. J. Newman Darling	1	1	0
Dr. J. C. Jefferson	1	1	0
Dr. W. Gifford Nash	1	1	0
Dr. Wilson Tyson	1	1	0
Dr. J. H. Stephen	1	0	0
Dr. Montague Cutcliffe	0	10	6

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C.2, and made payable to the "Bateman Fund Account."

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 7TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 122; scarlet fever, 1606; diphtheria, 941; enteric fever, 41; pneumonia, 1441; puerperal fever, 39; cerebro-spinal fever, 6; acute poliomyelitis, 4; encephalitis lethargica, 61; continued fever, 1; dysentery, 8; ophthalmia neonatorum, 121. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 19 from the number for the preceding week. Thirty-one cases were notified from Derbyshire, 21 from Northumberland (Ashington, 13), 6 from Notts, and 45 from Yorks, North Riding (Middlesbrough C.B., 39).

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever, 111 from measles, 11 from scarlet fever, 108 from whooping-cough, 40 from diphtheria, and 361 from influenza, as compared with 346, 352, 354, and 291 in the four preceding weeks. In London itself the deaths from influenza numbered 59, from whooping-cough 30, and from diphtheria 16.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twenty-first meeting of the Commission was held at the Home Office, Whitehall, on March 12th, Sir Andrew Duncan in the chair. The National Federation of Rural Approved Societies, represented by Mr. W. Wood and Mr. W. Hyde, gave evidence on the position and experience of rural societies under the insurance scheme. Evidence relating to a particular society, the Scottish Rural Workers' Society, was given by Mr. James Falconer and Mr. Wood. Thereafter Sir Norman Hill was examined on the working of the Seamen's National Insurance Society. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting of Feb. 26th are now on sale at H.M. Stationery Office.

Correspondence.

"Audi alteram partem."

THE BATEMAN FUND.

To the Editor of THE LANCET.

SIR,—In enclosing my contribution towards the Bateman Fund, I should like to say that I hope this appeal will meet with a very hearty response. If every member of the profession would send even a very small contribution, I do not doubt but that this would be of vast material help to Dr. Bateman—though nothing in the way of money can ever hope to recompense him for what he has had to go through. But it will show him that he has the help and the practical sympathy of his professional brethren—surely of some solace. I think the Proprietors of THE LANCET are to be highly congratulated on their generous contribution.

We are all a good deal at the mercy of patients, and even the most careful and conscientious medical man never knows the moment when he may be at the mercy of a jury utterly ignorant and incapable of judging a highly technical matter. It takes but little imagination to conjure up what Dr. Bateman has had to go through, and what the cost to him both in health and in practice must be.

I am, Sir, yours faithfully,
Margate, March 13th, 1925. A. GRAHAM-STEWART.

To the Editor of THE LANCET.

SIR,—I have great pleasure in forwarding you cheque as a small contribution to the Bateman Fund. I trust you will be able to raise a large sum for this very deserving object.

I am, Sir, yours faithfully,
Aberdeen, March 15th, 1925. JOHN H. STEPHEN.

HEALTH STATISTICS OF THE MERCANTILE MARINE.

To the Editor of THE LANCET.

SIR,—It is hoped that the timely leading article upon this subject which appeared in THE LANCET of March 14th will arouse the conscience of the Board of Trade as to its duty towards the men of this fine service.

In this connexion I would ask your permission to direct attention to one aspect of the health problem of the sailor which profoundly affects the general community. It is that of venereal diseases. The Merchant Shipping Act of 1916 provided that the expense of the treatment of the sick sailor should be borne by the owners of the vessel upon which he was employed; but it excluded from this benefit the seaman suffering from venereal disease and made no provision for him. While the Civil and the Service sections of the population have special V.D. schemes provided for them, the merchant seaman is practically neglected. From the nature of his occupation, the site of his labours, and the general conditions under which he exists, very special measures are required for dealing with him when he is suffering from venereal disease. At the present time there exists a large floating population of venereally infected mariners; these are sowing, and others are reaping, syphilis and gonorrhoea in every port in the world. I have the highest admiration for the merchant seaman, and I can claim an intimate knowledge of his life, his health, and his temptations owing to the fact of having at one time served as an ordinary seaman on ocean-going "tramps." It is a calling which is heavily infected with venereal disease—and indeed it is little wonder. The drink-shops and the harlots of "sailor-town" are always upon the look-out for the seaman with wages to spend. His arduous and cheerless life at sea, with its perils and its separation from home-life, make him, when

ashore, very susceptible to influences which part him from his money, and too frequently fasten upon him syphilis or gonorrhœa.

A few years ago Prof. E. W. Hope, M.O.H. for the City and Port of Liverpool, showed that 37 per cent. of the total patients attending the V.D. centre at Liverpool Royal Infirmary were seafarers, and that 15 per cent. of those were of foreign nationality. One would appeal for more adequate measures for dealing with these men. It is by no means sufficient to provide a treatment centre remote from the docks and expect to attract the men to it on week-days. There should be a treatment centre actually at the docks, and exclusively for the use of sailors. This should be open every night and all day on Sunday. At this place prophylactic treatment would be available. When a ship arrives in dock, a notice should be posted in the fore-castle giving information as to the position of the treatment centre and the facilities it affords. From the nature of the calling of these men, the matter is really an international one and might well receive the attention of the League of Nations or the International League of Red Cross Societies. Only thus will the seaman be able to secure some approximation to continuity of treatment.

From an international public health point of view a V.D. examination of men joining a ship is of high importance. At these treatment centres this might be done, and inquiries made as to recent exposure to infection. If there had been such exposure, prophylaxis would be administered and a certificate to that effect would be attached to the man's papers. This would be destroyed at the end of the syphilis incubation period. If the man denied exposure, and in consequence did not receive preventive treatment and subsequently developed venereal disease, he would then be liable to stoppage of pay during his illness.—I am, Sir, yours faithfully,

Manchester, March 16th, 1925.

E. T. BURKE.

OCULAR COMPLICATIONS IN GENERAL ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—In an article in the *British Journal of Anaesthesia* for October, 1923, entitled *The Value of the Reflex Basis in the Interpretation of Phenomena during General Anæsthesia*, I pointed out that inflammation of the conjunctiva could occur, apart from the introduction of anæsthetic liquid into the eye. The essential point referred to is, that mere exposure to air of such a delicate membrane as the conjunctiva is sufficient to produce inflammation if the protective mechanism—the blinking reflex—is removed. This reflex normally occurs two to three times per minute and prevents desiccation and deposition of minute particles by constant swilling with lacrymal secretion. If the administration of a general anæsthetic be prolonged, and the corneal reflex and lacrymal secretion abolished, the eyelids under these circumstances remain partially open, and the protective reflex being abolished, redness and inflammation of the conjunctiva may supervene. Elderly patients are especially prone to exhibit widely open eyes during general anæsthesia owing to the loss of tone of the orbicularis palpebrarum muscle, but any prolonged deep anæsthesia, especially if associated with shock, is apt to be associated with widely open lids, thus favouring the production of the condition. A series of observations were made in the case of a hospital resident whose anæsthetic cases showed an excessive proportion of inflamed eyes. No anæsthetic was allowed to get near the eyes, he was not allowed to take an eye reflex, the face pads were frequently changed, and yet at the end of the operation the conjunctiva was dry and showed vivid red injection. The complication may be avoided by frequent approximation of the lids and by rolling the upper lid over the globe of the eye from time to time so as to distribute the residual

secretion, or failing this by putting a little warm saline into the eye. If this be done the conjunctiva will be perfectly pale at the end of the operation. Another cause of inflamed eyes which is not generally recognised is the presence of vomit, with dissolved anæsthetic, on the patient's pillow and this may get into the patient's eye. Immediate cleansing with warm saline will correct any ill effect.

An analogous condition used to be seen in the operation for removal of the Gasserian ganglion. If the ganglion were completely removed destructive changes were prone to supervene owing to the interruption of the reflex arc and elimination of the blinking reflex. It was usual to wash out the eye with antiseptic lotion and stitch the lids together to lessen the risk.

I am, Sir, yours faithfully,

Manchester, March 14th, 1925.

S. R. WILSON.

POST-PARTUM AVULSION OF THE UTERUS.

To the Editor of THE LANCET.

SIR,—My friend, Dr. Miles Phillips, has done well in calling attention to Mr. Hopkins Walters's case of avulsion of the uterus, and I have done ill in overlooking it in my article on *Rupture and Avulsion of the Uterus at the Time of Labour: Cases which Recovered without Operation*. In the general index of the *Obstetrical Transactions* it is indexed under "avulsion" and "uterus," but not under "rupture." I ought, therefore, to have found it, and I regret very much that I did not refer to Mr. Walters's very valuable paper.

I am, Sir, yours faithfully,

March 14th, 1925.

HERBERT R. SPENCER.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—Owing to absence abroad I was unable previously to reply to Dr. Whitfield's letter in your issue of Feb. 28th. From it I conclude either that he did not read my views set forth in your previous issue, or that he has failed entirely to grasp the essential points in my argument. His opening remarks: "If . . . the urine is sometimes hypoacid, and there is no evidence of acidosis in the blood, I do not see why one should be tempted to try alkalies" shows this clearly. For the essence of my view concerning the ætiology of the seborrhœic state is that in it there is an accumulation of acids (*not* uric acid), which, owing to an insufficient supply of alkaline bases, are with difficulty, or only partially got rid of by the kidneys, but are vicariously excreted via the skin and mucous membranes. The urine, as a matter of fact, is usually hyperacid to litmus in seborrhœic persons, but it may occasionally be hypoacid; when, however, in the latter case alkalies are administered it becomes for a while progressively more acid, presumably owing to the fact that, with the increased quantity of alkaline bases available, the retained acids are at once turned out by the kidney. Dr. Doble and I are not alone in our observations on this point; it is an established fact, and I cannot suggest any other explanation than the one I have offered. Dr. Whitfield then says: "It would be interesting to know what controls he has carried out on apparently normal people." I definitely stated in my previous letter that I have used myself and others, with no trace of seborrhœa, as controls.

With regard to his remark on acne, I have always insisted that the primary seborrhœic state, and the secondary infections to which it predisposes, must be differentiated, and in my letter I said: "When once an infection with micro-organisms has become established, the factors of sensitisation and specific lowered resistance to definite strains of bacteria come into play, and the administration of alkalies alone is not sufficient to cure." (This sentence was unfortunately included in the paragraph on cheilopompholyx, to which it did not belong.) In chronic acne, seborrhœic

dermatitis and sycosis, for example, it is necessary not only to treat the underlying seborrhœic state, but also to employ measures—local and otherwise—to overcome secondary microbial infection.

But the whole object of my investigations has been to define and seek the explanation of the primary seborrhœic state, on which these secondary manifestations depend, and so to prevent relapse when the latter are cured. Dr. Whitfield concludes his letter by asking, "Are we then to accept a theory based on results which we cannot corroborate, and to continue a form of treatment which in our hands and the hands of others has proved futile?" The matter cannot be dismissed in this supercilious fashion. There is but little theory in my views, and there will be still less when my chemical co-workers have determined the actual nature of the acids concerned; this should not be very difficult now that the acidity of the saliva has been demonstrated. Dr. Whitfield must remember that the observations of Dr. Doble and myself are based on the examination of a very large number of patients and urines, that we have both used numerous controls, and that our statements are clinical and biochemical facts.

Dr. Doble's observation on the recrudescence of the skin condition, when too much alkali is given, I believe, only refers to cases of true seborrhœic eczema—i.e., where the inflammatory lesions are not due primarily to microbic infection. In these cases I can understand that both an excess of alkali or of acid would aggravate the eczema, but I have never observed a similar phenomenon in the commoner seborrhœic manifestations, although one should always bear in mind the possible dangers of inducing alkalosis by excessive dosage.

With regard to Dr. Agnes Savill's letter, she, like Dr. Whitfield, exaggerates the mere administration of alkali at the expense of my real conception of the seborrhœic state. If she will read again my remarks on the *ætiology* of the seborrhœic state, she will understand why the case she quotes recovered, for she ordered precisely the diet I recommend (with which I have cured many mild seborrhœics, without giving alkali or other treatment), and corrected the constipation that is so important a factor. I am doubtful whether the parathyroid and the acne vaccine played any part in the happy result obtained. One does not desire to condemn one's patients to an unnatural intake of alkali, which is purely a temporary measure, but to check their seborrhœic tendency by teaching them those rules of dietary and personal hygiene, the neglect of which has produced their disorders. Her question as to the acidity of saliva I cannot answer, but she must remember that slight degrees of the seborrhœic state are so common in the unnatural conditions under which we live, that the absolutely normal adult is relatively a *rara avis*. I do not know whether the saliva is acid in true gout, which has nothing to do with the seborrhœic state, although the two may be associated.

In conclusion, may I briefly refer to three recent cases:—

(1) A medical man, with acne and intense seborrhœa, was given a powder composed of 18 parts basic phosphates and 82 parts of bicarbonates. He reported that his early morning urine was "like hydrochloric acid" and that it required ten teaspoonfuls of the above powder per diem to make the morning urine alkaline.

(2) A lady consulted me for seborrhœa of the scalp and face, and acne of the back. She complained that the sweat of her axillæ (which was sharply acid to litmus), and "the acid skin" of her back rotted her clothing. The saliva was strongly acid. She was unwilling to employ any local treatment during her stay in London, and was merely given alkali, a laxative, and a diet sheet. She returned in three weeks delighted, because, after taking the alkali for one week, her underclothing was no longer spoilt. The saliva was much less acid. What other possible explanation can there be in this case except an abnormal acid excretion via the sweat glands and skin?

(3) Dr. Ryle has kindly supplied me with notes on the following case. Miss R., aged 33. For years troubled with "seborrhœic eczema." Since October has had a dry mouth and throat, small ulcers on the tongue, a metallic taste in her

mouth, and has noted that the gold arch of her denture has changed in colour, becoming redder than before. Poor complexion, rough, greasy skin, intense seborrhœa capitis, patches of seborrhœic dermatitis on trunk and limbs. Saliva definitely acid to litmus. Urine very acid, equals 44 per cent. decinormal NaOH (phenolphthalein).

I am, Sir, yours faithfully,

H. W. BARBER.

Devonshire-place, W., March 9th, 1925.

THE PHYSIOLOGICAL ACTION OF MYDRIATIC ALKALOIDS.

To the Editor of THE LANCET.

SIR,—Years ago an article appeared in an English or American journal dealing with the chemical constitution and the physiological action of mydriatic alkaloids with, I think, special reference to atropine and the pharmacology of different samples. Being much interested at present in the last-named subject I am anxious to trace this article. You, Sir, have been kind enough to search your indices, but without success. I shall be very much obliged if any of your readers can help me to find it.

I am, Sir, yours faithfully,

ERNEST THOMSON, M.D.

33, Snowdon-place, Stirling, March 9th, 1925.

TWINS IN HEALTH AND DISEASE.

To the Editor of THE LANCET.

SIR,—Many readers of Prof. G. R. Murray's fascinating address upon this subject in THE LANCET of March 14th will doubtless recall examples from their experience to illustrate features of similarity often displayed by uniovular twins from the physical and the mental side. It is not particularly easy to advance examples of athletic equality—Prof. Murray gives as a solitary instance the Allen brothers in lawn tennis—for which reason I may be permitted to draw attention to the case of the twin brothers N. G. and C. M. Chavasse. Their athletic equality was really remarkable. They were sprinters of outstanding ability, and in 1907 they both represented Oxford against Cambridge in the hundred yards and quarter-mile races. I was assured by one of the brothers that they were quite undecided, in that season at any rate, that any difference existed between them and they had resolved to fight it out at Queen's Club. N. G. was successful in the shorter race, and by a happy chance victory went to C. M. in the quarter-mile. He won from his brother by a small margin, and I shall never forget the pretty spectacle of the twins racing each other round the last bend far ahead of their Light Blue rivals.

One recalls with reverence that N. G., who subsequently became a member of our profession, gave his life for his country in circumstances of such heroism that he was posthumously awarded a bar to the Victoria Cross which, together with the Military Cross, he had already gained and also the special Gold Medal of the British Medical Association. The military achievements of C. M., as a Chaplain to the Forces, supplied further evidence of similarity in another respect.—I am, Sir, yours faithfully,

Brook-street, W., March 14th. ADOLPHE ABRAHAMS.

HEXYL RESORCINOL.

To the Editor of THE LANCET.

SIR,—In view of the recent publicity given to the new synthetic compound hexyl resorcinol, we think it advisable to point out that this preparation is the subject of British patent applications by a foreign firm, and for this reason we have not manufactured it to meet the demands for supplies we have received from members of the medical profession.

We are, Sir, yours faithfully,

BURROUGHS WELLCOME & Co.

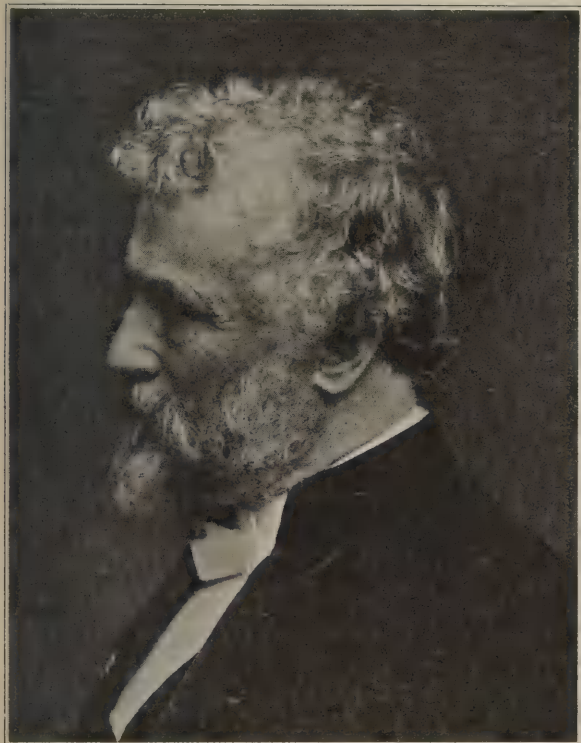
Snow Hill Buildings, London, E.C.,
March 13th, 1925.

Obituary.

JOHN CLELAND, M.D. EDIN., D.Sc. Q.U.I.,
LL.D. ST. AND., GLASG., AND EDIN., F.R.S.,

EMERITUS PROFESSOR OF ANATOMY, UNIVERSITY OF GLASGOW.

By the death of Prof. John Cleland, which took place at Chatham, where he was living in retirement, there has been removed from our midst a most prominent figure, a great teacher and worker in the field of science, and a philosopher. He will be deeply mourned by many generations of students, for few could resist the charm of his outstanding personality



JOHN CLELAND, M.D. EDIN.

and his great earnestness. Cleland was born in Perth in June, 1835; his life has therefore extended for practically 90 years, a long period when his great mental activity is taken into account. He was educated in the High School of Edinburgh and passed through his medical course in Edinburgh University, thereafter he studied for a year in Paris, returning to Edinburgh to graduate. His name was placed on the Medical Register in 1858. In Edinburgh he joined the staff of the University in the department of anatomy under the late Prof. Goodsir, whose original work greatly inspired the young demonstrator and whose memory he cherished throughout his life. A few years later he migrated to Glasgow, where he became senior demonstrator under the late Dr. Allen Thomson, at that time professor of anatomy in the University. In 1863 Cleland was transferred to the Chair of Anatomy in the then Queen's College, Galway, where he laboured incessantly for 14 years. His work must have been tremendous, for it embraced both anatomy and physiology and the surgical care of a large hospital. In addition he undertook the work, or a large part of it, of editing the seventh edition of "Quain's Anatomy," being one of three conjoined in the task, the others being William Sharpey and Allen Thomson. He also wrote a textbook of physiology, long a supreme favourite with

students all over the country, and he carried out a large number of researches, the results of which are published in numerous papers.

Cleland returned to Glasgow in 1877 as successor to Allen Thomson in the Regius Chair of Anatomy, in which he continued his active labours until his resignation in 1909, a period of 32 years. Of his life in Glasgow it is first to be said that he was loved and admired by his students. Physically he was a commanding personality, standing over 6 feet high and broad in proportion, and with a head so large and balanced with the rest as to give to the whole figure a striking appearance of nobility. He was intensely quick and sensitive, but so gentle and sweet in his demeanour that oftentimes a chastisement, called for and begun, ended in pardon and perhaps a blessing. He was a great and clear-thinking teacher. But perhaps the greatest service which he rendered to his students was the example of courage which he constantly set them in maintaining and defending his opinions on matters falling within his own sphere of work, against opposition, however fashionable its origin might be. His devotion and sacrifice to his mother, who for many years and until an extreme old age remained as head of his house, a great dame in Glasgow society, and for whose sake he postponed marriage until 1888, two or three years after her death, were the subject of admiration by all.

In the fields of biological science Cleland was a great worker and thinker. He was an ardent evolutionist, greatly admiring the work of Darwin but perhaps with a leaning to the theories of Lamarck. He has put forward his views in a series of papers entitled "Evolution, Expression, and Sensation," published together in one volume in 1881, and in 1887 in a volume of poetry entitled "Scala Naturæ and Other Poems" dealt with the same or similar topics. The philosophy of Darwin, eagerly assimilated by most of the scientific world, led many of Darwin's supporters into militant courses and not infrequently into materialistic conceptions, the latter more particularly in Germany. Cleland maintained a spiritual conception of life and nature, and for long was almost the only voice raised in this country against the irreligious tendencies of the age. But in the many controversies which ensued he fearlessly and brilliantly held his own. The whirligig of the times is bringing with it the justification of the courage of the great Glasgow philosopher and the proofs of the wisdom of his views. When Cleland passed into retirement his health was broken by many years of strenuous labour, and for 16 years he occupied practically a bed of sickness.

He is survived by a son, who during these final years, long drawn out, was his constant companion.

THE LATE DR. C. B. KER.

Dr. Alexander Joe writes as follows: "My colleagues and I at Colinton have read with great pleasure the obituary notice in THE LANCET with the appreciation by Dr. Andrew Balfour, who has told what manner of man our chief was when he knew him first 25 years ago. I think that, knowing Claude B. Ker after that lapse of time, there's not a man amongst us who would have expressed himself differently if he had been the possessor of Dr. Balfour's able pen. It is hard for us to realise that we shall see our beloved chief no more. His spirit so permeates the hospital that it seems as if he were away simply on one of his infrequent absences, and any minute we might expect to hear his well-known footfall along the covered corridors. Everyone has felt his loss as of a dear relative, for it is no exaggeration to say that he was loved and looked up to by everyone in the hospital. To those who have lived with him and worked with him the blow is a bitter one, and it is only now that we are beginning to realise how much of our work was of the nature of a personal service to our chief. He gave us a brilliant lead in both the amount and quality of our work, dealt with

us gently in the rough places, and was full of consideration for others, even in the most harassing circumstances. Old residents will remember him particularly at supper-time, when he would come in at the end of the day and talk about anything under the sun, take us into his confidence about men, matters, and books, and all the time reveal the sunny places in his extraordinarily well-stored mind. It is on occasions like these that we miss him most, and realise that his loss as a friend and as a guide to the manly exercise of our talents has made a gap that will never rightly be filled."

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—

At an ordinary meeting of the Council of the College on March 12th Sir John Bland-Sutton, President, in the chair, Mr. Arthur Percy Dodds-Parker, surgeon to Radcliffe Infirmary, Oxford, was admitted a member of the Court of Examiners.—The honorary gold medal of the College was presented to Mr. Richard Higgins Burne, together with a document declaratory of its award to him for his valuable services to the College as curator of the physiological department of the museum and his important contributions to biological science.—The John Hunter medal in bronze, together with the triennial prize for 1922-24, was presented to Mr. Wilfrid Edward Le Gros Clark for his researches in anatomy.—Mr. James Sherren was re-elected a representative of the College on the Senate of the University of London, and Dr. W. S. A. Griffith was re-elected a representative of the College on the Central Midwives Board.—The thanks of the Council were given to Mr. G. Buckston Browne, M.R.C.S., for presenting to the College an oil painting described as a portrait of John Hunter by Gainsborough, and to the Wellcome Historical Medical Museum for the presentation of some photographic reproductions of illustrations from the Life of John Hunter by Jesse Foote, surgeon, London, 1794.—A vote of condolence on the death of Dr. J. A. Ormerod was unanimously passed.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—

The annual meeting of the President and Council was held on March 17th, the Prince of Wales presiding. The accounts and report for the year 1924 were received and the annual report adopted.

NAVAL MEDICAL COMPASSIONATE FUND.—

A meeting of the subscribers of this fund will be held at 11.30 A.M. on April 17th at the Medical Department of the Navy, 68, Victoria-street, S.W. 1, to elect six directors of the fund.

ROYAL UNITED SERVICE INSTITUTION.—

A lecture entitled a New Principle in Health and Education will be delivered by Mr. Arthur Lovell on March 26th at 5.30 P.M., when Dr. Jane Hawthorne will also read a paper on the Results of Experiments with the New Principle at an Infant Welfare Centre in London. Lieut.-General Sir Aylmer Haldane will preside.

BRITISH MEDICAL ASSOCIATION: Scholarships and Grants in Aid of Scientific Research.—The Council of the British Medical Association is prepared to receive applications for research scholarships as follows: An Ernest Hart Memorial Scholarship, of the value of £200 per annum, for the study of some subject in the department of State medicine. Three Research Scholarships, each of the value of £150 per annum, for research into some subject relating to the causation, prevention, or treatment of disease. Each scholarship is tenable for one year, commencing on Oct. 1st, 1925. A scholar may be reappointed for not more than two additional terms. A scholar may hold a junior appointment at a university, medical school, or hospital provided the duties of such appointment do not interfere with his work as a scholar.

The Council is also prepared to receive applications for grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

The conditions of the award of scholarships and grants are stated in the regulations, a copy of which, with the prescribed form, will be supplied on application to the Medical Secretary of the Association, 429, Strand, London, W.C. 2. Applications for the year 1925-26 must be made not later than Saturday, June 6th, 1925. Applicants for research grants must furnish the names of three referees who are competent to speak as to their capacity.

THE North-Western Tuberculosis Society will hold a meeting at the Skin Hospital, Quay-street, Manchester, on Thursday, March 26th, at 3.30 P.M., when a demonstration, arranged by Dr. G. H. Lancashire, of tuberculous skin cases and methods of treatment, including light treatment, will be given.

HUNTERIAN SOCIETY.—The third dinner meeting of the Hunterian Society will be held at Simpson's Restaurant, 2 and 3, Bird-in-Hand Court, 77, Poultry, Cheapside, on Monday, March 30th, at 7.30 P.M. Price of dinner, 3s. 6d. (excluding wines). Intention to be present, with or without guests, should be signified to Mr. A. E. Mortimer Woolf or Mr. A. Westerman. After dinner there will be a discussion on the Use and Abuse of Drugs, opened by Prof. W. E. Dixon and Dr. H. H. Dale.

ROYAL MICROSCOPICAL SOCIETY.—A meeting of the section of this society which has been formed to deal with the industrial applications of the microscope will be held at 20, Hanover-square, London, W., on March 25th at 7.30 P.M. Sir David Prain, F.R.S., will preside. Dr. James A. Murray, F.R.S., will give the second of a series of three lecture demonstrations on the Making of Microscopical Preparations. Prof. Percy Groom, F.R.S., will read a communication on the Microscopical Investigation of Fungal Attacks on Wood, and Mr. A. P. H. Trevelli and Mr. R. P. Loveland will speak on the Application of Microscopy to the Photographic Industry.

MAUDSLEY HOSPITAL.—The second part of the eighth course of lectures and practical instruction, instituted by the London County Council for a diploma of Psychological Medicine, will begin on April 1st. The course consists of series of lectures and clinical demonstrations on various aspects of mental diseases, as follows: Eight lectures on the Psychoneuroses, by Dr. Bernard Hart; eight lectures on Morbid Psychology and six demonstrations in Clinical Psychiatry, by Dr. Edward Mapother; six lectures on the Pathology of Mental Diseases, including Brain Syphilis, its Symptomatology and Treatment, by Sir Frederick Mott; eight lectures on the Practical Aspect of Mental Deficiency, by Dr. F. C. Shrubbsall; 12 clinical demonstrations in Neurology, by Sir Frederick Mott and Dr. F. L. Golla; six lectures on Crime and Insanity, by Dr. W. C. Sullivan; and lectures on the Legal Relationships of Insanity and Treatment, by Dr. C. Hubert Bond. The fees for the whole course are ten guineas, and for one single series of lectures two guineas. Further particulars as to the lectures may be obtained from the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, London, S.E. 5. In addition to the special lectures and demonstrations of the above course, there is opportunity for clinical experience and instruction available at the hospital. In particular there are a limited number of appointments available as clinical assistants; service in this capacity (either whole time or part time) is recognised by the various examining bodies as constituting the clinical experience required by the regulations for the diploma.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—A meeting was held at the Elizabeth Garrett Anderson Hospital on March 10th, Miss M. Chadburn in the chair, when Dr. Dorothy Hare read a paper on the Value of the Electrocardiograph to the Physician and Surgeon. She said that she proposed to discuss the general principles of the subject and not to describe the technical details of the apparatus. The one she worked at the Royal Free Hospital was similar to the original Waller instrument, invented in 1887, with the exception that the capillary electrometer was now replaced by the Einthoven string galvanometer. While no mechanical means of investigation should ever replace careful clinical examination, there did undoubtedly exist cases with few physical signs, in which the additional information supplied by the electrocardiograph was a weighty factor in the diagnosis. She spoke of the case of obtaining a reading without discomfort to the patient, the equipment at the hospital making it possible to carry out the whole process with the patient in bed if necessary. She then showed a series of interesting diagrams and records of clinical cases, selected in the main to bring out the special points which this method of investigation will elucidate. Dr. Hare pointed out that the normal tracing was by no means simple, and that the limits of variability of the normal had not yet been fully established. Secondly, cases illustrative of the value of the tracing in the determination of the condition of the myocardium were described. It was here that the electrocardiologist could be of help to the surgeon and obstetrician, as a definite opinion as to the patient's fitness for operation could be given from a study of the muscle element in the curve. Thirdly, a series of cases showing lesions of the conducting mechanism were then described. A short discussion followed, in which Dr. Dalby, Dr. Dobbie, Miss Alice Bloomfield, Dr. Lepper, Mrs. Flemming, and Miss Chadburn took part.

UNIVERSITY OF LIVERPOOL.—The University Council have invited Dr. J. E. W. MacFall, lecturer in toxicology, to accept the Chair of Forensic Medicine and Toxicology.

ROYAL INSTITUTION.—On Tuesday next, March 24th, at 5.15 P.M., Prof. A. S. Eddington will begin a course of two lectures at the Royal Institution on the Internal Constitution of the Stars; on Thursday, March 26th, at the same hour, Mr. T. Thorne Baker will deliver the first of two lectures on the Chemical and Physical Effects of Light, (1) Reproduction of Light Images by Photography, (2) Transmission of Light Images by Electricity; and on Saturday, March 28th, at 3 P.M., Prof. J. H. Ashworth will commence a course of two lectures on the Nervous System and Some Reactions. The Friday evening discourse on March 27th will be delivered by Sir Ernest Rutherford on Studies of Atomic Nuclei, and on April 3rd by Sir Daniel Hall on the Productivity of English Land.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—The next ordinary meeting of this Society will be held at 122, Harley-street, at 3 P.M., on Monday, March 23rd, when a paper will be given by Dr. R. E. Wodehouse, secretary of the National Tuberculosis Association of Canada, on tuberculosis work in Canada, and another by Dr. Noel D. Bardswell on the results of an experiment on settling tuberculous men on the land. A discussion will also take place, initiated by Dr. Andrew J. Shinnie (Westminster) and Dr. Esther Carling (Peppard), on the weak points in the present scheme of treating tuberculosis at the public expense. It is hoped that a general practitioner will express the point of view of those in general practice.

THE MEDICAL OFFICER TO THE NUNEATON RURAL DISTRICT.—At a meeting of Nuneaton Rural District Council on March 11th a communication was read from the Ministry of Health pointing out that the local practitioner, whom the District Council wished to appoint as medical officer, did not hold either of the qualifications prescribed by Article 5 of the Sanitary Officers Order, 1922, whereas two of the candidates were specially qualified according to that Order. In the Minister's opinion any disadvantage which might result from residence outside the council's district would be outweighed by the advantage of obtaining the services of an officer with special experience and qualification in public health. On the information at present before him the Minister had decided that he would not be justified in exercising the power of dispensation reserved to him by Article 21 of the Order in respect of the appointment.

ROYAL MEDICAL BENEVOLENT FUND.—The annual meeting of this Fund was held at the Rooms of the Medical Society of London on March 17th, under the chairmanship of the President, Sir Thomas Barlow, when the report and financial statement for the year 1924 were submitted and approved. The report recorded an increase of £1000 in new subscriptions, which was balanced, however, by a similar sum lost, principally through the death of subscribers. The grant income showed an increase of £30 only, and the total income an increase of £130. The Committee of Management point out that the applications for help became more numerous each year, while the increase in the cost of living makes it necessary to give larger grants than formerly, and add: "The amount of distress and starvation of which many of the older applicants complain is so distressing that if it could only be better known to the profession there would at once be a large wave of benevolence which would pour money into the funds of the society for relief." During the year 343 persons have been relieved by grants and 147 by annuities, while the demands on the Fund steadily increase year by year quite out of proportion to the income. The income derived from subscriptions and donations amounted to £4846, and from invested property to £4343. The total income available for distribution was £9573, a decrease of £354 on the preceding year. The amount expended in grants was £5001, and in annuities £3476, making a total distribution of £8468, or an increase of £780. It was announced that the War Emergency Fund, part of which has been used to educate the children of medical men who had suffered in their incomes owing to the war, would come to an end next year. A special tribute was paid to the Ladies' Guild for its invaluable help, and it was mentioned that the British Medical Association had collected subscriptions of over £1100, while the medical and lay press had helped the Fund considerably. The deaths of Sir Clifford Allbutt, Sir Anderson Critchett, Sir Frederick Needham, Dr. G. E. Haslip, and Mr. J. H. Morgan meant the loss of valuable supporters of the Fund, the two last named being members of the Committee of Management. Sir Thomas Barlow was re-elected as President, Sir Charters J. Symonds as hon. treasurer, and Dr. G. Newton Pitt as hon. secretary.

RACIAL RESEARCH IN SWEDEN.—A lecture with illustrations will be given, entitled "Races and Racial Research in Sweden," on Monday next, March 23rd, at 8.30 P.M., by Dr. W. Krauss, in the rooms of the Royal Anthropological Institute, 52, Upper Bedford-place, London, W.C. The chair will be taken by Dr. F. C. Shrubbsall, and the lecture will be accompanied with numerous illustrations. Dr. Krauss is attached to the Swedish State Institute for Race Biology.

NEW SUSSEX HOSPITAL FOR WOMEN AND CHILDREN. On the occasion of the annual meeting of the governors of this institution at Brighton, a hospital entirely officered by women doctors, Dr. Mary Scharlieb, C.B.E., opened the new X ray department, which had been installed thanks to the generosity of Mr. C. H. Corbett and Mr. Herbert E. Corbett. The present premises in Windlesham-road were only opened in August, 1921, but already there is need for extension from 30 beds to 50, and a preliminary appeal is being issued for £20,000 to enable another wing to be built. The year's work at the institution marked a great increase in patients, particularly those in the out-patient department. The balance-sheet was in a satisfactory position.

PEOPLE'S LEAGUE OF HEALTH.—The last of a series of nine lectures on What We Should Eat and Why, which are being given under the auspices of the League, will be delivered by Prof. W. E. Dixon on Wednesday, March 25th, at 6 P.M., at 11, Chandos-street, Cavendish-square, London, W.1. The subject of Prof. Dixon's lecture is Food Preservation and Adulteration.—The ninth lecture of the Sims Woodhead series of constructive educational health lectures will be delivered by Sir Frederick Mott on Brain and Nervous System, at 6 P.M., on Monday, March 23rd, at the headquarters of the National Union of Teachers, Hamilton House, Mabledon-place, W.C.1. The tenth, and final, lecture will be given by Dr. Tredgold on Development and Function of Mind, on Monday, March 30th, at the same hour and place.

MEDICAL SOCIETY OF LONDON: ANNIVERSARY DINNER.—The 152nd anniversary dinner of this Society was held in the Grand Hotel on March 11th, the President, Dr. Eustace M. Callender, in the chair. The toast of "The Medical Society of London" was given by Sir StClair Thomson in a happy speech illuminated with many quotations from Shakespeare and from the writings of the founder of the Society—Lettsom. Referring to the President, he said that Dr. Callender was the first general practitioner to hold that office since Lettsom himself occupied the chair. Dr. Callender, in reply, referred to Lettsom's opinion that "nothing had contributed more to the advancement of science than 'literary' societies." He spoke of the danger of specialists interpreting signs and symptoms in terms of their own specialty, and, in illustration, related a joke which appeared in the French comic press about 1880, when under the influence of Koch attention was being directed less to the patient than to his disease, where two "specialists" were depicted assuring a widow that her husband had died cured. The toast of "The Forces" was given by Sir Humphry Rolleston, and was responded to by Surgeon Vice-Admiral Joseph Chambers, Director-General of the Navy. "The Visitors," coupled with the names of Lord Riddell and Mr. Basil Hall, were proposed in amusing vein by Dr. Herbert Spencer. Sir Charters Symonds gave "The President," and Dr. Callender, in the course of his reply, paid a tribute to the work of the two secretaries of the Society, Prof. F. Langmead and Dr. J. E. H. Roberts.

TUBERCULOSIS SOCIETY.—An ordinary meeting of this society will be held at 1, Upper Montague-street, Russell-square, to-day (Friday) at 8 P.M. Dr. W. H. Dickinson, tuberculosis officer, Newcastle-on-Tyne, will give a paper, illustrated by lantern slides, on the League of Nations Post-graduate Course for Tuberculosis Workers.—The provincial meeting of the society will be held in Cambridge on April 2nd, 3rd, and 4th, in the pathological lecture theatre of the University. The following papers will be read:—April 2nd: Prof. W. E. Dixon, Treatment of Disease with Heavy Metals and Bactericidal Agents; and Dr. J. E. A. Lynham, X Rays in the Diagnosis of Pulmonary Tuberculosis. April 3rd: Dr. R. C. Matson, National Tuberculosis Association (America), (1) End-results and Limitations of Artificial Pneumothorax, (2) the Role of Thoracoscopy, Thoracoplasty, and other Surgical Procedures; Mr. Henry Platt (Manchester), Forms of Arthritis simulating Tuberculosis; Sir Henry Gauvain, the Present Position of Light Treatment in Surgical Tuberculosis; Dr. Louis Cobbett, Racial Susceptibility and Resistance to Tuberculosis. On April 4th Dr. Cobbett and Dr. Stanley Griffith will give a demonstration of pathological specimens, and, by the invitation of Dr. Jane Walker, a visit to East Anglian sanatoria will be made. Information as to lodging accommodation and cheap railway fares may be obtained from F. J. C. Blackmore, hon. secretary, at 138, Herbert-road, Plumstead, London, S.E. 18.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, MARCH 10TH.

Mental Hospitals.

Mr. TAYLOR moved "that in the opinion of this House a reform of the conditions existing in mental hospitals is of urgent importance." He said that there was no need to wait for the report of the Royal Commission before giving effect to the recommendations of the Departmental Committee which reported last July. When they considered the physical and mental strain under which the magnificent body of men and women who formed the staffs of mental hospitals did the dirty work of society, a work which would be repulsive were it not for their gift of human charity, kindness, and love, when they considered that these people might be subjected to physical violence and the indescribable filth among which they had to pass their daily lives, he thought they were entitled to expect from the rest of society better treatment than they were getting to-day. The average wage of a fully qualified and trained male nurse in charge of a ward was less than the minimum wage of a police probationer. He thought that a 48-hour week was the right thing for mental hospital staffs, but the Committee which examined this specific problem 12 months ago reported in favour of 56 hours, giving a day and a half compulsory holiday, and he suggested to the Government that the Board of Control could by judicious pressure bring up the worst asylums to the level at any rate of the recommendations of that Committee. A fortnight ago, he said, he went through an asylum and discovered about 30 boys and girls who ought not to have been there at all. According to the medical superintendent of that institution, they were capable of being trained and educated in some degree, and they ought to have had an entirely different environment. As a matter of fact these children were in the wards with adult patients, with idiots, and with lunatics of every degree of suffering. The medical superintendent was a most humane and efficient administrator, but the difficulty was that there was no alternative accommodation. He had made representations to the local authorities, but they were up against the necessity for embarking on large capital expenditure. He hoped the Government would see their way to assist local authorities in this matter, because even the 60 per cent. grant which under the Mental Deficiency Act they could make towards capital expenditure of this kind was not sufficient in view of the financial position of many of the local authorities.

Mr. R. RICHARDSON, in seconding the motion, advocated placing mental cases under the charge of the health committees of the local authorities. He also wished to call attention to the insufficiency of the medical staff. In one hospital he knew very well there were only four doctors to attend to 400 patients. If there was a larger medical staff he believed that instead of 19 or 20 per cent. of recoveries that could be easily increased to 40 or 50 per cent. in the near future. As regarded nurses nearly every hospital with which he was acquainted was under staffed.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said the Royal Commission, which was now sitting, was empowered to examine many of the points raised by Mr. Richardson. He hoped, therefore, that the hon. Member would not think that he was wanting in sympathy when he said that it would be better to await the judgment of that Commission before indicating any views which he held on the matter. He anticipated that the report of the Commission would be forthcoming next year. As soon as it was received it would obtain the immediate attention of the Ministry of Health. With regard to the question of the conditions of mental hospital staffs, he agreed that the work of mental nurses did not receive the public commendation that it deserved. These people ought to command every sympathy from the House and from the local authorities. So far as the Ministry of Health was concerned, they desired in every possible way to see that they received every sympathy and carried out their duties under the most favourable conditions. The Board of Control was most anxious that, at any rate, many of the recommendations of the Committee which had been referred to should be adopted by the local authorities. The Board had done and would do all in their power to improve the conditions of people who had such difficult tasks to carry out in their everyday life. But the difficulty was that the Board had no powers to enforce on local authorities better terms and conditions with regard to mental nursing. They would, however, continue, so far as they could, to bring the Committee's recommendations to the notice of local authorities.

Replying to a question by Mr. TAYLOR, Sir KINGSLEY WOOD said he would consider whether he could confer with

the local authorities in the worst areas with a view to finding some method of meeting the most pressing needs. The motion was by leave withdrawn.

WEDNESDAY, MARCH 11TH.

Blind Persons in England and Wales.

Mr. GROVES asked the Minister of Health the number of persons affected by the application of the Blind Persons Act, 1920; the number at present employed in the various workshops; the average wages paid; and the number of blind persons in receipt of the old age pension.—Mr. NEVILLE CHAMBERLAIN replied: The total number of known blind persons in England and Wales on June 30th, 1923, was 36,518. The number employed specifically in workshops is approximately 2090. The average wage—that is, the wage earned at the trade-union or other standard piece-work rates, is approximately 20s. a week, but, in addition to the wage actually so earned, augmentation is in all cases paid to blind workers. The number of blind persons between 50 and 70 years of age who were in receipt of pensions under Section 1 of the Blind Persons Act, 1920, was 11,525 on Dec. 31st last.

Foot-and-Mouth Disease Research.

Mr. STEPHEN MITCHELL asked the Minister of Agriculture the expenditure in connexion with the Foot-and-Mouth Disease Scientific Committee since March of last year; and what the available funds for this purpose amounted to.—Mr. WOOD replied: A grant of £10,000 from the Development Fund was sanctioned by the Treasury for the work of the Foot-and-Mouth Disease Scientific Committee during the present financial year, and of this sum £5500 was expended up to Feb. 28th. A grant of £15,000 has been approved to meet the expenses of the Committee in the coming financial year; this is the sum estimated by the Committee to be required.

Danger of Patent Medicines.

Mr. GROVES asked the Minister of Health whether he had considered the conditions under which patent medicines were manufactured and sold in this country as compared with other countries; whether he was aware that ill-informed persons were attracted by advertisements and thereby avoided proper medical attention; and whether he would consider what steps he could take to ensure public health and safety in this respect.—Sir KINGSLEY WOOD replied: The question of some statutory regulation of the conditions in which patent medicines are advertised and sold is under consideration, but unless a substantial measure of agreement can be secured, my right hon. friend does not anticipate that it will be possible to introduce legislation during the present session.

Health of Unemployed Men.

Mr. GROVES asked the Minister of Health if he had any information in regard to the health of the unemployed men and women of the country who had been out of employment for two years and upwards; and whether, in view of the fact that such persons might be assumed to be quite outside the National Health Insurance benefits, he had considered the issue of instructions to the various boards of guardians to arrange special medical attention to persons so affected.—Sir KINGSLEY WOOD replied: I think the hon. Member has overlooked the effect of the Prolongation of Insurance Act, 1921, which is still in force. In view of this Act it has not been thought necessary to make any special inquiries as to the health of unemployed persons, and my right hon. friend is not aware that there is any need for the issue of such instructions as are suggested in the last part of the question.

Condemned Houses in Occupation.

Mr. HORE-BELISHA asked the Minister of Health whether, in view of the necessity of obtaining an accurate estimate of the number of houses required, he could see his way to obtain statistics of the number of condemned houses which were still inhabited and of the number of persons occupying these houses; including children, particularly, in view of the fact that without these statistics no accurate estimate of the housing shortage could be made.—Sir KINGSLEY WOOD replied: Information is already furnished to my right hon. friend in the annual reports of medical officers of health as to the number of houses found, after inspection, to be unfit for human habitation. According to the last reports the number of such houses reported during the year 1923 was 14,367. My right hon. friend does not consider that the value of the further information asked for in the hon. Member's question would be commensurate with the labour and cost involved in obtaining it.

Employment of Pensions Medical Officers.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Pensions, with reference to his promise that medical officers discharged from the medical staff employed by the Ministry would be given sessional work on medical boards, whether

he would give definite instructions to heads of the various areas that this practice must be continued.—Viscount CURZON replied: My hon. and gallant friend's suggestion is in accordance with the existing practice of the Ministry and instructions are being issued accordingly.

THURSDAY, MARCH 12TH.

Closing of Convalescent Centres.

Colonel DAY asked the Minister of Pensions what convalescent treatment and training centres had been closed in the past 12 months and where situated; whether it was proposed to close the remaining treatment and training centres; and, if so, on what dates.—Viscount CURZON replied: The centres at Barry and Blackpool were closed during 1924. The centre at Epsom is being closed this month. The remaining centre at Birmingham is still required and no date can at present be assigned for its closing.

Neurasthenics at Saltash.

Colonel DAY asked the Minister of Pensions the total cost per head, including establishment, medical attendance, and food, of the patients in the institution for neurasthenics at Saltash, Cornwall; and whether, if the cost be higher than would be the case if the men were given 100 per cent. pensions, he would, seeing that most of the men had been under treatment and away from their homes the greater part of the time since their discharge, consider the desirability of awarding life pensions and permit the men to be restored to their families.—Viscount CURZON replied: The total cost of the treatment given in the institution referred to is 34s. a week per head, exclusive of the personal allowances payable to the men and their families. If such allowances are included in the cost, the amount would, on an average, be in excess, and necessarily so, of the average amount that would be drawn by a pensioner on a pension for total disablement. The patients in this institution are admitted for the purpose of undergoing a specific course of treatment, and it would, therefore, not be in the interests of many of the cases to adopt the course suggested by the hon. and gallant Member, even if it were otherwise practicable. It is not, however, the intention of the Ministry that cases should remain indefinitely or unnecessarily in this or any other institution, and where they can suitably be dealt with by discharge to their homes with an appropriate rate of pension, this course is adopted.

Bonus for Ex-Service Medical Officers.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Pensions whether he would consider the grant of a bonus to ex-Service medical officers now in the employ of the Ministry and under notice of discharge in cases where these officers had five years' service or more under the Ministry, seeing that those fortunate enough to be retained were to receive a rise of pay of £50 per annum in lieu of a bonus based on the number of years served.—Viscount CURZON replied: It is not customary for temporary civil servants to be paid a bonus on discharge, and my right hon. friend would not feel justified in urging upon the Chancellor of the Exchequer that the temporary medical officers of the Ministry of Pensions should be specially privileged in this respect. The hon. and gallant Member is under a misapprehension in thinking that the increase referred to in the last part of his question is being granted in lieu of any such bonus. It has been decided upon as part of a general scheme for the future remuneration of the medical officers of the Ministry, which has been framed after consultation with their staff association.

Patients in Mental Hospitals.

Lieut.-Commander KENWORTHY asked the Minister of Health how many persons were at present confined in mental hospitals; and how many of these were maintained solely at the public expense.—Mr. NEVILLE CHAMBERLAIN replied: On Jan. 1st, 1925, there were 111,200 persons confined in institutions for the insane in England and Wales; 102,313 were maintained at the public expense, but in many of the rate-aided cases contributions are recovered from the relatives.

Hospital Contributions Held Up.

The Marquess of HARTINGTON asked the Home Secretary whether his attention had been called to the fact that the management of a company in the hands of the receiver was unable to hand over to a hospital money held by it as employees' contributions to a joint hospital fund, and that in some cases money deducted from wages for the purpose of payment to hospitals had been held up nearly two years; and whether, having regard to the fact that such money could not under any circumstances be regarded as part of the assets of a company, he could arrange for it to be paid over to hospitals without unnecessary delay.—Sir P. CUNLIFFE-LISTER (President of the Board of Trade) replied: If my noble friend will give me particulars of any specific case which he has in mind I will have it looked into.

Deaths from Influenza.

Sir ALFRED BUTT asked the Minister of Health the number of deaths caused by influenza or its complications in London during January and February, 1925; whether these deaths had any correlation with age, occupation, or locality; and whether, in view of a probable return of the epidemic and its crippling effect on industry, he would consider any amendment of the National Health Insurance Acts to encourage the withdrawal of early influenza cases from factories, workshops, and offices during the most infectious period.—Mr. NEVILLE CHAMBERLAIN replied: The total number of deaths in London during January and February, 1925, notified as due to influenza, was 480, which is equivalent to 649 per million of the population per annum. I am sending detailed figures to my hon. friend showing the number of deaths in each of the London and metropolitan boroughs, and also the number in age-groups. Information as to occupations could not be given without a re-examination of the entry relating to each individual death. As regards the last part of the question, I think that an amendment of the National Health Insurance Act on the lines suggested would not be practicable. The effect of the Act is already in the direction desired by the hon. Member, inasmuch as it encourages workers to seek prompt medical advice as soon as they begin to feel ill, and by providing cash payments during absence from work owing to illness it alleviates the financial loss through such absence.

Opium Exports from India.

Mr. SCURR asked the Under Secretary of State for India the amount and value of the opium exports of India for the last five years, and how these exports were distributed to various countries.—Earl WINTERTON replied: The following is a statement of the number of chests exported from India to various countries during the years 1919-23. Figures for 1924 are not at present available.

Destination.	1919.	1920.	1921.	1922.	1923.
Singapore ..	4155	3090	3010	1820	2100
Hong-Kong ..	1009	180	120	150	240
Colombo. . .	50	60	70	60	30
Batavia . . .	2000	2900	2300	1800	900
Sydney . . .	1	—	—	—	—
London . . .	1700	100	—	—	—
Kobe	1150	900	150	50	150
Bangkok . .	1700	1700	1700	1650	1600
Saigon	1920	950	1655	1700	2975
Mauritius . .	—	35	—	—	—
Macao	—	531	440	500	240
Yokohama . .	20	—	—	—	—
Sarawak . . .	—	—	—	55	125
British North					
Borneo . . .	226	176	240	60	84
Bushman . .	—	—	85	283	100
Total	13,931	10,622	9770	8128	8544

The total value of the opium exported from India during the above five years is as follows. Particulars of the value of the opium exported to each individual country are not available.

Year.	Total value (Rs.).	Year.	Total value (Rs.).
1919 ..	3,42,16,390	1922 ..	2,96,36,088
1920 ..	3,28,35,830	1923 ..	3,44,12,829
1921 ..	3,16,30,584		

Colonial Revenues from Opium.

Mr. CAMPBELL asked the Secretary of State for the Colonies what proportion in the total revenues, for the last year for which figures were available of the Straits Settlements, Federated Malay States, North Borneo, and Brunei respectively, was derived directly or indirectly from opium.—Mr. AMERY replied: For the year 1923, which is the latest year for which complete figures are available, the revenues derived from opium by the Governments of the Straits Settlements, the Federated Malay States, and Brunei formed 45.4 per cent., 16.9 per cent., and 18.24 per cent. respectively of the total revenues collected by these Governments; as regards North Borneo, the latest year for which I have information is 1921, when the proportion was 12.3 per cent.

Infantile Mortality at Market Drayton.

Sir CHARLES OMAN asked the Minister of Health whether he had received a report from the medical woman inspector as to the high rate of infantile mortality at Market Drayton; whether the report had been published; and what was the rate of infantile mortality in that union for 1924, as compared with that of the neighbouring unions of Wellington and Newport and with that of Shropshire as a whole.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative, and to the second part in the negative. I have, however, communicated to the

county council certain suggestions arising out of the report and am now awaiting their reply. As regards the last part of the question, figures are not available for unions, but the following are the figures for 1924 for the urban districts mentioned in the question and the county as a whole:—

Urban district.	Births.	Deaths (under one year).	Infantile mortality (per 1000 births).
Market Drayton ..	77	7	91
Wellington . . .	135	4	30
Newport . . .	48	2	42
County of Salop ..	2119	127	60

Asylums under Local Authorities.

Major GLYN asked the Minister of Health how many asylums for lunatics were under the administration of local authorities now and for the years 1900 and 1914; what was the total number of inmates now and for the same years; and what was the present-day cost of maintaining these institutions.—Mr. NEVILLE CHAMBERLAIN replied: The figures are as follows:—

Year (1st Jan.).	Number of inmates.	Number of institutions.
1900	74,004	79
1914	105,504	97
1925	105,399	97*

* This figure does not include Ewell Epileptic Colony—loaned to Ministry of Pensions; and Maudsley Hospital, which provided accommodation on Jan 1st, 1925, for 146 uncertified patients.

The cost of maintenance (excluding loan charges) during the year ending March 31st, 1924, was £6,242,284.

FRIDAY, MARCH 13TH.

Summer-Time Bill.

Lieut.-Colonel A. L. WARD moved the second reading of the Summer-Time Bill, a measure providing for the permanent adoption of summer-time to begin on the Sunday following the first Saturday in April and end on the Sunday following the first Saturday in October.

Mr. A. RAWSON seconded.

Sir H. HOPE moved the following amendment: "That this House, while approving the introduction of summer-time, declines to give a second reading to a Bill which, unless it is limited to the months of May, June, July, and August, must inflict grave injury to the industry of agriculture."

Replying to Mr. B. PETO, the Speaker said that the effect of the amendment would undoubtedly be to kill the Bill, and he imagined it was so intended.

Dr. LITTLE said that it was at the request of the medical members of his constituency (London University), and as a medical man himself and a hospital physician in London for 25 years, that he supported the fullest application of this Bill. The opposition to the Bill came largely from agriculturists, who were in the fortunate position of spending all their lives in the fresh air, and who hardly realised how very selfish their action was in preventing some little opportunity of the same kind to the classes who were not in such a position. He urged from the medical point of view that they were on the eve of great extensions of knowledge of the properties of sunlight. His branch of medicine had led to a special study of its effects, and anyone who visited the light department of any of the great London hospitals would see the transformation of human wrecks into reasonably healthy persons as the result of sitting for a half an hour three times a week in front of a feeble imitation of sunlight coming from a carbon arc lamp. The importance of sunlight and the importance of fresh air could not be over-estimated, and both would be immeasurably increased for large numbers of people by this Bill. The study of the pathological effects of fresh air and sunlight showed that they had an enormous influence on nutrition generally. He would like to see people wear less clothes in the sunlight, but as they could not go the whole extent, he hoped they would clothe themselves in such a way as to get as much benefit as possible from the sunlight and fresh air.

Sir W. JOYNSON-HICKS (Home Secretary) said that the Government proposed to leave the second reading of the Bill to a free vote of the House. If the second reading was carried and the measure passed through Standing Committee—where he hoped there would be no organised opposition—the Government would take it up and give the necessary facilities for its further passage. But on the report stage he would arrange for a free vote to be taken in the House as to the dates of the beginning and ending of the summer-time period.

After further debate the amendment was rejected by 289 votes to 63—majority against 226. The Bill was then read a second time.

MONDAY, MARCH 16TH.

Medical Referees and Hospital Cases.

Mr. BENJAMIN SMITH asked the Home Secretary whether a medical referee under the Workmen's Compensation Acts who was also on the staff of a voluntary hospital was not permitted to give a report on a case under his care at that hospital; and, if so, whether, seeing that this might involve injustice to the patient examined, as no other doctor could know as much of the case, he would consider the advisability of withdrawing the instruction or regulation.—Mr. LOCKER-LAMPSON (Under Secretary to the Home Office) replied: There is no specific Home Office instruction or regulation which prevents the doctor in such a case giving the workman or the employer a report on the condition of the workman, but if a referee is employed in any case by or on behalf of either party, he is precluded by the Statute from acting subsequently as referee in that case. It is also generally undesirable that referees should act for either party in compensation cases, especially cases which are the subject of dispute. My right hon. friend will, however, consider the matter further in the light of the hon. Member's representation, and if he has any particular cases in mind, the Home Secretary would be glad to be furnished with the details.

Mentally Defective Children in Scotland.

Mr. STEPHEN MITCHELL asked the Secretary for Scotland what arrangements existed for the education of slightly mentally defective children in the towns and also in the rural districts of Scotland.—Sir J. GILMOUR replied: The provision of schools and classes for mentally defective children in the towns and rural districts of Scotland as at July 31st, 1923, is stated in Table 4 of the latest "Return showing Grant-earning Day Schools and Institutions." Since the date of that return the number of schools and classes has been increased, but the final figures are not yet available.

Milk and Dairies Act, 1915.

Mr. BARNES asked the Minister of Health whether, in view of his decision to allow the Milk and Dairies Act, 1915, to become operative from Sept. 1st next, those provisions of the Act which would be administered by order of the Minister would all be enforced from that date; and, if so, whether he would publish drafts of the Orders at an early date and arrange for consultation with the interests concerned before submitting the draft Orders to Parliament.—Sir KINGSLEY WOOD replied: My right hon. friend is unable at present to say on what date the Orders to be made in pursuance of the Milk and Dairies Act, 1915, will come into operation, but, as the hon. Member is no doubt aware, until the new Orders are made the existing Orders will continue in force. It is certainly the intention of my right hon. friend to consult the interests concerned before any new Orders are laid before Parliament.

Elimination of Bovine Tuberculosis.

Mr. HURD asked the Minister of Agriculture whether, following upon the visit of his scientific advisers to North America, he proposed to adopt in this country such administrative measures for the elimination of bovine tuberculosis as had proved successful in the United States and Canada.—Captain HACKING (Vice-Chamberlain of the Household) replied: My right hon. friend has at present under consideration means for the elimination of bovine tuberculosis, and he is proposing to introduce shortly a measure on the lines of the Tuberculosis Order of 1914, which is a necessary first step in any procedure of the kind.

Hospitals for British Troops in India.

Sir PHILIP RICHARDSON asked the Under Secretary of State for India whether any report had been received from India as to giving effect to the recommendations of the British Station Hospital Committee of 1918; and when he expected to take action to improve the standard of comfort and accommodation in hospitals for British troops in India.—Earl WINTERTON replied: I am sending the hon. Member a detailed statement supplied by the Government of India. Progress is being made as fast as financial conditions permit.

TUESDAY, MARCH 17TH.

Sanatoria Accommodation in Glasgow.

Mr. COUPER asked the Secretary for Scotland whether any complaints had been received in regard to the sanatoria accommodation in Glasgow; how many persons were waiting for admission to sanatoria in Glasgow on March 7th; and what was the longest period any of these applicants had been waiting for admission.—Sir J. GILMOUR replied: The reply to the first part of the question is in the negative. On March 7th the number of cases of pulmonary tuberculosis awaiting admission to institutions was 71, of which 23 were cases recommended for sanatorium treatment. Normally the period of waiting for pulmonary cases recom-

mended for institutional treatment does not exceed from 10 to 14 days. During winter pressure a case may wait for as long as two months, but regard is had in every case to the patient's condition and in the event of urgency admission would be arranged without delay.

Medical Women and the Post Office.

Miss WILKINSON asked the Postmaster-General whether he was aware that the Post Office was the only Government department which paid its women doctors less than its men doctors for similar work; and whether, in view of the fact that the Post Office advertisements for posts at present vacant were being refused by the medical journals in consequence, he would bring his department into line with other departments in this matter.—Sir W. MITCHELL-THOMSON replied: The conditions under which women medical officers are employed in the Post Office are not analogous with those of other departments. The question of equal pay for men and women is one which affects the whole of the Civil Service, and I am not in a position to recommend an exception in respect of this particular class of civil servant.

Mental Deficiency Bill.

Sir LESLIE SCOTT introduced the Mental Deficiency (Amendment) Bill, a measure to amend Section 7 of the Mental Deficiency Act, 1913, for the purpose of enabling a defective to be removed from an institution for the purpose of being placed under guardianship.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 23rd.

MEETING OF THE SOCIETY: at 5.30 P.M.

Special Discussion (continued from Feb. 16th) on

Non-specific Disturbances of Health Due to Vitamin Deficiency.

Speakers:

Dr. William Hunter, Dr. Robert Hutchison, and others.

ODONTOLOGY: at 8 P.M.

Casual Communication:

Mr. G. J. Harbrow: A Dental Cyst in Connexion with a Deciduous Tooth.

Paper:

Mr. A. Livingston: The Permeability of Enamel.

Tuesday, March 24th.

SURGERY
MEDICINE
PATHOLOGY

Special Discussion: at 8 P.M.
The Treatment of Septicæmia.

Openers:

Sir Thomas Horder (Medicine), Mr. R. P. Rowlands (Surgery), and Dr. L. Colebrook (Pathology).

Wednesday, March 25th.

COMPARATIVE MEDICINE: at 5 P.M.

Paper:

Sir Stewart Stockman: A Review of Some Problems of Foot-and-Mouth Disease (with lantern demonstration).

Thursday, March 26th.

EPIDEMIOLOGY AND STATE MEDICINE: at 5.30 P.M.

Paper:

Dr. W. L. Burgess (M.O.H. Dundee): An Outbreak of Food Poisoning.

UROLOGY: at 8.30 P.M.

Clinical and Pathological Evening.

Members wishing to exhibit specimens are requested to notify the Hon. Secretary (Mr. Sydney G. MacDonald, 51, Queen Anne-street, W.) as soon as possible.

Friday, March 27th.

STUDY OF DISEASE IN CHILDREN.

Clinical Meeting at 4.30 P.M. at the National Hospital for the Paralyzed and Epileptic, Queen-square, W.C.

Cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 23rd.—8.30 P.M., Discussion on Oxaluria, to be introduced by Mr. L. Bathe Rawling, followed by Sir William Wilcoxon and others.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.
WEDNESDAY, March 25th.—7.30 P.M., Dr. J. A. Murray: Imbedding and Section-Cutting.

HARVEIAN SOCIETY OF LONDON, Town Hall, Paddington Green, W.

THURSDAY, March 26th.—8.30 P.M., Discussion on Obstruction of the Colon. To be opened by Sir Crisp English, followed by Mr. T. P. Legg, Dr. Arthur Hurst, Mr. Lockhart-Mummery, Mr. Gordon-Taylor, Dr. Montague Smith, and others.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, March 27th.—8.30 P.M., Discussion on Gonococcal and Syphilitic Infections of the Eye. To be opened by Mr. Bishop Harman, followed by Mr. Cyril Hudson and Mr. T. H. Benians.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, March 23rd, to SATURDAY, March 28th.—WEST LECTURE HALL, Royal Society of Medicine. Monday, March 30th, at 5.30 P.M., Mr. Ernest Clarke: Myopia—its Diagnosis and Treatment. Wednesday, April 1st, at 5.30 P.M., Dr. Robert Knox: Demonstration on X Rays in the Diagnosis of Lesions on the Right Upper Quadrant of the Abdomen.—BROMPTON HOSPITAL FOR DISEASES OF THE CHEST. Second week as per syllabus.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Lecture-demonstrations in Diseases of the Eye. Daily from 1.30 P.M.—NORTH-EASTERN FEVER HOSPITAL, St. Ann's-road, Tottenham. Wednesday and Saturday, 11 A.M., Demonstrations and Treatment of the Acute Infectious Diseases, by Dr. Frederic Thomson.—ROYAL NORTHERN HOSPITAL, Holloway-road, N. Intensive Course (first week).—CHELSEA HOSPITAL FOR WOMEN. Special Course as per syllabus. Mostly afternoon work.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, March 23rd.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—11 A.M., Sir Henry Simson: Gynaecological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept. 2 P.M., Mr. Bishop Harman: Eye Dept.

FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 10.30 A.M., Dr. Dowling: Skin Dept. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.

SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturday, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

FRIDAY, March 27th.—4.30 P.M., Dr. W. Jenkins Oliver: Some Common Dermatoses of Children.

Daily, In-patient and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: FEB.—MARCH, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, March 23rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Syphilis of the Nervous System (3): Dr. Adie.

TUESDAY, March 24th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Disseminated Sclerosis: Dr. Birley.

THURSDAY, March 26th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Cerebellar Disease: Dr. Gordon Holmes.

FRIDAY, March 27th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Demonstration of Physical Exercises in Exercise Room: Mr. Elmquist.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, March 26th.—12 noon, Inflammatory Reactions in the Central Nervous System: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, March 23rd.—12 noon, Reflexes: Dr. Hinds Howell.

A COURSE OF CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, is held in the Wards at 10 A.M. on Tuesdays and Fridays by Dr. H. J. Macbride.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.

WEDNESDAY, March 25th.—3.30 P.M., The Oculomotor Nerves.

WEDNESDAY, April 1st and 8th: The Trigeminal Nerve: Mr. Leslie Paton.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M. or at such other times as may be announced. Full particulars on application to

J. G. GREENFIELD, Dean of Medical School.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 20th.—4 P.M., Mr. Nicol Rankin: Nasal Sinus Suppuration.

HOSPITAL FOR SICK CHILDREN, Gt. Ormond-st., W.C.
THURSDAY, March 26th.—4 P.M., Mr. Addison: Cleft Palate.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, March 24th.—4.15 P.M., Dr. C. H. Melland: Drugs of Power.

FRIDAY.—4.15 P.M., Dr. J. C. Bramwell: Electrocardiographic Demonstration. Mr. P. R. Wrigley: Surgical Demonstration.

THE PEOPLE'S LEAGUE OF HEALTH.

Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.

WEDNESDAY, March 25th.—6 P.M., Prof. W. E. Dixon: Food Preservation and Adulteration.

Appointments.

ELLIS, H., M.B., B.S. Lond., D.P.H., has been appointed Assistant Medical Officer of Health for Ealing.

RAE, HARRY J., M.B., Ch.B. Aberd., D.P.H., Chief Medical Officer of Health for Aberdeenshire.

TURNER, ADAM A., M.B., Ch.B. Aberd., D.P.H., Medical Officer of Health for Finchley.

Salford Royal Hospital: McCREA, E. D'ARCY, M.B., B.Ch. Dub., Surgical Registrar; STOUT, A. J., M.B., Ch.B. Edin., House Surgeon; WARBURTON, EDWARD, M.R.C.S., L.R.C.P. Lond., Casualty House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: TIDCOMBE, F. S., M.R.C.S., L.R.C.P. Lond. (Bognor); BARNES, R. G., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Tenterden).

Vacancies.

For further information refer to the advertisement columns.

Belfast, Mater Infirmorum Hospital.—Hon. Asst. Gynaecologist. Belgrave Hospital for Children, Clapham-road, S.W.—H.P., H.S., and Asst. H.P. at rate of £100.

Benenden, Kent, National Sanatorium.—Res. Asst. M.O. £300. Board of Education.—M.O. £600.

Bristol University.—Lecturer in Physiology.

British Guiana.—Asst. M.O.H. £500.

British Hospital for Mental Disorders, 72, Camden-road, N.W.—Hon. P.

Bromley Borough.—M.O.H. £800.

Cardiff City.—Two Asst. M.O.'s. Each £600.

Evelina Hospital for Children, Southwark, S.E.—H.S. at rate of £120. Also Anaesthetist. 25 guineas.

Exeter, Royal Devon and Exeter Hospital.—Asst. H.S. at rate of £150.

Folkestone, Royal Victoria Hospital.—R.M.O. at rate of £150.

Glasgow, Consumption Sanatoria of Scotland, Bridge of Weir.—Res. M.O. £200—£250.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each at rate of £50.

Hull Royal Infirmary.—Asst. H.S. £150.

Hull and Goole Port Sanitary Authority.—Asst. M.O.H. £750.

Leeds City.—Asst. M.O.H. for Maternity and Child Welfare. £600.

Leicester Royal Infirmary.—H.S. at rate of £125.

Liverpool County Borough, Local Education Authority.—Three Jun. Asst. School M.O.'s. £800.

Liverpool, Mill Road Infirmary.—Res. Asst. M.O. £200.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. M.O. £200.

London Homoeopathic Hospital, Great Ormond-street, W.C.—Third Anaesthetist. £50.

London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.

Maidstone, West Kent General Hospital.—H.S. at rate of £220.

Middlesex Hospital Medical School.—University Chair of Biochemistry. £800.

Ministry of Health, Whitehall, S.W.—M.O.'s. £800.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. Appts. Each at rate of £50.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Prince of Wales's General Hospital, Tottenham, N.—H.S., Spec. H.S., H.P. Each at rate of £150. Also Jun. H.S. and Jun. H.P. Each at £110.

Putney Hospital, Lower Common, Putney, S.W.—R.M.O. £150.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—R.M.O. £200. H.S. at rate of £100.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. at rate of £250.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal Chest Hospital, City-road, E.C.—Phys.

St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. Phys.

Shrewsbury, Royal Salop Infirmary.—H.S. £250. L.P. at rate of £160.

Suva, Fiji.—Port. M.O. and Bacteriologist, &c. £750.

Wallasey, Victoria Central Hospital.—Hon. Asst. Ophth. S.

West African Medical Staff.—Medical Officers.

Births, Marriages, and Deaths.

BIRTHS.

LEWIS.—On March 7th, to Dr. and Mrs. R. T. Lewis, 124, Fellows-road, Hampstead, N.W. 3—a daughter.

MACLAUGHLIN.—On March 13th, at Kensington Court, W., the wife of Colonel A. M. MacLaughlin, M.B., C.B.E., R.A.M.C., Res. Offs., of a daughter.

QUINTON.—On March 9th, at 99, Tollington Park, N. 4., the wife of Percival G. Quinton, M.D., of a daughter.

RICHARDSON.—On March 10th, at Leicester-road, Loughborough, the wife of C. G. Richardson, M.D., F.R.C.S., of a son.

RIDOUT.—On March 14th, at St. Elmo, Southsea, the wife of C. A. Scott Ridout, M.S., F.R.C.S., of a son.

SHELDON.—On March 12th, at Albert-road, Southport, the wife of Harold Sheldon, M.D., of a daughter.

MARRIAGES.

FAIRLEY—PLEWS.—On March 11th, at Christ Church, Burbage, Buxton, Keith Douglas Fairley, M.D., M.R.C.P., to Eileen, elder daughter of Mr. and Mrs. Leonard Plevs, of Buxton.

DEATHS.

ALLWORTH.—On March 13th, at Parliament House, Peckham-road, Alfred Allworth, M.D., L.D.S., aged 87.

CASTLE.—On March 11th, Richard Field Castle, M.B., B.Ch. Camb., of Thornhill House, Darfield, Yorks, aged 64 years.

KIRBY.—On March 14th, at his residence, Kilden, Sutton Court-road, Chiswick, after a short illness, William Egmont Kirby, M.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

SUNDERLAND ROYAL INFIRMARY.—This hospital is so crowded, and so many patients are awaiting admission, that the first portion of large extensions is being put in hand. The new block now begun will provide 78 additional beds, which will increase the total number to 318. The Nurses' Pension Fund is in danger of exhaustion. The only remaining investment represents £1050, and the fund is overdrawn.

LEEDS WORKPEOPLE'S HOSPITAL FUND.—At the thirty-eighth annual meeting the Executive Committee of the Leeds Workpeople's Fund presented a record report; the striking feature being that the workshop collections amounted to over £30,000 out of a total income of £40,086—the largest amount ever collected in one year and exceeding by over £3000 the amount collected last year. From the total amount, £20,000 was allocated to the Leeds General Infirmary, £3000 to the Leeds Public Dispensary, £2500 to the Hospital for Women and Children, £1000 to the Maternity Hospital, and to other and smaller hospitals grants in proportion were made. In 1916 the amount granted to the Leeds Infirmary was £5000 and the total grants were £7775.

BRIGHTON AND HOVE PROVIDENT DENTAL HOSPITAL.—The growing recognition by the public of the need for proper dental care was marked by the enormous increase in the number of attendances at this institution during 1924, the report submitted at the annual meeting on March 5th showing an increase of nearly 2000—4802, as against 2807 in 1923. One of the causes of this large increase, it was explained at the meeting, was the greater number of patients under the Sussex Provident Scheme, from which the institution received £117 as against £57 in the previous year. The finances for 1924 showed an excess of income over expenditure amounting to £21 8s. 5d. Colonel Norman C. King, Registrar of the Dental Board of the United Kingdom, presided over the meeting.

MANCHESTER CANCER CAMPAIGN.—Dr. R. Veitch Clark, medical officer of health, has been elected chairman of the Cancer Committee on which, amongst other bodies represented, are representatives of the Health Committee of the city, University of Manchester, Radium Institute, Royal Infirmary, Union Infirmary, St. Mary's Hospital, Ancoats Infirmary, Skin, Northern, and Jewish Hospitals. Arrangements were made for the election of subcommittees comprising men and women specially qualified to deal with the problem. The committee has the approval of the Ministry of Health, who recommend that various questions arising out of a cancer campaign should be periodically reviewed. These questions refer to improved facilities for clinical consultations and pathological examinations, and for cancer treatment (operative, or with X ray and radium apparatus). The adequacy of arrangements at hospitals and institutions serving the area, and for transport of patients, should also be inquired into, and arrangements made for post-graduate demonstrations for the use alike of medical men practising in the area and of the public.

Notes, Comments, and Abstracts.

CHILD LABOUR IN CHINA.

NEWS from China chiefly tells of civil war and opium, and it is not widely known that within the last 20 years Shanghai, the chief port for overseas trade with North China, has become a great industrial centre. Factories with modern machinery have been able to draw their labour from a people of whom millions are always living on the border-line of want, and the Chinese guild system, which was a fairly efficient defence against the worst effects of economic stress among such a population, has failed to adapt itself to the new order. In the absence of any control there has developed a system in which modern machinery exists alongside conditions like those of the early nineteenth century, without the legislative enactments which are an essential part of Western industrial civilisation. Shanghai is an international settlement governed by an elected Council in which the British predominate, every non-Chinese citizen being subject to the jurisdiction of his own consular court, whilst the Chinese are provided for by a mixed court in which a native magistrate sits with a foreign assessor appointed by the consuls. The Council has strictly limited powers of making regulations for the government of the settlement, and under these conditions carries on the government of some 20,000 foreigners and 750,000 Chinese. Perturbed by the state of industrial conditions, the Council appointed a Child Labour Commission, on which they were fortunate to obtain the services of Dame Adelaide Anderson, formerly H.B.M. Principal Lady Inspector of Factories. The report¹ of this Commission has attracted notice in this country and describes conditions which raise again the question how much other peoples are benefited by the adoption of Western ways. In a match factory "young children, certainly not more than five years of age, were to be seen working with almost incredible rapidity." In silk filatures children work, standing, for 12-hour shifts, with not more than an hour off for a meal, and a new form of occupational neurosis is indicated in "a peculiar and rapid up-and-down movement of the body by means of alternately relaxing and then straightening their knees."

Describing conditions during the night shift, the report says: "Rows of baskets containing babies and children, sleeping or awake as the case may be, lie placed between the rapidly moving and noisy machinery. Young children who are supposed to be working, but who have been overcome by fatigue or have taken advantage of the absence of adequate supervision, lie asleep in every corner, some in the open, others hidden in baskets under a covering of raw cotton." Sanitary arrangements are bad and accidents are frequent, whilst the extent of this child labour is shown in a statistical appendix, from which we learn that over 18,000 children under 12 years of age are employed in factories in Shanghai or its immediate neighbourhood. Those factories outside the settlement are of course under Chinese jurisdiction, and there will obviously be trouble if regulations are applied only to those within the limits of municipal authority. The difficulties of the situation are increased by the various nationalities of the owners of the factories—Chinese, Japanese, British, American, French, Italian, and Portuguese. Shanghai people are proud of their city and rightly look upon their international republic as a model from which the Chinese may learn what is best in Western methods of government. The report of this Commission, with its candour in statement and care in considering possible means of action, is an excellent piece of work, and gives assurance that both determination and administrative ability will be applied to the amelioration of the conditions it describes.

SPA TREATMENT IN THE BRITISH ISLES.

IN these columns last year a plea was entered for a comprehensive and national policy in regard to British spas which should, in the opinion of some, supply most of the requirements of British patients. Efforts are being made in many directions to develop on scientific lines the resources for treatment which can be obtained within the borders of our shores. Much good work in this direction has been done by the British Spa Federation, which now includes nine leading spas, all of which comply with a certain standard, while the courses on medical hydrology which are held annually at the London University give facilities for the systematic training of hydrologist practitioners. The third of these courses will take place during the week beginning April 27th and will include a study tour of Buxton.

¹ Reprinted by the Industrial Committee of the National Christian Council, 23, Yuen Ming Yuen Road, Shanghai, China, 1924.

In this connexion we congratulate our contemporary the *Prescriber* on having devoted its March issue to the subject of spa treatment, to which Dr. Fortescue Fox supplies a foreword expressing the conviction, based on "a rather long experience of the spas of many countries," that one especial characteristic belongs to the spas of Great Britain in that they are far more invigorating than continental spas. "Their season," he says, "coincides with the holiday time of our working classes—the manual and intellectual labourers. Indeed, the chief *raison d'être* of the British spas is, or should be, to provide a pleasant retreat and invigorating cure for jaded and failing workers." This number of the *Prescriber* is well illustrated, and the articles include notes on old-time bathing at Bath, on treatment by radio-active springs, on the brine treatment at Droitwich, and on the chemistry of the Buxton and Harrogate waters. There is also a descriptive list of spas in Great Britain, Ireland, and New Zealand.

HEALTH CONDITIONS IN HAMPSTEAD.

DURING a local health campaign in 1923 Dr. Frank E. Scrase, medical officer of health for the borough of Hampstead, read a paper on the Health of Hampstead, Past and Present which has just been published in booklet form following a special resolution of the borough council. A popular and intelligent interest in matters of public health is essential if the campaign against disease is to attain any measure of success, and this publication should certainly help in stimulating such interest. Dr. Charles F. J. Lord, the first medical officer of health for Hampstead, used to complain that he could not make an annual report interesting unless an epidemic occurred, but happily the modern health officer is able to make interesting reading out of a decrease in mortality-rates, as Dr. Scrase has done. After tracing the history of health in Hampstead he goes on to show that the borough can boast a death-rate which is lower than that for England and Wales as a whole, and considerably lower than that for London. The death-rates for certain important diseases, excepting that from cancer, all show a satisfactory decrease within recent years. The infantile mortality-rate for 1922 was the eminently satisfactory figure of 56, but Dr. Scrase insists that this may be lowered still further by attention to the two cardinal principles of breast-feeding and pre-maternity supervision. In the report for the year 1858 Dr. Lord referred to the numerous houses and courts which required thorough eradication: he wrote then "a devastating fire would finally prove a blessing to the parish." Dr. Scrase points out that some of the premises which called for this drastic opinion still exist and still want wiping out. The density of population for the Kilburn Ward is above the average for London, and overcrowding in certain districts is still appallingly prevalent, so that despite the record for health which Hampstead has attained there still remains plenty of work to be done. A child born in Hampstead to-day can expect 12 more years of life than its grandparents: with further progress along enlightened lines the child of two generations hence may quite well be able to boast as much.

HYGROMETRIC TABLES.

THE Meteorological Office has prepared a set of hygrometric tables¹ computed on the basis of Regnault's formula to replace those, prepared by the late James Glaisher, F.R.S., which have been in use hitherto in this country. Tables based on Regnault's formula are already in general use in other countries; this formula, unlike Glaisher's, can be supported by physical reasoning. The new tables are arranged for temperatures in Fahrenheit degrees and vapour pressures in millibars, and they have been computed for a mean atmospheric pressure of 1000 millibars. They are conveniently arranged to give as rapidly as possible the relative humidities, the vapour pressures, and the dew points corresponding with a given range of temperatures of the dry bulb and of "depressions of the wet bulb," the thermometers being exposed in Stevenson screens. The tables are not suitable for use with thermometers exposed indoors—e.g., in factories or storerooms—unless precautions are taken to secure adequate motion of the air over the thermometers by fanning or otherwise. Systematic errors may also be introduced by the use of the tables in climates where the air is hot and dry and calms are of frequent occurrence. In this country, of course, a "calm" rarely prevails inside a Stevenson screen freely exposed; under all atmospheric conditions, even on occasions of strong wind in the open because of the nature of the screen, the velocity of the air past the bulbs in the screen is likely to be of the order of that comprised in the group "light airs." It is for such

¹ Hygrometric Tables for the Computation of Relative Humidity, Vapour Pressure, and Dew Point from Readings of Dry and Wet Bulb Thermometers Exposed in Stevenson Screens. (M.O. 265.) H.M. Stationery Office. 1s. 6d.

conditions as are prevalent in the Stevenson screen in this country that the tables are compiled. It is obviously advantageous to employ tables giving results which agree closely with those prevailing in other countries and are, at the same time, founded on the most accurate reasoning. The tables will be brought into use for the preparation of data for publication from the Meteorological Office as from Jan. 1st, 1925.

BRITISH PRESTIGE ABROAD.

UNDER this title Messrs. Cubitt's Engineering Co., Ltd. (55 and 56, Pall Mall, London S.W.1), announce their intention in a communication to THE LANCET of supplying a certain number of copies of a recent book by Dr. E. Halford Ross, entitled "To Venice and Back in a Two-Seater," at the reduced price of 3s. per copy, postage paid. They hope that other British manufacturers will follow the example of issuing similar propaganda, either by circulating this book or in other ways, the idea being that owners of British cars would thus be encouraged to tour abroad and maintain British prestige. There is something arguable here, but the intention is excellent.

THE PROVISION OF SURGICAL APPLIANCES FOR THE POOR.

THE Surgical Supply Depot at 23, Upper Phillimore-place, Kensington, London, W. 8, is an institution which exists to provide approved surgical appliances at cost price or less to those who require such and whose purses are shallow. The work is not carried on for profit, most of the workers are unpaid, and the depot is supported by voluntary contributions. The depot originated as the Kensington War Hospitals Supply Depot, and during the war it was of great value to hospitals and surgeons. The management are eager to enlarge the scope of their activities and would welcome the co-operation and interest of medical men and nurses all over the country. Anyone desiring to see the depot and how the work is done there will be welcomed, or an illustrated catalogue will be sent free on application. All communications and inquiries should be addressed to the hon. secretaries.

CATALOGUE OF WIRELESS APPARATUS.

WE have received from Messrs. A. J. Stevens and Co., Ltd., Walsall-street, Wolverhampton, a catalogue of wireless receiving sets, valves, condensers, wireless masts, head-phones, and so forth. What appears to be a useful piece of apparatus is the Patent Rejector Circuit, price £2 5s., by which it is claimed the near-by stations, however close, can be cut out and any other station tuned in at will. The price of the receiving sets vary from £17 to 50 guineas and they are made in handsomely finished cabinets. Broadcasting is being more and more used in hospitals and nursing homes as a means of entertaining patients, and some of the apparatus in the catalogue are suitable for hospital as well as for private use.

COLONIAL HEALTH REPORTS.

JAMAICA.

IN the report for 1923, signed by Colonel the Hon. H. Bryan, C.M.G., D.S.O., Colonial Secretary, it is stated that the estimated population of Jamaica at the close of the year was 894,576. 3384 marriages were registered during the year, the rate being 3.8 per 1000 of population. In the same period 34,077 births were registered, of which 17,315 were boys and 16,762 were girls. The birth-rate works out at 38.2 per 1000, as against 37.3 during 1922. 20,278 deaths were registered, of which 10,061 were males and 10,217 females, the death-rate being 22.7 per 1000, as compared with 22.9 in the previous year. 7308, or 36.0 of the total deaths, were those of children under 2 years of age; and of these 5839 were those of children under 1 year of age. The principal causes of deaths (per 1000 of total deaths) amongst the inhabitants of Kingston, the capital, were: Diarrhoea and enteritis, 9.4; atrophy, icterus, and scleroma of the new-born, 11.3; phthisis, 9.5; enteric fever, 6.0; pneumonia, 5.1; heart disease, 6.9; chronic Bright's disease, 3.6; cerebral hæmorrhage, apoplexy, 4.6. The Rockefeller Foundation continued their campaign with a view to the eradication of hookworm in the island. On the withdrawal in 1926 from the colony of the Foundation, the Central Government propose to carry on the campaign for treatment. The parochial boards have recognised the advantages that are derived from sanitation preparatory to treatment for hookworm, and provision of latrine accommodation on approved lines must have the most beneficial results on the health of the colony generally. Arrangements have been made for the appointment of full-time medical officers of health for the parishes of Clarendon and St. Andrew, and a junior sanitary medical officer was appointed during the year under review, who will supervise the sanitary

work in the western part of the island. Alastrim still exists in some of the parishes, and general vaccination continues to be carried out extensively. The campaign against yaws is progressing most satisfactorily. Treatment of venereal disease is receiving attention and a special clinic has been established in Kingston. Notifications of typhoid fever have shown a progressive diminution since 1921. The mean island rainfall for the year 1923 was 57.45 inches, showing a large deficiency when compared with the 50-year average of 76.46 inches. In Kingston the mean temperature for the 12 months was 79.2°, the average for 33 years having been 78.7°. Slight earthquake shocks were reported in January, June, July, August, September, and December, but none during the other months.

UGANDA.

The population of this Protectorate on Dec. 31st, 1923, was estimated to be 3,127,455, composed of 1289 Europeans, 6521 Asiatics, and 3,119,645 native inhabitants. The territories comprised in the Protectorate lie between the Belgian Congo, the Anglo-Egyptian Sudan, Kenya, and Tanganyika. Uganda is flanked on the east by the natural boundaries of Lake Rudolf, the river Turkwel, Mount Elgon (14,200 feet), and the Sio River, running into the north-eastern waters of Lake Victoria, whilst the outstanding features on the western side are the Nile watershed, Lake Albert, the river Semliki, and the Ruwenzori range (16,794 feet), and Lake Edward. The annual report states that the health of the natives, both bodily and mental, is receiving closer attention; immense strides have been made in affording better facilities for medical treatment, and in so far as education is concerned a comprehensive scheme has now been devised supplementing work at present carried out by missionary societies. Vital statistics for Buganda and the neighbouring Bantu districts record an excess of births over deaths, although in Buganda and Bunyoro the number of deaths exceeds the births. The figures for the year 1923 show that satisfactory progress has been made in reducing the proportion of still-births. Wide expansion has taken place in the treatment of native diseases, particularly venereal diseases. With a view to bringing medical treatment within the reach of natives throughout the Protectorate a system of sub-dispensaries in charge of trained native attendants is being established. Those already established, numbering 27, have proved at once successful and popular with the natives. A total of 184,601 cases received medical treatment, as compared with 116,600 cases in 1922. During the year 74 cases of black-water fever occurred, 17 of which were fatal, the corresponding figures for 1922 being 83 and 14 respectively.

The climate of the Protectorate as a whole, though pleasant, cannot be considered healthy for Europeans. European children as a rule thrive in infancy, but considerable risk is attached to bringing them out when they are over 2 or 3 years old, as they are liable to attacks of malaria and the resultant anæmia. The health of adults depends mainly on their mode of life; with care constitutional health should not be impaired, but if physical fitness is maintained the altitude and proximity to the Equator combine to produce nervous strain after prolonged residence. Outdoor manual labour is dangerous for Europeans, and on plantations a manager's or owner's duties are for the most part supervisory. The mean maximum temperature for most districts averages 80° F. and the mean minimum 60°. On the Ruwenzori range there is extreme cold with perpetual snow, and it is also cold on the higher slopes of Mount Elgon. In the Nile valley, near Lake Albert, on the other hand, the mean maximum temperature is 90° and the mean minimum 74°. The favourite localities for European plantations are the Buganda Province (particularly the Mengo and Mubendi districts), the Toro district of the Western Province, and the Bunyoro district of the Northern Province. There are a few estates in Busoga (Eastern Province), but this is not so popular. The rainfall at Entebbe during 1923 amounted to 89.04 inches distributed over 160 days—the highest rainfall recorded in the Protectorate. Two main rainy seasons are anticipated annually. The first, the "long" rains, usually begin in March and may continue through June; the second, or "short" rains, in September and extend through October and occasionally November. Much of the rain falls during the night or early morning. Violent thunderstorms and heavy showers occur frequently in the daytime, but these are only of local incidence.

NOTTINGHAM HOSPITALS. — During the next 18 months Nottingham General Hospital will be greatly extended at a cost of £72,000.—The Nottingham and Midland Eye Infirmary is in the unusual position of having money in hand but a deficiency of patients, and the chairman of the committee at the annual meeting of the governors appealed for an increase in the number.

Goulstonian Lectures

ON THE STUDY OF

GASTRIC FUNCTION IN HEALTH AND DISEASE.

By JOHN A. RYLE, M.D., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN AND LECTURER ON MEDICAL PATHOLOGY,
GUY'S HOSPITAL.

LECTURE II.*

IN the introductory chapter to his Lectures on Diseases of the Stomach, Brinton,¹ discussing symptomatology, writes as follows:—

"In short, the stomach is devoid of all common sensibility. But we are not therefore to imagine this important organ really insensible to stimulation; or to suppose that, because it is not every moment arousing the brain of its master, and demanding his forethought or exertion, it remains unimpressed and inactive. On the contrary, we must rather conclude that it has a special sensibility of its own; not one whit less marvellous (but surely more so) for possessing a certain independence of the cerebro-spinal centre. Closely related to this centre by the feelings of hunger and satiety—nay more, dictating to it (so to speak) those exertions which the proper alternation of these two states imperiously demand from the mass of mankind—it has a sphere of action altogether its own. And the study of digestion has shown us how admirably and silently the stomach fulfils its various and complex tasks; and how, incidentally to these, the unfelt particle of food no sooner touches its mucous surface than it excites the flow of a variety of secretions, both far and near, and provokes movements in the muscular substance of its walls and vessels, as well as in the analogous structures of neighbouring parts. To these acts, which respectively constitute the sensation and motion of the healthy stomach, its morbid states afford an instructive parallel. And just as the kind of sensibility specific to a healthy muscle—the feeling of its strength, its equilibrium, its measurable force—seems to be traceable, by gradual modifications through healthy fatigue to the feverish soreness of over-exertion, and through this to the universal muscular pain and prostration of various grave general ailments, so the indistinct sensation of the healthy stomach affords us the best clue to the acute sensibility of the diseased one; and allows us to trace a scale of similar kind—from satiety to repletion; from repletion to distension and weight in the epigastrium; and from hence to the dull heavy aching of dyspepsia, the gnawing or burning pain of ulcer, and the sharp agony of cancer of the stomach."

The latter portion of this passage was appropriately quoted by Hurst in his Goulstonian lectures on the Sensibility of the Alimentary Canal. I cannot refrain from quoting again the fuller passage, for in writing thus it seems to me that Brinton, with his clear perception and reasoning, anticipates the results of those later scientific inquiries to which I have already referred. He recognises that the muscle of the stomach, rather than its mucosa or its glandular structures, is the element principally responsible, not only for the proper performance of its digestive functions, but also for the appreciation of its states of comfort and discomfort. And at the same time he reminds us of the importance of endeavouring always to trace the gradations between states which can respectively be classified as physiological and pathological. However correct or otherwise it may be to introduce the analogy of skeletal muscle in discussing the functions of the plain muscle of the stomach, there can be little dispute as to the practical utility of that analogy. For just as I have in my first lecture pointed to the association of good appetite and healthy tonus with general well-being and muscular fitness, so, too, in reviewing symptoms we may correlate general hypersthenic and hyposthenic states with gastric hypersthenia and hyposthenia. Further, in the case of more local gastric

disease we may frequently ascribe with reason certain pains and discomforts to fatigue, exhaustion, or over-activity of the muscle-fibre. The natural discomforts of hunger induced by fasting and attributable, as Carlson² has shown, to increased tonic and peristaltic activity may be traced through various morbid discomforts to the unmistakable hunger-pain of visceral disease. If a "sinking sensation" relievable by food is developed with unusual readiness it will commonly be found that the patient has a hypertonic and rapidly emptying organ. This symptom has been described by Hurst³ as occurring in the healthy members of families with a tendency to duodenal ulcer, and in further support of his views on the "ulcer diathesis" he has described families in which several members actually developed proved duodenal ulceration. In my own practice I have encountered similar families. In the early phases of a chronic duodenal ulcer patients may describe sinking sensations before they develop actual hunger-pain, and between the sinking sensation and the hunger-pain is an intermediate type of discomfort sometimes referred to as a sense of local "pressure" in the epigastrium. In a comparable way the pain of angina pectoris is often preceded by a sensation of retrosternal pressure or oppression, and it is of interest that the early discomforts both of angina and duodenal ulcer are commonly mistaken for flatulence by the patient.

If, instead of a sinking sensation before meals a sensation of fullness or repletion or weight after meals is too readily acquired, it will not uncommonly be found that the total capacity of the stomach has been diminished by structural disease, or (more rarely) by extreme hypertonus; that its emptying rate has been hampered by a narrowed outlet; or that its power of adaptability has been reduced by a loss of tone. The decision as to which of these divergent causes is likely to be responsible in an individual case must, of course, depend on an analysis of other elements in the anamnesis or the physical examination. Thus a good appetite in association with a rapidly developed sense of fullness after food suggests a small hypertonic organ. A much impaired appetite with a rapidly developed sense of fullness more probably points to grave structural disease of the stomach wall when the leading symptoms are of a local kind, or to hypotonus in states of general ill-health.

When it is stated that gastric pain originates in the muscle-fibre and reflects an exaggeration of the same factors which call forth appetite, hunger, and repletion, it should be clearly understood that reference is only made to the gastric *visceral* pain. It would be impossible in the time at my disposal to consider in detail the theories of Lennander⁴ who demonstrated the insensibility of the viscera to ordinary stimuli, and of the late Sir James Mackenzie,⁵ who for this and other reasons held that pain does not originate in the viscera, but is referred to the somatic tissues; or to the contentions of Ross,⁶ Hurst,⁷ and others, who have regarded visceral pain and referred pain as distinct phenomena. The latter view is now the more widely accepted, and of its probable truth we have daily reminders. Most careful observers, including members of our own profession, who have experienced severe visceral pain, locate it at a point deep to the body wall, and when confusion by the coexistence of referred pains or other distracting symptoms is not too great, their localisation is usually remarkably accurate. Furthermore, if normal sensations such as hunger or the desire to micturate are produced in the viscera—and I have not seen it urged that these sensations too are referred to the somatic tissues—it would at least seem reasonable to suppose that abnormal sensations must also have a local origin. During the past few years I have constantly registered observations relating to reflex phenomena in disease of the abdominal viscera, testing for the presence of cutaneous and muscular signs as a routine in almost every abdominal examination I have made.

* Lecture I. appeared in THE LANCET last week, and Lecture III. will appear in a subsequent issue.

As a result of these observations I have concluded that indisputable viscerosensory and visceromotor signs persisting apart from a severe visceral crisis invariably point to the existence of an inflammatory or ulcerative lesion. I have not found such signs as cutaneous soreness and muscular guarding present in the gastric zone of reference in cases of gastric pain due to remote causes. During the healing of gastric and duodenal ulcers I have carefully watched the disappearance of these reflex signs, and I have not found them present in such conditions as pyloric stenosis, in which there was good reason to suppose that the active ulcer had been replaced by a scar. Conversely, the deeper the ulcer the more constantly have I found the signs to be present. Although they may be exaggerated or brought to light by a crisis of visceral pain these reflex signs may persist quite apart from the pain; indeed, in ulcer they may be present for days or even weeks after the disappearance of all spontaneous pain. In other words, the somatic phenomena of visceral disease are an expression not of the visceral pain but of the lesion, which, also by reflex mechanisms, causes the visceral pain. When visceral pain is due to mechanical causes, or occurs independently of a lesion, as in ordinary colic, or in response to some distant stimulus, as in appendicular dyspepsia, then there are no associated viscerosensory or visceromotor symptoms in the somatic zone served by the segment of the cord supplying the painful organ. The same observations have been confirmed in the case of other hollow viscera.

I have made this digression merely to emphasise my belief that gastric pain and the referred pains of gastric disease are separate manifestations and that the latter are not a mere reflection of the former.

Gastric pains may, as has long been recognised, be broadly classified into those which develop shortly after taking food and those which develop after a much longer interval, when the stomach is again becoming empty. These will be referred to respectively as "immediate" and "delayed" pain. Gastric pain persisting apart altogether from the act of eating can generally be traced to extragastric causes or to an extension of gastric disease beyond its seat of origin. Similarly, precordial or retrosternal pains persisting apart from effort or emotion are usually extracardiac in origin. In other words, visceral pain has a definite relationship to visceral function and expresses perverted activity rather than structural disease. In clinical work so much depends on a proper appreciation of the nature and causes of a particular pain that it would seem desirable, notwithstanding the frequent discussions which have been devoted to this subject, to attempt once more an analysis of the two main types of gastric pain.

No lesion more clearly demands consideration of the causes of the pain associated with it than peptic ulcer. In gastric ulcer we have an example of "immediate pain," arriving rapidly after eating, and in duodenal ulcer we have an example of "delayed pain." In both conditions (though with less constancy in gastric ulcer) there is a definition about the pain and about its localisation and associated symptoms which render it peculiarly amenable to study.

Originally it was supposed that the pain of peptic ulcer was due to irritation of the ulcer itself by the physical contact of food or the chemical irritation of the gastric hydrochloric acid, the relief afforded by alkalis supporting the latter view. The first view is made improbable by the observation originally due to Hurst⁷ that although food starts to enter the duodenum shortly after its ingestion the pain in duodenal ulcer does not develop until the stomach is nearly empty; furthermore, if friction were its essential cause, the pain would surely be more continuous from simple contact of the ulcer with the opposite wall of the empty viscus. That the pain is not due to the acid was also shown by Hurst,⁷ who failed

to produce it in several cases of gastric ulcer by the introduction into the stomach of 4 oz. of a 0.5 per cent. solution of hydrochloric acid.

Hurst concluded that gastric pain is an expression of hypertonus, excessive peristalsis and inhibition of pyloric relaxation—all factors liable to increase intragastric tension and tension in the muscle-fibre. In the case of ulcers near the pylorus he suggested that actual pylorospasm analogous to the anal spasm accompanying anal fissure might be an additional factor. He considered, however, that acid might indirectly cause the pain by promoting muscular action and preventing relaxation of the pylorus. Personally, I am doubtful whether it is necessary to introduce the acid factor at all. I have myself examined many cases of gastric ulcer, with extreme degrees of hypochlorhydria and a few with complete achlorhydria, in all of which the pain was just as severe and characteristic as in cases associated with a normal or high acidity. Given an irritative focus, the ingestion of food, or the readiness for it, even in the absence of acid secretion, is an adequate stimulus for the initiation of the exaggerated tonic and peristaltic action upon which the pain depends. Reasons will be given later for supposing that the relief of pain on giving sodium bicarbonate may be due to other factors than the neutralisation of acidity.

"DELAYED PAIN."

Hurst, in his Goulstonian lectures,⁸ states that hunger pain develops when "only a small proportion of the food is still present in the stomach and the hypertonic condition constantly present in cases of duodenal ulcer reaches its greatest development, owing to the increase in tone which occurs as the bulk of the gastric contents diminishes." With this I am in entire agreement. In a more recent review⁹ of the subject, however, he has ascribed the pain of duodenal ulcer to the great increase of pressure in the pyloric vestibule which arises when a peristaltic wave shuts off this portion from the rest of the stomach and food is simultaneously prevented from entering the duodenum by a reflex achalasia (or failure to relax) on the part of the pyloric sphincter. He also argues that the acidity plays a part in maintaining the pyloric achalasia, and that the relief due to food and alkalis is partly caused by diminution of the acidity. The sustained character of the pain, which shows no synchronism with peristaltic movements, does not to my mind accord with this hypothesis; and, further, if achalasia of the sphincter were so complete as to permit of a sustained rise in pressure, there would surely be delayed emptying instead of the normal or rapid emptying commonly present in these cases. M Crea¹⁰ has recently shown that complete separation of the pyloric antrum is a common event in the normal "J"-shaped stomach, but that it does not occur in the normal "steer-horn" stomach, the type with which duodenal ulcer is most commonly associated. I must also disagree with Hurst when he says that increased tension in the gastric muscle-fibre is the adequate stimulus for "the associated reflex symptoms of tenderness and rigidity in the corresponding segment of the rectus abdominis muscle."⁸ The impulses constantly passing from the ulcer itself are the adequate stimulus for these signs, just as they are the adequate stimulus for the exaggerated tension of the gastric muscle-fibre. It is true that the signs may become more definite when spontaneous pain is present—that is to say, when there is increased stimulation of the ulcer—but my own observations, already referred to, have shown again and again that rectus rigidity and cutaneous soreness persist quite apart from the occurrence of spontaneous pain, and are absent in pyloric stenosis from a healed ulcer, a condition in which increased tension of the muscle-fibre must surely exist.

If it should become necessary, in the light of recent observations, to reject altogether the theory of "acid control" the development of a pathological degree of hypertonus in an organ already predisposed

to that condition would still be readily explicable. Carlson¹⁰ has shown that any stimulus to the duodenum tends to produce contraction above; in the presence of duodenal ulceration the intensity of all stimuli is increased and gastric hypertonus and pain occur as soon as the diminution in the bulk of the gastric contents makes this possible. Pain disappears at those times at which relaxation of tonus (or adaptation of posture) develops in response to the introduction of food, fluid, or gas into the stomach. I believe that simple "adaptation of posture" is the essential relieving factor in the case of hunger-pain. Sodium bicarbonate is much more effective than bismuth oxycarbonate in producing relief. May it not be that this is due to the rapid evolution of gas and a more effective relaxation of tonus? Alkalies are less effective in cases and conditions in which achlorhydria has developed and gas is not evolved. Dr. E. P. Poulton and Dr. T. Turner tell me that an even more effective relief of pain in ulcer cases results if an effervescent mixture is given, and that such a mixture is in great demand among their hospital out-patients. The eructations produced by displacement of some of the gastric air-bubble give the sense of relief to the patient, but it is difficult to see why this should be the whole cause of the relief in duodenal ulcer, as any further reduction in content short of complete emptying would tend to increase rather than to lessen tonus. It is, however, probable that the pylorus, working in unison with the pars pylorica, also adapts its posture or relaxes when the gas is evolved and so facilitates emptying. Spencer, Meyer, Rehfuess and Hawk¹¹ have shown that sodium bicarbonate hastens the emptying of the stomach. The fact that relief in duodenal ulcer is also, and often more effectively, obtained with milk, water, whisky and water, or even small quantities of dry food, further suggests that relief of pain by alkalies is not specific but due simply to the adaptation of posture which follows eating or drinking. That the acid alone is not an adequate factor for the production of pain is supported by the observation that the resting acidity in the early morning is often the highest recorded acidity in the day; some of this must escape into the duodenum, but pain in duodenal ulcer does not occur as a rule before breakfast and usually disappears on fasting. For the production of the pain it is necessary to oppose a resistance to the contracted muscle-fibres in the shape of the small quantity of food present in the later phases of digestion, or, in other words, to induce fatigue in it by providing it with "work" at a time when its tonic activity is already exaggerated.

I have recently had under my care a colleague who had a gastro-jejunostomy performed 30 years ago for duodenal ulcer with stenosis. Later, after many vicissitudes, the stoma also became narrowed. In 1922 it was shown to be working inefficiently, and only the merest trace of barium passed out through the pylorus; at the same time he was found to have developed achlorhydria. With the advent of autumnal weather in 1924 he had a return of characteristic hunger-pain, night-pain, and relief by food. Alkalies were much less successful than in the past, but frequent small feeds, rest, and belladonna produced a steady improvement. His case exemplifies three points: (1) With a marked stenosis of the pylorus, which is now almost certainly incapable of contraction or relaxation, he had typical hunger-pain due presumably to general hypertonus of the pars pylorica. (2) The pain occurred in the absence of free acidity. (3) In the absence of free acidity alkalies failed to give the customary relief, not, I believe, because the pylorus was incapable of relaxation, but because with no evolution of gas no adequate relaxation of the pars pylorica was obtained.

We have a further clinical observation suggesting that pain of the type occurring in duodenal ulcer bears no necessary relationship to the acidity. The opportunity of confirming this observation we owe to our surgical colleagues. Briefly, it is that the whole of the subjective syndrome of duodenal ulcer

can be closely and sometimes exactly simulated by disease of the gall-bladder or appendix independently of the chemical response. Many of us must have seen hunger-pain and night-pain and relief by food and alkalies in patients who were subsequently shown to have no gastric or duodenal lesion at all. In other words, the reflex hypertonus of the pars pylorica and pylorus may be induced in a normal stomach by a distant lesion, and although hyperchlorhydria secondary to the pyloric hypertonus is present in a certain proportion of these cases, it is by no means an essential accompaniment, and there may be a complete absence of free acid. Thus I have recently seen a case of chronic appendicular disease with complete achlorhydria in which the patient described pain in the epigastrium and feelings of flatulence coming on two and a half hours after breakfast and immediately relieved by lunch. The pain returned at half-past three and was relieved by tea, and at half-past ten in the evening, dinner having been at half-past seven. These pains were liable to keep the patient awake sometimes until two or three in the morning. I have also seen hunger-pain, night-pain, and relief by food in gastric carcinoma with achlorhydria.

Patients with duodenal ulcer describe their pain, when it arrives, as persistent, although sometimes of a "crescendo" character. It is never described as rhythmical or griping, although Carlson² states that a rhythmical quality can be dissociated from the sustained pain. Gastric "colic" or griping pain is experienced in acute indigestion from unsuitable food and as a preliminary to vomiting when the pylorus is strongly resisting the passage of indigestible fragments. It is seen also in early pyloric stenosis or obstruction, but here again the general hypertonus may tend to the production of a sustained rather than a rhythmical pain. The sustained character of the pain in non-obstructive duodenal ulcer is in favour of the view that it is due to hypertonus, probably involving the longitudinal as well as the circular fibres, rather than to segmentation by an increased peristaltic contraction as Hurst suggests.

In his recent experiments on the control of the pylorus in animals Carlson¹⁰ showed that spasmodic contractions of the pylorus can be induced by injuring various abdominal viscera or by stimulation of the peritoneum, an observation which accords with clinical experience. I have seen the syndrome usually associated with duodenal ulcer closely reproduced by appendicitis; by cholecystitis or gall-stones with cholecystitis; by lesser curvature ulcers (particularly those situated at the pyloric end of the stomach); and more than once by carcinoma ventriculi. In one case the symptoms were simulated by the peripheral irritation of a small fatty protrusion through the linea alba; in another by excessive tobacco smoking. Even worry and overwork at times constitute the adequate stimulus. With a few exceptions my patients were men, and the majority of these were of the broad-chested and hypersthenic type, or lean and nervous. I believe with Hurst that the physiological "habitus" of the stomach is one of the main factors determining the nature of the dyspeptic response, and that on this hypothesis we can best explain the observation that the same symptoms may be evoked by such a variety of stimuli. The hypersthenic habitus is present more constantly in duodenal ulcer than with any other lesion, but when it is present in association with another lesion the same response is produced.

IMMEDIATE PAIN.

The pain due to ulcers of the lesser curvature develops within a quarter or half an hour to one hour of taking food, or sometimes rather later; it is relieved by vomiting, fasting, and alkalies. In a considerable proportion of cases of gastric ulcer the radiologist can demonstrate a spasm of the greater curvature opposite to the ulcer, the so-called "spasmodic hour-glass" appearance. That this spasm in itself is not the whole cause of the pain is obvious from the fact that it is often very persistent, and that

it may be demonstrated when no pain is being experienced. Nevertheless the spasm must be associated with a shortening of muscle-fibres, partly reflex in character, and (in the more chronic cases with deep ulceration) partly attributable to inflammatory changes, or commencing scarring in a group of the circular fibres; some such shortening is probably present in a lesser degree even when the "spasm" is not demonstrable. This shortening prevents or limits normal adaptation of tonus or posture when food is introduced, and therefore tension in the muscle-fibre is further increased and pain results. Getting rid of the food (by fasting or vomiting) is the surest method of relief, and relief by vomiting, whether spontaneous or induced by a finger in the pharynx, is commonly described by patients.

Some experiments reported by Poulton¹² support the foregoing conclusions with regard to pain in gastric and duodenal ulcer. With cases of ulcer of the lesser curvature Poulton found that his patients could obtain relief from their pain by swallowing the gastric tube into the proximal portion of the stomach and allowing an escape of some of its gaseous content. Conversely, by blowing air at known pressures into the stomach he could reproduce their pain. On the other hand, in a case of duodenal ulcer, inflation caused great distension but no pain. I am therefore inclined to think that the administration of sodium bicarbonate produces relief by facilitating belching in ulcers of the lesser curvature, but by causing relaxation of general and pyloric hypertonus in duodenal ulcer.

Just as the pain of duodenal ulcer may be simulated by the reflex effects of distant abdominal disease, so, too, the pain of gastric ulcer may be simulated. In this instance, however, the hypertonus is of a more local character and is referred to the fundic half of the stomach. Hurst¹³ and Langdon Brown¹⁴ have reported visualisation (with the X rays) of a gastric spasm induced by pressure over an inflamed appendix, and the occurrence of epigastric pain on pressure over McBurney's point in "appendicular dyspepsia" is a familiar observation. I have formed the impression that in men there is a greater tendency for duodenal ulcer and in women for gastric ulcer to be simulated by cholecystitis and appendicitis. This again accords with the hypothesis that, whether the focus of irritation be in the stomach, the duodenum, the gall-bladder or elsewhere, the nature of the response in the particular sex or type is commonly determined by the physiological tendencies or gastric habitus of that sex or type. With the hypersthenic habitus the response is "delayed pain"; with the hyposthenic habitus the response is "immediate pain."

In gastric carcinoma the two main factors underlying the production of pain are pyloric obstruction and rigidity of the stomach wall. The first causes pain by preventing evacuation and amplifying the tonus and the depth and number of the peristaltic waves; the second by obviating adaptation of tonus when fluid or food is introduced. In some cases of growth involving the body of the stomach there is remarkably little pain, and in these it may be found that there is a rigidly patent pylorus, and that evacuation is extremely rapid. Needless to say, other and more persistent types of pain develop when the growth has spread beyond the limits of the stomach and has begun to invade neighbouring structures.

The greater our experience of epigastric pains the less inclined are we to be dogmatic in our diagnoses based upon them, for careful investigation and laparotomy are continually revealing our deficiencies. These deficiencies depend partly, no doubt, upon inherent difficulties and our own shortcomings, and partly upon the inadequate powers of observation and description of our patients. Nevertheless, with better appreciation of the causes of visceral pain and the establishment of new methods of clinical inquiry we undoubtedly win by gradual stages to a higher standard of accuracy. In the words of Hilton¹⁵

"every pain has its distinct and pregnant significance if we will but carefully search for it."

When probing the nature of a visceral pain it is as necessary to proceed with method as it is in the conduct of any other physiological experiment. Needless to say, the procedure is much more difficult and exacting than any laboratory exercise, but the information which may be obtained by careful questions from a patient of intelligence is often remarkable, and that the anamnesis is the most necessary part of the clinical inquiry is perhaps better illustrated in the case of the dyspepsias than in any other brand of internal medicine. When we pause to consider the interrogatory in respect of a gastric pain we find that—apart altogether from associated symptoms and referred signs—there are at least nine reasonable questions which may be put. Thus we may inquire as to: (1) The character of the pain; (2) its severity; (3) localisation; (4) extent of diffusion; (5) frequency; (6) duration; (7) initiating factors; (8) aggravating factors; and (9) relieving factors. Reasonable answers to only one-half of these inquiries, but particularly to numbers (1), (2), (3), (8), and (9) will again and again suggest a reasonable diagnosis. But if there is one principle which it is important to observe above all others it is that of endeavouring to see the patient at a time when he is actually experiencing his pain, or even to take steps to reproduce his pain by giving or withholding food. At such times he can more clearly define and locate his symptom, and at such times reflex signs, absent or inconspicuous on other occasions, are likely to be unmasked.

FULLNESS AND DISCOMFORT.

Fullness and discomfort which fall short of actual pain are due to identical mechanisms and depend on similar causes. In addition to local causes general disease and toxic or emotional factors may influence the health or tonus of the muscle-fibre in the direction either of relaxation or exaggerated action, so that we find in tuberculous, neurasthenic, and psychoneurotic patients a frequent complaint of dyspeptic discomforts. These symptoms seldom have the severity or the defined characters of pain due to structural disease or reflexly induced by neighbouring or distant organic lesions. In their time relationship with meals, however, discomforts show the same behaviour as pains, and once more the nature of the response seems partly to be determined by the gastric habitus of the individual.

FLATULENCE.

Epigastric fullness and discomfort lead naturally to a consideration of the familiar symptom of gastric flatulence. In the vast majority of all cases gastric flatulence is due to swallowed atmospheric air. In health small quantities of air are swallowed with the saliva and the food, and the presence of a fundic air-bubble is always demonstrable by percussion and X ray examination. The sensation of flatulence and subsequent eructation can be reproduced in health by voluntarily swallowing air, or by taking an effervescent mixture, and by the gulping of air which involuntarily accompanies a choking fit. As has been mentioned eructations of a minor kind also accompany hunger. The sensation of flatulence is one of pressure or of fullness high up in the epigastrium or under the sternum, or sometimes more widely diffused about the chest; occasionally a pain is referred to the angle of the left scapula. In pathological flatulence the symptom may be produced by the habit of aerophagy or "air-sucking" irrespective of the physiological characters of the stomach. The sensation of flatulence may also be experienced with a normal air content in subjects with gastric hypertonus, and is then identical with the feelings of pressure which precede the development of pain in duodenal ulcer.

The habit of air-swallowing is developed for various reasons. It is a common symptom of anxiety states

and so occurs in the psycho-neurotic patient. I have on several occasions seen it initiated by the swallowing movements which accompany a sore throat or a chronic pharyngeal or naso-pharyngeal catarrh, and in this connexion I believe that a type of catarrh regarded by some laryngologists as secondary to a dyspepsia is often rather the cause of the dyspepsia. I have once developed aerophagy and flatulence myself for a short time after painting my throat with an iodine preparation. The symptoms may follow the administration of a general anæsthetic, particularly ether, in which case, I presume, the gulping movements during induction or the retching during recovery may initiate the discomforts and establish the habit. The soft diet and inefficient mastication necessitated by dental extractions commonly cause flatulence. Of the organic diseases with which the complaint of flatulence is associated duodenal ulcer and still more gall-stones and cholecystitis are the most important. In both there is a tendency to pyloric hypertonus and to feelings of epigastric pressure, sometimes (especially in the presence of gall-stones) of a "bursting character." These local feelings suggest to the patient the presence of an excess of gas in his stomach, and in attempting to eructate he sometimes aggravates the condition by swallowing more air. The retrosternal oppression experienced in angina, being mistaken by the patient for an œsophageal or gastric sensation, also commonly induces aerophagy. In aerophagy, however initiated, relief follows from time to time with an explosive effect when the cardia is forced by the accumulated gas in the fundus. Flatulence from aerophagy is odourless, tasteless, or mingled with the flavour of the food last taken. Gas resulting from diffusion into the stomach, if this occurs, must be very small in amount, and it is difficult to imagine any pathological state which would appreciably modify the rate of such diffusion.

Fermentation of food does not take place in the stomach excepting in association with pyloric delay, for the normal sojourn of the gastric contents is too short and the acid secretions help to inhibit bacterial action. I have never seen active fermentation occurring in the fractional specimens of healthy subjects at room temperature. On three occasions I have seen active fermentation at room temperature in specimens obtained from patients, and in each case the diagnosis was pyloric stenosis or obstruction. Fermentation is said to be more common in obstructive carcinoma because of the absence of free hydrochloric acid, but I have met with it also in pyloric stenosis from cicatrization of an ulcer, and in traumatic stenosis following the swallowing of a caustic alkali; in each instance free acid was shown to be present. Flatulence occurring under these conditions may have the odour of sulphuretted hydrogen, and in any chronic dyspepsia with malodorous eructations organic interference with pyloric function should be suspected and will almost certainly be found. I have recorded the symptom quite as frequently in pyloric stenosis as in cancerous obstruction. In the case of a medical man whom I saw with Dr. A. F. Hurst and Mr. C. H. Fagge, eructation of sulphuretted hydrogen was the first and only prominent symptom of a carcinoma of the pylorus. Operation was performed without delay and the growth resected. The patient lived and remained at full work for more than two years.

ANOREXIA.

Loss of appetite has already been discussed in the process of reviewing the gastric element of the appetite sensation. The main disturbances of motor function accompanying anorexia are diminished tonus, or a pathological rigidity of the stomach wall. In otherwise healthy persons anorexia of a mild grade may result from severe or prolonged fatigue. Fatigue, whatever its pathology may be, is largely a muscular symptom, and the plain muscle of the stomach betrays the state of fatigue by loss of tone and loss of appetite. Profound emotion and prolonged worry

may also impair gastric tonus, probably through the medium of the sympathetic nervous system, but as under these conditions there is often loss of sleep and physical rest, fatigue factors may again be contributory. In neurasthenia, whether due to physical or psychological stresses, or to intoxications, or to some combination of these factors, loss of appetite occurs for reasons similar to those already given. In all these conditions it should be clearly appreciated that there may not be a demonstrable hypotonus, for hypotonus is a relative term, and in a subject with the hypersthenic habitus the development of a normal or average tonus or of a lessened hypertonus may cause symptoms. In acute fevers and in chronic infective illnesses muscular tonus is impaired by the circulating toxins. In mental disease and the anorexia nervosa of Gull, the initial factor may be mental depression or a simple refusal to eat, but at a later stage exhaustion and relaxation of tonus complete the vicious cycle. In chronic alcoholism loss of appetite is probably to be attributed partly to the general effects of the poison on muscular function and metabolism, and partly to the excessive secretion of mucus which inhibits normal stimulation of the gastric mucosa and consequently the appetite stimuli directly due to eating. Beaumont¹⁶ showed that acute alcoholism in the case of Alexis St. Martin might result in superficial lesions of the mucosa with suppression of secretion and stagnation of food, but Alexis did not always experience gastric symptoms or loss of appetite in the presence of these changes. Carlson,² producing alcoholic intoxication in dogs, demonstrated an abolition of tonus and hunger contractions coincident with refusal of food and vomiting. In carcinoma of the stomach, and especially in diffuse carcinoma, anorexia is almost as constant a symptom as pain, and in the absence of a palpable tumour or metastases more surely directs attention to the diagnosis than any other symptom or sign.

The anorexia of fatigue is cured by rest. The toxic anorexias are cured by the withdrawal of the poison. The anorexia of infective states is relieved by the termination of the infection or (as in pulmonary tuberculosis) by improving the patient's response to it. The anorexia of carcinoma ventriculi cannot be relieved, as nothing can restore the tonus of the muscle.

In all the common forms of anorexia, apart from that due to carcinoma ventriculi, in which it becomes continuous, the symptom is observed with curious frequency in the morning. The breakfast appetite is usually poor in the alcoholic and in the exhausted or tuberculous patient. Whether this expresses an incomplete recovery from the fatigue or toxins of the previous day, aggravated perhaps by unrefreshing sleep, or whether under these circumstances the stomach requires the actual ingestion and the stimulant and restorative effects of food before it can register a tonic response, I do not know. Possibly in toxic and fatigue states minor variations in the blood-sugar, upon which the activity of muscle in part depends, may be a factor, for in the early morning the blood-sugar is normally at its lowest level.

EXAGGERATED HUNGER AND BULIMIA.

Exaggeration of hunger and appetite is seen in the early stages of diabetes and sometimes in Graves's disease; later, when a general debility supervenes, it may be replaced by loss of appetite. Bulimia, or an abnormal hunger or craving for food appearing without obvious cause, is generally psychogenic, but it may accompany cerebral tumours. The only records of the symptom in my own case-notes were among the nervous dyspeptics.

NAUSEA.

In speaking of hunger and appetite I have been careful to insist that their gastric elements alone were under review. Other and more general disturbances, including malaise, weakness, sweating, and salivation,

commonly accompany nausea, but few would deny that it includes a local gastric element. In health nausea is induced by disgusting sights, smells, and emotions; is experienced in acute fatigue, and accompanies early pregnancy. Oily and fatty foods and remedies, which are known to inhibit gastric motility and secretion, readily induce it, and more so in persons who have small appetites and hypotonic stomachs, and whose food requirements are low, or in persons with normal food requirements when these requirements are diminished by hot weather. Nausea frequently accompanies feelings of faintness, and Barclay¹⁷ has observed a drop of 3 inches in the lower border of the stomach just before fainting occurred. In another instance "a normal stomach dropped an inch or more when the patient smelt something which, to him, was nauseating. Asafoetida and various other disgusting substances were tried, and the reaction seemed to be proportionate to the revulsion of the patient." Bennett and Venables¹⁸ showed a striking fall in the acid curve and much delayed emptying with the fractional test-meal in an individual to whom they suggested nausea under hypnosis. In disease nausea is especially common in chronic gastritis, whether from alcoholism or oral sepsis, in chronic biliary infections, in jaundice, in severe anæmias, and in the presence of any severe peripheral pain. It is an accompaniment of ocular disturbance, such as astigmatism, and labyrinthine disturbances, such as sea-sickness and Menière's disease. The available evidence suggests that nausea is an inhibition effect—that is to say, it results from conditions opposed to those which induce gastric pain. In this connexion it is interesting to note that (although it is evoked by other severe pain) nausea does not accompany the more painful dyspepsias. It is debatable whether the inhibition accompanying nausea is associated, as some suggest, with the closure of the pylorus which occurs during vomiting. Bile certainly tends to regurgitate into the stomach in association with nausea and retching, and this would rather indicate a relaxation of the pylorus in concert with the general relaxation.

Mention must be made of the confusion which exists between the sensations of nausea and hunger. To feel "sick with hunger" is a popular phrase and has a foundation in truthful observation. The nausea of pregnancy is commonly regarded as a perversion of hunger and may be relieved by food. I have frequently experienced temporary nausea on being abruptly awakened from sleep and called out at night, and on these occasions relief has followed the taking of food. In pathological nausea there is generally not only anorexia but actual loathing for food. Carlson² found in his own starvation experiments that nausea developed towards the end of his five days' fast, but that gastric tonus and peristalsis were increased rather than diminished during this period. He concludes that the changes responsible for this altered sensation may be partly increased irritation of the gastric mucous membrane and partly increased irritability of the central nervous system. It has occurred to me, however, that the nausea which is confused with or accompanies hunger may possibly depend upon the sudden relaxations at the end of strong hunger contractions. In pathological nausea the symptom is frequently described by the patient as "coming in waves," and there seems to be no particular reason why waves of relaxation should not under certain circumstances be appreciable in addition to, or at the expense of, the waves of contraction.

OTHER DYSPEPTIC SYMPTOMS.

Four other dyspeptic symptoms—heart-burn, water-brash, acid regurgitation, and simple regurgitation of food—are, strictly speaking, oesophageal rather than gastric in origin, but as they depend on derangements of the function of the cardia and accompany motor disturbances of the stomach, they may conveniently be considered here.

The relief effected by alkalies in *heart-burn* has long caused it to be regarded as a symptom of acid regurgitation into the oesophagus, and even of hyperacidity. The symptom must, however, be carefully separated from "acidity," for it can occur in persons with normal curves and achlorhydria, and, as Hurst has shown, cannot be reproduced artificially by hydrochloric acid or organic acids introduced into the oesophagus. Hurst⁷ regards it as due to regurgitation of alcohols resulting from the action of yeasts or sarcinae on carbohydrate food. Others, including Payne and Poulton,¹⁹ believe it to be associated with spasm of the cardia or lower end of the oesophagus. The symptom is usually described as a "burning" sensation, and is felt behind the lower end of the sternum. Most of us experience it at one time or another, but occasionally it becomes a chronic and troublesome complaint. In my own practice it has occurred most frequently in the dyspepsia accompanying the early months of pregnancy, in visceroptosis, and in certain types of nervous dyspepsia. Occasionally it is described in duodenal ulcer, but it is not a common association of organic disease. If Poulton's view is correct the relief with sodium bicarbonate may be due to an increase in size of the fundic air-bubble and relaxation of the cardia.

True *acid regurgitation* is due to reflux of acid chyme into the oesophagus or mouth, where it may give rise to a sour taste and roughening of the teeth. It is the only subjective manifestation of hyperchlorhydria, but is present in only a small proportion of cases. No great reliance can be placed upon the patient's description, for it is often confused with heart-burn, and I have been told by a medical man with complete achlorhydria secondary to cancer of the stomach that he was much troubled by "acid regurgitations." Possibly the symptom may have been due to organic acids in his case.

Water-brash, or the regurgitation of mouthfuls of clear, tasteless fluid, is believed by Hurst²⁰ to result from accumulations of ordinary saliva and mucus in the oesophagus, owing partly to excessive secretion and partly to reflex closure of the cardia. I have myself seen it most frequently in cases of duodenal ulcer, and it is common in chronic gastritis.

Regurgitation of food from the stomach without straining, retching, or nausea, should be distinguished from the trick of rumination, and is due to relaxation of the cardia. In the few cases in which I have noted the symptom it has been an association of physical fatigue and mental anxiety in hyposthenic individuals. It was best exemplified by the case of a medical student who only developed it at times when an examination was imminent and he was taking no exercise; physical and radiographic examination revealed no abnormality. It is important to recognise that regurgitation of unaltered food from the oesophagus occurs in the opposite condition of achalasia of the cardia.

DISTURBANCES OF MOTOR FUNCTION.

The subjective manifestations of disturbed tonus have been considered in the foregoing sections, and although by a comparison of these with the habitus of the patient and with other associated symptoms and signs it may be possible to suspect clinically what the radiologist graphically reveals, it is obvious that no precise clinical estimate of tonus can be expected. There are no direct objective physical signs of hypertonus and hypotonus excepting in the extreme examples which accompany respectively the earlier and very late phases of duodenal or pyloric stenosis. These signs are more correctly discussed under the section dealing with disturbances of motility or emptying-rate. The radiographic signs of hypertonus include: (a) high position of the stomach with the pylorus low in relation to the greater curvature; (b) transverse direction of the long axis of the organ; (c) high position of the upper fluid level; (d) normal or less than normal content. These signs

are, as Carman²¹ points out, more likely to be of pathological import if they do not correspond with the habitus of the patient. Occurring in about 17 per cent. of healthy men and 7 per cent. of healthy women hypertonus is found with greater frequency in certain classes of dyspepsia, and particularly in the reflex dyspepsias due to duodenal ulcer and gall-bladder disease. We have no evidence as to the frequency of hypertonus in these conditions before the development of the irritative lesion.

The radiographic signs of hypotonus include (a) low position of the greater curvature, with the pylorus high in relationship to it; (b) vertical position with "J"-shaped stomach; (c) low position of the upper fluid level; (d) content normal or larger than normal. Occurring in 4 per cent. of healthy men and 15 per cent. of healthy women the incidence of hypotonus, usually without any gastric lesion, is much higher in the various conditions causing general debility and in visceroptosis; in association with ulcers of the lesser curvature in women considerable degrees of hypotonus are also found. There is seldom any justification for a diagnosis of "atony" or "dilated stomach" excepting in the presence of signs pointing to pyloric or duodenal obstruction, or to prolonged or repeated "pylorospasm" of reflex origin. Excepting in "acute dilatation" of the stomach, which is now believed to be due to obstruction of the third part of the duodenum by the mesenteric vessels, atonic dilatation is always a process of gradual development.

Finally, tonus may be greatly modified or altogether abolished in infiltrating diseases such as carcinoma and syphilis of the stomach. Care on the part of the radiologist is sometimes necessary to distinguish between a small high-placed hypertonic organ with rapid emptying, and a stomach with diffuse carcinoma of its wall, a narrowed lumen, and rapid evacuation due to rigidity of the pyloric canal.

PERISTALSIS.

The subjective symptom of excessive peristalsis is recurring pain of a griping or colicky character, in which the passage of the pain from left to right may be noted by the patient himself. It occurs in acute indigestion from unsuitable or irritating food, and in a chronic and more severe form is seen only with lesions which obstruct the pylorus or first part of the duodenum. Peristalsis visible through the abdominal wall nearly always implies organic obstruction. From the radiologist's point of view the abnormalities of peristalsis include (a) an increase in the number and depth of the waves; (b) irregularity in the occurrence of the waves; (c) anti-peristalsis; (d) absence of peristalsis. Hyper-peristalsis, with increase in the number and depth of the waves involving both curvatures, is most commonly seen in association with a constricting duodenal ulcer. It may, however, accompany non-obstructive duodenal ulcer or the reflex dyspepsias due to appendicular or gall-bladder disease, conditions in which "pylorospasm" is presumed to occur; Carman²¹ states that under these circumstances there is less tendency to exaggeration of the depth of the waves. He also observes that the hyper-peristalsis of pyloric or præ-pyloric obstruction from growth is more erratic in character and affects chiefly the greater curvature. Anti-peristalsis, in his experience and that of most radiologists, is nearly always due to organic obstructive disease.

All the extreme disorders of tonus and peristalsis are therefore seen to be associated with organic disease of the pylorus or duodenum, or with conditions producing "pylorospasm." The balloon experiments of Carlson² confirm the clinical and radiographic observations with regard to the augmentation of tonus and peristalsis in the early stages of obstruction. The more complete the obliteration of the pyloric lumen and the longer its duration, the more irregular and intermittent become the peristaltic contractions. In the final stage the appearance after a barium meal is that of a greatly dilated, atonic,

and inert sack with the greater curvature low in the pelvis. Peristalsis is also abolished by infiltrating disease of the stomach wall.

MOTILITY (OR EMPTYING-RATE).

Motility may be either impaired or exaggerated by disease. The clinical signs of impaired emptying are vomiting, enlargement of the stomach, and visible peristalsis. Vomiting, it need hardly be stated, occurs as the result of a great variety of local and peripheral stimuli. Thus it may be due to irritation of the gastric mucosa, to general fatigue, to local gastric fatigue through over-eating, to intoxications, to central nervous lesions and psychic disturbances, to spasm or organic narrowing of the pylorus or the duodenum, to mid-gastric constrictions, or to inflammatory or obstructive lesions lower down in the alimentary tract.

The movements bringing about the act of vomiting are largely extra-gastric, and need not here be separately discussed. The pyloric end of the stomach is in strong contraction during the act, while the resistance of the cardia is overcome by the great increase of pressure in the fundic portion produced by the combination of the pyloric closure, descent of the diaphragm, and contraction of the abdominal muscles. I was recently demonstrating a case of pyloric obstruction with visible peristalsis to my clinical clerks when one of them observed a definite reverse peristaltic contraction. Exactly at that moment the patient, who had not been complaining, exclaimed that he felt an urgent desire to be sick. It is possible that the act of vomiting, even apart from obstruction, may be associated with reverse peristalsis.

From the appearance, odour, amount, acidity, and bacterial content of the vomitus in chronic cases and from the length of time over which recognisable particles of food are retained, it has long been customary to decide between organic and functional pyloric closure, and even to draw conclusions as to the cause of the obstruction. Visible peristalsis and enlargement of the stomach to palpation may become apparent before extreme dilatation and stenosis have developed, and even occasionally before delay and stenosis are radiographically demonstrable. In this stage the stomach muscle is hypertrophied and by its hypertrophy and vigour is successful in overcoming the obstruction. With improved methods of diagnosis and earlier and more skilful surgery the extreme degrees of gastric dilatation with persistent succussion splash and copious obstructive vomiting have now become comparatively rare.

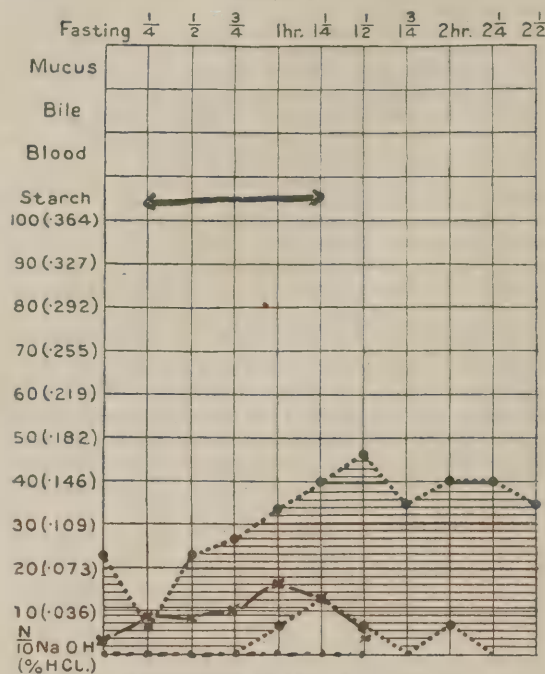
From the radiographic point of view delay of a substantial portion of a barium meal beyond the six-hour limit is due to organic obstructive disease. In cases of great loss of tone from general ill-health, when the stomach is low in the pelvis, there may occasionally be delay even up to six hours if the patient is in the erect posture, but by lying down, and particularly by turning on the right side, emptying within normal limits of time may be encouraged. Delayed emptying may also be estimated by the Ewald test-meal, and a simple practical method of determining the presence of pyloric stenosis is that attributed by Cohnheim²² to Boas, in which a meal including raisins or currants is given overnight and the stomach is emptied with an ordinary gastric tube or Senoran's evacuator in the morning. In the presence of obstruction the more fluid portion of the meal escapes but the raisins remain.

Abnormally rapid emptying or hypermotility occurs in a certain proportion of cases of duodenal ulcer with hypertonus; in carcinoma ventriculi, with a rigid pylorus; in association with achylia gastrica, in which a condition of pyloric insufficiency is present; and after gastro-jejunostomy and partial gastrectomy. Rapid emptying can only be inferred indirectly by clinical means. An unduly rapid development of sinking sensations or of pain in duodenal ulcer; morning diarrhoea or post-prandial diarrhoea in so-called achylia gastrica and in Addison's anæmia;

and post-prandial discomforts in the small intestine after a gastro-jejunostomy may all suggest the presence of the abnormality. In any of these conditions the barium meal may be completely evacuated from the stomach within periods as short as two hours or even less.

With the fractional test-meal the rate of emptying and the factors prolonging or shortening it are readily

CHART 10.



Achlorhydria. Addison's anæmia.

studied. The information obtained with the gastric tube is probably more accurate than by other methods and we have the advantage of a normal standard for comparison. In cases of moderately advanced or extreme stenosis or obstruction the test serves the purpose of a 12-hour as well as a fractional test, and the resting juice contains a turbid malodorous residue from the day before. In less advanced cases of duodenal stenosis large quantities of clear and highly acid juice are withdrawn in the first specimen. In the absence of such indisputable evidence in the resting fraction delayed evacuation of the gruel beyond three hours is nearly always found to depend on organic disease, but other evidence than prolongation of the meal should be sought. When, for instance, sedimentation in the rack of tubes has taken place it is noticed that the level of the gruel, instead of falling steadily in the later specimens, is maintained, while in cases due to stenosis from ulcer there is an increase in the clear supernatant fluid. Reflux from the duodenum is naturally inhibited by stenosis, and bile regurgitation was completely absent in 11 out of 12 cases of pyloric stenosis and obstruction whose test-meal findings I have previously reported.²³ Active evolution of gas may sometimes be observed in the specimens. Chemical findings to be discussed later serve to indicate the cause and degree of the stasis, so that with organic narrowing of the pylorus the fractional method becomes a diagnostic test. In all other conditions it supplies evidence only as to the type of the functional derangement.

In the conditions showing hypermotility the fractional test-meal shows disappearance of starch in periods varying from half an hour to one hour. If the hypermotility is due to hypertonus there is a high curve of acidity; if it is due to a patent pylorus there is a low curve or achlorhydria.

DISTURBANCES OF SECRETORY FUNCTION.

The only symptom directly suggesting hyperchlorhydria is acid regurgitation; its unreliability has already been mentioned, and it is obviously secondary to motor disturbances. There is no direct clinical evidence of hypochlorhydria, achlorhydria, or achylia, but the presence of the two last-named symptoms may occasionally be surmised from associated symptoms such as acne rosacea and painless diarrhoea. This lack of any direct subjective evidence of secretory abnormality is wholly consistent with the opinion already emphasised that gastric sensibility is a function of the musculature and not in any way to be related to chemical changes.

Although extreme degrees of hyperchlorhydria and complete achylia (as has been shown) may be associated with perfect health and comfortable digestion, this does not imply that the symptoms have no clinical significance, for it is beyond dispute that both occur with a much greater frequency in disease. In a series of 187 cases of dyspepsia from all causes personally collected and investigated I found 62 per cent. of normal curves, while 30 per cent. showed hyperchlorhydria and 8 per cent. achlorhydria. The incidence of the two extreme conditions was thus nearly four times the normal in the case of hyperchlorhydria, and double the normal in the case of achlorhydria. In Bell's²⁴ much larger series (vide Table V.), which includes other than dyspeptic diseases, the figures were as follows: Normal curves, 61 per cent.; hyperchlorhydria, 24 per cent.; achlorhydria, 15 per cent.; hyperchlorhydria here showing three times and achlorhydria rather more than three times the normal incidence.

TABLE V. (Bell.)

A Comparison Between the Percentage Incidence of the Six Types of Curves in Various Diseases, with the Normal.

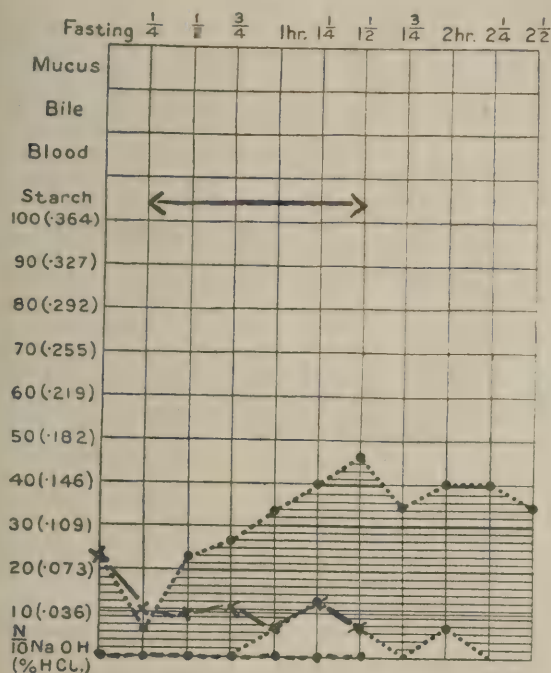
Disease.	Number of cases.	Percentages.					
		Achlorhydria.	Hypochlorhydria.	Low normal.	Normal.	High normal.	Hyperchlorhydria.
Normal (Bennett and Ryle) . . .	100	4.0	1.0	10.0	59.0	18.0	8.0
Chronic gastritis . . .	11	45.4	18.1	9.0	0	18.1	9.0
Gastric ulcer . . .	24	4.1	12.5	16.6	20.8	25.0	20.8
Carc. of stomach . . .	10	30.0	30.0	20.0	10.0	10.0	0
Duodenal ulcer . . .	34	0	0	11.7	3.8	26.4	53.0
Nervous dyspepsia . . .	37	5.4	10.9	8.1	27.0	8.1	40.5
Gastro-jejunostomy sequelæ . . .	22	18.1	18.1	22.7	18.1	4.5	18.1
Viscerophtosis, including gastrophtosis . . .	19	10.5	26.3	26.3	15.7	0	21.0
Gall-stones . . .	7	14.2	0	0	57.1	14.2	14.2
Chronic appendicitis . . .	13	23.0	0	7.6	38.4	7.6	23.1
Addison's anæmia . . .	6	100.0	0	0	0	0	0
Tabes dorsalis . . .	9	11.1	11.1	22.2	22.2	11.1	22.2
Disseminated sclerosis . . .	8	0	12.5	12.5	50.0	25.0	0
Rheumatoid arthritis . . .	8	37.5	12.5	12.5	0	0	37.5
Neurasthenia . . .	20	10.0	30.0	5.0	25.0	5.0	25.0
Psychasthenia . . .	11	9.0	18.1	9.0	45.4	18.1	0

The mechanism of hyperchlorhydria in health has already been discussed. There is no essential difference in its mechanism in disease, excepting that the causal factors—namely, hypertonus and hypermotility—are exaggerated, and that there is reason to suppose that in certain conditions a positive hypersecretion may occur. In hypersecretion, which is an accompaniment of duodenal or pre-pyloric ulcer, there is a very copious, clear, and highly acid resting juice with continued secretion after the conclusion of the test-meal. According to Bolton,²⁵ however, the only indisputable evidence of hypersecretion is a "rapid rise in the total chloride curve, with or without a similar rise in the HCl curve in the early stage of digestion when the stomach is full, provided the organ is not emptying rapidly."

Hypochlorhydria and achlorhydria in disease are due to (1) excessive neutralisation consequent upon abnormal patency of the pylorus or the presence of a gastro-jejunostomy; (2) neutralisation by the alkaline and albuminous exudates from the surface of a malignant growth; and (3) neutralisation and inhibition of acid secretion by an excessive output of mucus, as in gastritis.

Complete achylia or absence of secretion has by some been presumed to depend upon atrophy of the

CHART 11.



Achlorhydria. Leather-bottle stomach.

gastric glands. Faber regards it as a result of pathological changes consequent upon past gastritis. Hurst,²⁷ as also did Martius,²⁸ regards it as an inborn error of function, and considers that gastritis is more often secondary to achylia than achylia to gastritis. The discovery of achylia in a small percentage of healthy men and in the healthy members of families with a history of Addison's anaemia supports Hurst's view. I have formed the impression from a few case-histories that scarlet fever which, as Brinton¹ showed, is capable of producing a very severe desquamative gastritis, may be a cause of subsequent achylia. One of the four healthy men with achylia in Bennett and Ryle's series was found on subsequent inquiry to have had scarlet fever in childhood followed by a slight persistent albuminuria.

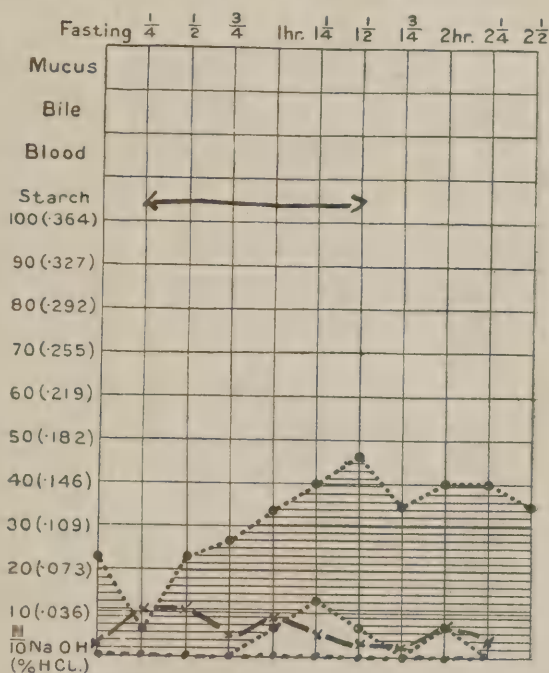
There are no constant distinguishing features in the ordinary test-meal curves between a secondary achlorhydria and a primary achylia. In primary achylia there is a very narrow interval and close parallelism between the curve of total acidity and the base line (vide Chart 10), and the condition persists after lavage. A wide interval between the curve of total acidity and the base line and a lack of parallelism is more likely to occur in a secondary achlorhydria, and is best seen in cases of obstructive carcinoma. The presence of blood strongly favours a diagnosis of carcinoma. In gastritis the presence of mucus in large quantities is an accompaniment of the achlorhydria and the fasting specimen may have a peculiar rancid odour; normal curves may be obtained after lavage and treatment. A comparison of Charts 10, 11 and 12, from cases of Addison's anaemia, leather-

bottle stomach, and gastritis with acne rosacea will show that no diagnosis can be based on a simple study of the chart of acidity alone. Lacking other evidence, a repetition of the test-meal after lavage and chloride estimations may be necessary to distinguish between an achylia and a secondary achlorhydria.

Achlorhydria and achylia are encountered with greater frequency than in health in a variety of general diseases. In Addison's anaemia, with which subacute combined degeneration of the cord is included by Hurst and Bell,²⁹ it is a constant finding. Reference to Bell's series gives an idea of the increased incidence of achlorhydria in certain general and local conditions, including multiple infective arthritis, appendicitis, and gall-stones. Others have reported its frequent occurrence in pellagra and sprue and gout. In some of these conditions, but particularly in Addison's anaemia and in gastrogenous diarrhoea, recognition of the achylia or achlorhydria is of more than academic interest, for it calls for the therapeutic administration of hydrochloric acid.

Hunter,³⁰ employing the fractional test-meal and examining 174 cases of gastro-intestinal disease (in which the diagnosis was confirmed at operation or by biopsy, autopsy, or indisputable clinical evidence), found that in chronic duodenal ulcer 88 per cent. of the cases showed curves above the limits of normal; in ulcer at the pyloric end of the stomach, 67 per cent. of the curves were above the limits of normal; in chronic ulcer of the body of the stomach 50 per cent. of the curves were within normal limits, while 35 per cent. rose above these limits. In cases of

CHART 12.



Achlorhydria. Gastritis with acne rosacea.

hour-glass stomach there was hypochlorhydria; in hour-glass stomach complicated by pyloric stenosis there was usually hyperchlorhydria. In cases of carcinoma of the stomach 67 per cent. showed complete achlorhydria, while 32 per cent. of the curves were within or above the limits of normal. In viscerotoposis there was achlorhydria in 70 per cent. of cases.

Reviewing the conclusions of the foregoing sections we find that most pronounced variations in acidity can be related to disturbances in the function of the

pylorus with which the pars pylorica should probably be included. The exceptions to this generalisation are (1) primary achylia; (2) secondary achlorhydria from disease involving the mucous membrane itself; and (3) the reflex hypersecretion which accompanies some cases of duodenal and præpyloric ulcer.

There is no longer any justification for the employment of "hyperchlorhydria" and "achlorhydria" in a diagnostic sense. The majority of dyspeptic cases which would formerly have been diagnosed as "hyperchlorhydria" are now shown to have either a duodenal ulcer or some other organic irritative lesion. The majority of cases showing achlorhydria are found to be suffering from pyloric insufficiency with gastric hypotonus due to general causes; from local diseases such as gastritis or carcinoma involving the gastric mucous membrane; or from general diseases such as Addison's anæmia.

SUMMARY.

1. The nature and probable causes of the common gastric symptoms have been discussed and evidence for their dependence upon an exaggeration or inhibition of normal tonus, peristalsis, or motility has been given. Whereas pain and discomfort are probably associated with an increase of tension in the muscle-fibre, it is suggested that anorexia (other than that due to rigidity of the stomach wall) and nausea are associated with abnormal relaxations of the muscle-fibre.

2. The common derangements of motor function and the methods of studying them have been briefly reviewed. Motility (or emptying-rate) and the factors disturbing it are more completely and accurately studied with the gastric tube than by other methods.

3. Although actual hypersecretion and hyposecretion of the gastric hydrochloric acid may occur under certain conditions, reasons are given for supposing that pathological hyperchlorhydria, hypochlorhydria, and achlorhydria generally depend upon motor disturbances influencing in one direction or another the rate at which neutralisation occurs.

REFERENCES.

1. Brinton, W.: Diseases of the Stomach, 1st ed., London, 1859.
2. Carlson, A. J.: Control of Hunger in Health and Disease, Chicago, 1916.
3. Hurst, A. F.: Guy's Hosp. Rep., 1922, lxxi., 450.
4. Lennander, K. G.: Centralbl. f. Chir., 1901, xxviii., 209; and Jour. Amer. Med. Assoc., 1907, xlix., 836.
5. Mackenzie, J.: Symptoms and Their Interpretation, 4th ed., London, 1920.
6. Ross, J.: Brain, 1888, x., 350.
7. Hurst, A. F.: Goulstonian Lectures on the Sensibility of Alimentary Canal, London, 1911.
8. Hurst, A. F.: Brit. Med. Jour., 1925, i., 145.
9. M'Crea, E. D., M'Swiney, B. A., Morison, J. W., and Stopford, J. S. B.: Quart. Jour. Exp. Physiol., 1924, xiv., 379.
10. Carlson, A. J.: Arch. Int. Med., 1924, xxxiii., 281.
11. Spencer, W. H., Meyer, G. P., Rehfuess, M. E., and Hawk, P. B.: Amer. Jour. Physiol., 1916, xxxix., 459.
12. Poulton, E. P.: THE LANCET, 1921, i., 263.
13. Hurst, A. F., and Rowlands, R. P.: Guy's Hosp. Rep., 1921, lxxi., 168.
14. Brown, W. Langdon: Sympathetic Nervous System in Disease, London, 1923.
15. Hilton, J.: Rest and Pain, 2nd ed., London, 1877.
16. Beaumont, W.: Physiology of Digestion, 2nd ed., Burlington, 1847.
17. Barclay, A. E.: THE LANCET, 1922, ii., 261.
18. Bennett, T. I., and Venables, J. F.: Brit. Med. Jour., 1920, ii., 662.
19. Payne, W. W., and Poulton, E. P.: Quart. Jour. Med., 1923, xvii., 53.
20. Hurst, A. F.: Ibid., 1914, viii., 300.
21. Carman, R. D.: Roentgen Diagnosis of Diseases of the Alimentary Canal, Philadelphia and London, 1921.
22. Cohnheim, P.: Diseases of Digestive Canal, 2nd ed., Philadelphia, 1911, p. 35.
23. Ryle, J. A.: Guy's Hosp. Rep., 1921, lxxi., 442.
24. Bell, J. E.: Ibid., 1922, lxxii., 302.
25. Bolton, C.: Brit. Med. Jour., 1923, ii., 269.
26. Faber, K.: Arch. de Malad. de l'Appar. Dig., 1920, x., 641.
27. Hurst, A. F.: THE LANCET, 1923, i., 111.
28. Martius, F.: Achylia Gastrica, Leipzig, 1897; and Mediz. Klinik, 1916, xii., 481.
29. Hurst, A. F., and Bell, J. R.: Brain, 1922, xiv., 266.
30. Hunter, D.: Quart. Jour. Med., 1923, xvi., 95.

THE DIAGNOSIS OF MALIGNANT DISEASE OF THE THYROID.

By A. J. WALTON, M.S. LOND., F.R.C.S. ENG.,
SURGEON, LONDON HOSPITAL.

THE whole subject of carcinoma of the thyroid presents so many curious anomalies that no certain statements can be made which are true for all varieties. It is often stated that the disease is so malignant that once the diagnosis can be definitely made the prognosis is hopeless; but in more recent work there has been a tendency, in the statistics at least, to show that the outlook is quite good. These diverse statements are clearly due to the inclusion of several very different conditions, and, therefore, before it is in any way possible to discuss the diagnosis it will be necessary briefly to consider the frequency of the disease and the various pathological and clinical types.

Malignant goitre is usually found in patients of middle age, most frequently between the ages of 40 and 50. The youngest patients in my series were two males, aged 21 and 37, and one female, aged 34. The oldest was a female aged 79. Most investigators find that the condition is twice as common in females as in males, this being the ratio in Wilson's series.¹³ In my own group of 13 cases there were nine females and four males.

In the majority of my cases the diagnosis has been proved by microscopic examination; two have not been operated upon owing to the advanced condition, but both of these have pursued the characteristic course of advanced carcinoma, and the diagnosis, therefore, can be accepted. In the same period of time there have been 402 cases of innocent tumour of the thyroid which have been subjected to operation. Thus in this operative series the frequency has been about 3.2 per cent. There are, however, not included in these figures a large number of cases of colloid goitre and small localised adenomata which have been seen in the hospital out-patient department, and of which—unless a special series is observed for the results of treatment—I keep no private notes; hence the frequency in the total number of cases is probably somewhere about half of this figure—i.e., 1.6 per cent. It is in this question of frequency that such varying figures are found in the literature. Balfour¹ found 103 cases of carcinoma in 6359 of goitre, a percentage of 1.6, whereas Speese and Brown¹¹ found the frequency as high as 4.6 per cent. They believe that this difference may be accounted for owing to the fact that their cases came from a non-goitrous region, whereas Balfour's were obtained from an endemic goitrous area. Wilson,¹³ in his investigations, found that the incidence of malignant disease was as high as 1 in 15.

Difficulties of Diagnosis and Classification.

In my own experience the morphological characters, whether micro- or macroscopic, have been of little or no help in determining the clinical course of the disease or in estimating the measure of its malignancy. Pemberton's⁸ classification into sarcoma, carcinoma, malignant adenoma, and malignant papilloma, although of pathological interest, is of little use, for these different varieties do not give rise to constant clinical types. Of two of my cases showing very similar enlargements of the thyroid, and both described as "mixed-celled carcinoma," one died of extensive recurrence after five months, whilst the other, although developing a local recurrence which was treated with X rays, is alive and well over three years after the operation. De Quervain⁵ has also laid stress upon these difficulties, and he states that the term "malignant goitre" must still be used because it is impossible to differentiate the varying histological types clinically; indeed, it is not possible to distinguish cancer from sarcoma. With the latter part of his statement all will agree, and indeed this subject presents enormous difficulties even to the pure

pathologist, for, as Wilson has pointed out, the sarcomata are peculiar in that besides the connective-tissue elements, of which any form of sarcoma may predominate, there are almost invariably present large or small groups of parenchymatous cells which are also proliferating. He states that it is therefore difficult to say whether the original tumour was formed of proliferating carcinoma cells with a later growth of the connective-tissue elements, or whether the connective-tissue change was primary and there was a secondary stimulation of the parenchymatous cells. At the London Hospital all these mixed cases are reported as "carcinoma sarcomatoides," of which there were four in my own series. To my mind, the almost constant appearance of the carcinoma cells in the cases of sarcoma is a strong argument in favour of the view that these tumours arise from groups of embryonic cells, for in their growth such cells might be expected to differentiate along the connective tissue or epithelial cell path, or even along both.

The difficulties are increased by the fact that many lesions of the thyroid which ultimately pursue a clinical course that is clearly innocent show a microscopic picture which would be passed as malignant. The close simulation that microscopic sections of some cases of exophthalmic goitre show to carcinoma is well known, and in one of my cases (No. 1A) such a diagnosis was made because the cells had spread widely into the lymphatics. The appearance of the thyroid clinically and at operation also suggested this diagnosis, but the subsequent progress has given no evidence of the presence of any carcinomatous change, and I doubt very much, therefore, whether I ought to have included this case in the list of carcinomata. The difficulties that have arisen in the cases of the proliferating goitre of Langhans or the toxic adenoma of Plummer, and to which attention will later have to be given, are also well known. For these reasons, then, any pathological classification must in the present state of our knowledge be regarded as unsatisfactory, and resource will have to be made to a clinical grouping.

Clinical Varieties.

In my own cases three quite distinct clinical varieties can be recognised: (1) Those occurring secondary to adenoma or a colloid enlargement; (2) those which are apparently carcinomatous from the onset; (3) those showing a slowly-growing primary lesion with large secondary deposits. In such cases the primary lesion is frequently overlooked.

Cases Occurring Secondary to an Adenoma or Colloid Enlargement.

In my own series there were five such cases, four being females and one a male. The presence of such a group has long been recognised, but very different figures have been given as to the frequency of any previous lesion. Speese and Brown, in their careful investigation of 25 cases of carcinoma and three of sarcoma, found that there had been a previous adenoma or colloid goitre in 78.5 per cent. of the cases, and the average time at which a simple lesion had been present before the onset of malignancy was 12 $\frac{1}{10}$ years. Wilson,¹³ Plummer,⁹ and Balfour¹ believe that the association of malignant disease with a previous benign lesion is almost invariable, and Berry² has shown that a careful examination will often reveal the presence of some evidence of previous disease. Chambers⁴ states, however, that taking into consideration the slow growth of some cases of carcinoma it is possible that in many instances the condition is rather one of continuous slow development of a malignant goitre than of malignant disease superimposed on a benign growth.

My own cases in this group all show, as will be seen by the table, a prolonged period ranging from 2 $\frac{1}{2}$ –35 years in which a tumour having only benign characters had been recognised, and it is not possible to believe that over such long periods the tumour was already malignant. It is in this group that the first evidence of malignancy is often shown by the presence of some hyperthyroidism, due to a cellular

proliferation within the capsule of the gland, and I believe that too much stress cannot be laid upon the work of Plummer and Wilson in this respect. The latter¹⁴ found that of 97 cases who had died of the disease or who had had recurrence after operation in the Mayo Clinic, there were 50 whose clinical history before the first operation contained no suggestion of malignancy, and 23 of these thyroids were even passed by a pathologist without suspicion of malignancy. He believes that the first evidence of proliferation is hypermetabolism with cardiac disturbances—the toxic adenoma of Plummer. If the proliferation continues it penetrates the capsule, invades and metastasises, and is then frankly malignant. Histologically, it may be impossible to distinguish the foetal adenoma from carcinoma. Hence he states that any sizable adenoma composed of embryonal tissue, if in a patient of cancer age, is potentially malignant. With this my own experience agrees, and I would therefore regard the onset of hyperthyroidism in any adenoma as a strong piece of evidence of the onset of carcinoma, and would advocate early operation in any such case. Later, when the cells break through the capsule, more definite evidence of carcinoma arises, but it is interesting to note that for a time such cases are relatively slow in their progress, and hence the prognosis may be still quite good.

Usually the first evidence of such change is a more rapid growth of the localised nodule, but the mere presence of such a change must not in itself be taken as definite evidence of carcinoma. There are a considerable number of other conditions which will give rise to such a rapid increase. Perhaps the most frequent of these is the presence of an intracystic hæmorrhage, and the fact that this may cause a rapid enlargement and a sudden increase in the dyspnoea is well known. The enlargement due to a hæmorrhage is often, however, much more sudden than that due to the onset of carcinoma, although the rate of increase will naturally depend upon the amount of bleeding. More suggestive of carcinoma is the rapid increase in size which occurs with an inflammatory change. This will give rise to considerable difficulty in the diagnosis, for not only is the mass increased in size but its outline becomes more ill-defined, and it may become firmly adherent to the trachea and sometimes even to the surrounding structures. Its outline, however, is as a rule less nodular than in the case of a carcinoma. Another difficulty may arise owing to the fact that some of the tumours which have undergone a definite carcinomatous degeneration may not always show a rapid onset in the growth. Wilson¹³ found that such an increased rate of growth was only present in one-third of the cases, whereas another one-third had noticed symptoms of continuous growth for ten years or more, and even of those that were inoperable at the time of their examination one-quarter had noticed symptoms which might have been interpreted as indications of the presence of malignancy for ten years or more.

An important change which is usually seen at the same time as the increase in size is an irregularity of the outline and a firmer consistency of the mass. Similar changes may be seen in an adenoma which has been cystic and calcareous, but unless there be coincident inflammation there will not be the same measure of fixation. A rapid increase in size due to inflammation or hæmorrhage may be equally hard but will rarely be so nodular. It must also be remembered that an adenoma in a patient who has become pregnant not infrequently becomes larger and considerably harder, and hence may be mistaken for a carcinomatous change. As a general rule no operation should be performed for goitre on a pregnant patient if it can possibly be avoided. In all the above conditions there is rarely the same irregularity, the presence of which is distinctly suggestive of the onset of carcinoma. Care must, however, be taken not to mistake one large adenoma with several small outlying adenomatous patches for the irregularity of one neoplastic mass.

TABLE I.

Name.	Date.	Sex and age.	Swelling.	Progressive symptoms.	(a) Hypr. thy. (b) Condition of thyroid.	Pressure symptoms.	(a) Fixation. (b) Dilated vessels.	(a) Lymph glands. (b) Secondaries.	Condition at first operation.	First operation.	Pathological report.	(a) After progress. (b) After treatment.
A1 L. S.	26/10/14	F 34	4 yrs.	Pressure and inconvenience 6 mths.	(a) Nil. (b) Diffuse swelling.	Slight.	(a) Nil. (b) Nil.	(a, b) Nil.	28/10/14: Colloid shape, very hard.	Double V-resection.	Carcinoma.	(a) Thyroid very large and hard for 2 weeks. Hypothyroidism after 5 weeks. (b) Thyroid extract after 6 weeks. (c) Steady improvement in 1 yr.
A2 E. T.	14/9/14	M 42	6 yrs.	Increase in size and pressure 1 yr.	(a) Marked. (b) Diffuse enlargement.	Nil.	..	..	16/9/14: Diffuse enlargement like Graves's.	Removal of right lobe and isthmus.	Acinar, papillary, cystic, cubical, giant-celled carc.	(a) Good immediate recovery. 3 mths. later 1 large gland high up right side. (b) Given X rays. (c) Good immediate recovery. Quite free 2 yrs. after operation.
A3 G. R.	25/10/21	F 46	5 yrs.	Rapid increase 6 mths. dysphagia, dyspnoea.	(a) Nil. (b) Large swelling right lobe and isthmus.	Dyspnoea, dysphagia, alteration in voice.	(a) Complete trachea. (b) Veins.	(a) 1 right sup. clav. (b) Nil.	26/10/21: Right lobe and isthmus and glands enlarged.	Removal of right lobe and isthmus, right supraclavicular glands.	Solid mixed-celled carc. Secondaries in gland.	(a) Good immediate recovery. 3 mths. later 1 large gland high up right side. (b) Given X rays. (c) Good immediate recovery. Quite free 2 yrs. after operation.
A4 H. S.	4/10/22	F 69	2½ yrs.	Severe pain 10 mths. Dyspnoea and dysphagia.	(a) Moderate. (b) Firm, hard mass right side, irregular.	Dyspnoea, dysphagia.	(a) To deep structures. (b) Nil.	(a) Several right. (b) Nil.	6/10/22: Large, hard, nodular mass right lobe, not infiltrating.	Right hemithyroidectomy.	Solid tubular carc. or thyroid.	(a) Good immediate recovery.
A5 M. A.	21/6/17	F 67	35 yrs. Left swelling right side and dyspnoea.	(a) Moderate. (b) Large irregular masses, left, very big.	Much dyspnoea.	(a) Nil. (b) Left side and upper thorax.	(a) Nil. (b) Nil.	(a, b) Nil.	24/6/17: Trachea displaced to right. Left lobe very large, adherent to sheath and muscles.	Left hemithyroidectomy.	Carc. sarcomatoides. Multinucleated cells and many mitoses.	(a) Good immediate recovery.

TABLE II.

Name.	Date.	Sex and age.	Swelling.	Progressive symptoms.	(a) Hypr. thy. (b) Condition of thyroid.	Pressure symptoms.	(a) Fixation. (b) Dilated vessels.	(a) Lymph glands. (b) Secondaries.	Condition at first operation.	First operation.	Pathological report.	(a) After progress. (b) After treatment.
B1 A. S.	8/11/14	M 21	6 mths.	Change in voice 2 months. Dyspnoea.	(a) Nil. (b) Enlargement left lobe, nodular.	Dyspnoea.	(a, b) Nil.	(a, b) Nil.	13/11/14: Ill-defined mass right lobe. ? Adenoma.	V-resection unilateral.	Solid acinar, trabecular, and papillary cystic carc.	(a) Good immediate progress.
B2 L. T.	20/4/15	F 48	1 yr.	Increase in size and pain 1 mth.	(a) Nil. (b) Localised swelling right lobe.	Change of voice.	(a) Present. (b) Nil.	..	21/4/15: Diffuse enlargement. Adherent to trachea and muscles.	Right hemithyroidectomy.	Medullary carc. chronically inflamed in thyroid.	(a) Uninterrupted recovery. (b) No further treatment.
B3 F. F.	5/9/16	F 44	10 mths.	Rapid growth since onset. Difficulty in swallowing. Loss of weight.	(a) Nil. (b) Large, soft mass right. Skin red and injected.	Great pressure on oesophagus.	(a) Absolute. (b) Whole area red and injected.	..	6/9/16	Gastrostomy.	Nil.	(a) Died 2 days later.
B4 W. B.	31/12/17	M 64	6 wks.	Swelling in neck, steady progress since onset.	(a) Nil. (b) Rounded swelling in isthmus.	Nil.	(a) To trachea. (b) Nil.	..	3/1/18: Mass in isthmus, adherent to trachea.	Isthmus incised, dissected off trachea.	Mixed-celled sarcomatoides.	(a) Local recurrence. April, 1918. Died August, 1918.
B5 H. S.	1/5/19	F 55	9-10 mths.	Swelling in neck, steady progress. Pain 5 mths.	(a) Nil. (b) Hard mass, right lobe. Displacement of carotid.	Dyspnoea, dysphagia, aphonia.	(a) To trachea. (b) Nil.	..	8/6/19: Right lobe enlarged and fixed.	Wide dissection down to mucosa and pharynx.	Solid diffuse, mixed-celled carc. sarcomatoides.	(a) Good immediate recovery. Pain and dysphagia after 3 mths. Local induration. Later dyspnoea.
B6 M. S.	2/6/21	F 79	2 wks.	Swelling in neck, steady progress.	(a) Nil. (b) Hard mass, right lobe.	Some dyspnoea.	(a) Firmly to trachea. (b) Nil.	..	2/6/21: Advised X rays.	..	..	..
B7 P. R.	5/6/23	F 61	3 wks.	Swelling in neck, right side. Steady progress.	(a) Nil. (b) Enlarged, hard, nodular right side.	Some dyspnoea. Voice hoarse.	(a) Absolutely to trachea. (b) Nil.	(a) 3 left side. (b) Gland only.	X ray not advised (Dr. Jupp)	..	..	(a) Steadily progressed. Rapid increase of glandular involvement.

TABLE III.

Name.	Date.	Sex and age.	Swelling.	Progressive symptoms.	(a) Hypr. thy. (b) Condition of thyroid.	Pressure symptoms.	(a) Fixation. (b) Dilated vessels.	(a) Lymph glands. (b) Secondaries.	Condition at first operation.	First operation.	Pathological report.	(a) After progress. (b) After treatment.
C1 C. M.	8/8/22	M 38	4 yrs. Swelling in front of left ear. Removed low right clavicle.	2 years' recurrence of lump in front of ear, 18 mths. swelling below right clavicle.	(a) Nil. (b) Nil abnormal found.	Nil.	(a, b) Nil.	(a) Nil. (b) In front left ear, below right clavicle.	10/8/22: Apparently sarcomatous masses in front of ear and in right pectoralis.	Masses dissected out.	Secondary carc. sarcomatoides. Primary of thyroid.	(a) Good immediate progress. Recurrence in axilla after 1 year. (b) Given X rays.

An early and suggestive symptom is the presence of pain. Radiating and neuralgic pain passing from the lobe of the thyroid up the corresponding side of the neck to the back of the head is in most cases due to the presence of carcinoma. It may, however, occur when a fairly acute inflammatory change has taken place in the thyroid. If it be due to a sudden increase of tension, such as occurs with hæmorrhage, the pain is much more likely to be localised to the site of the swelling. With the onset of pain the mass will become fixed. It is important to remember that a simple adenoma is freely movable both upon the trachea and the surrounding tissues. If it has become carcinomatous it usually first becomes fixed to the trachea, and may be definitely malignant although it is still freely movable on the surrounding tissues. Stress is not sufficiently often laid upon this fact, and fixation to the trachea is often regarded as a character of all thyroid tumours. Care must therefore be taken in

LATER PROGRESS.

(Continued from opposite page.)

TABLE I.

- A1.—Myxœdema ceased. Swelling rapidly disappeared. At end of year thyroid not felt. Still myxœdema controlled by extract. Diffuse alopecia after 2 years; improved. Still myxœdema after 7 years; controlled. Married, with 1 child.
 A2.—After 7 years quite well.
 A3.—Gradual improvement. Three years later quite well. Still small swelling upper border of thyroid.
 A5.—Died of recurrence 4 months after operation.

TABLE II.

- B1.—Well 8 months, then failed to report.
 B2.—Perfectly well after 18 months. No recurrence since.
 B5.—Operation low tracheotomy, 18/8/19. Died 5 weeks after second operation.
 B6.—Died 6 months later of recurrences in lung.

TABLE III.

- C1.—Some improvement in axillary swelling.

the examination to fix the trachea and to estimate the mobility of the mass upon it. With the continued spread of the growth beyond its capsule the next structures to be involved are, as a rule, the pretracheal muscles; as these become infiltrated there will clinically be a further amount of fixation and the nodular appearance on the surface will become much more evident. A distinct increase of pressure upon surrounding structures giving rise to dyspnoea, dysphagia, hoarseness and coughing, or clear evidence of interference with the recurrent laryngeal nerves, are all suggestive, but, as with the other symptoms, any one of these alone must not be taken as clearly indicative of carcinoma. It used frequently to be stated that a paralysis of one side of the larynx was diagnostic of carcinoma. It is now known, however, that a simple adenoma may project posteriorly and interfere sufficiently with the recurrent laryngeal nerve to cause a similar weakness of that side of the larynx. It is rather on the presence of several of these physical signs than of one alone that a diagnosis of carcinoma will be made. In the later stage infiltration of the skin, with redness, marked dilatation of the veins, and the presence of blood-stained sputum will make the diagnosis evident. Enlargement of the lymphatic glands is also suggestive but is not certain evidence of carcinoma, for an inflammatory lesion may also cause glandular enlargement. The nature of the enlargement is of more importance. In the former case the glands are harder and more sharply defined unless the carcinoma has broken through them and involved the surrounding tissues. These changes are usually quite distinct from the softer and more tender enlargement which is inflammatory in nature. The presence of such glandular enlargement may be found relatively early, and is thus not in itself a necessary counter-indication to operation.

The difficulties of making a diagnosis in the early stages are perhaps less in this than in the other groups, but are very considerable. The presence of a certain amount of hyperthyroidism I would regard as of great import, for even if it is not due to the

actual onset of carcinoma it will give rise in time to severe toxic changes, and thus is an indication for operation even in elderly and feeble patients. It was present in three of the five of my cases in this group. Of the other symptoms rapid growth, increased hardness, irregularity, and tracheal fixation may all occur early, and although each one alone may occur with other conditions the presence of two or more are very suggestive. If operation be performed in these earlier stages the prognosis is not so absolutely hopeless as it is often thought. Of my five cases the first, which perhaps should not be included, has developed myxœdema but is alive and otherwise well ten years after operation; the second is quite well seven years after operation; one had a recurrence which has been kept under control and has indeed decreased in size with X rays, the patient being alive and feeling in perfect health three years after operation; the fourth is free of any evidence of recurrence two years after operation, and the fifth died with evidence of recurrence a few months after operation. (Table I.)

Cases which are Apparently Carcinomatous from the Onset.

This group in my series was slightly more common than the last, there being seven such cases, five females and one a male. In nearly every case the first symptom noticed was a swelling in the neck which rapidly grew and within a short time of the onset was associated with pain or the onset of pressure symptoms. Porter¹⁰ states that as a rule this variety occurs in people beyond middle life, usually as a unilateral and less frequently as a bilateral goitre, and grows steadily or rapidly. It will be seen, however, that in my series one of the patients was only 21 at the time of onset, although the majority were over the age of 40. The longest history that was obtained was of one year, and in this case (No. B2) the growth was relatively benign in that even at the end of this period the tumour on clinical examination still appeared to be limited to the thyroid gland. It was, however, of special interest in that at operation it was not only adherent to the trachea but the whole of the right lobe was found to be involved and the growth had spread to the pretracheal muscles, so that these structures were infiltrated with a material resembling sago pudding in its consistency. Nevertheless, a wide removal of the right lobe and the overlying pre-tracheal muscles was followed by a rapid cure, and the patient has since remained free of all evidence of recurrence, a period of nine years. In three of the cases the tumour was limited to one lobe and showed the general appearance of an adenoma, but in all of these the mass was considerably harder than would have been expected if the lesion had only been an adenoma. In one it was nodular in outline and in the third it was adherent to the trachea—that is to say, in two of the three cases there was fairly definite evidence of carcinoma on clinical examination, so that the physical signs taken with the short history and rapid growth made the diagnosis probable. In the remaining cases the growth was more diffuse, a whole lobe or more of the gland being involved. It is in this group that a considerable amount of difficulty will be found in making a correct diagnosis, and this will chiefly lie in the direction of mistaking non-malignant conditions for carcinoma.

This variety of growth usually presents a short history, there is a diffuse enlargement of one lobe or more of the gland, the enlargement is hard, is often irregular and is fixed to the trachea. There is often a considerable amount of pain, probably owing to the rapid growth. The mass is not only fixed to the trachea but there may be a distinct amount of dyspnoea and often some difficulty in swallowing. Although these changes are very suggestive of carcinoma, I have had three such cases where a positive diagnosis of growth was made, but an operation was not advised either because of the patient's age or because the size and fixation to the trachea gave rise

to the belief that the condition was too advanced for an operation to hold out a reasonable hope of cure. The after-progress of these cases has, however, been so slow or the condition has so definitely regressed that it is certain that there is no carcinomatous element. Unfortunately, in such cases the correct diagnosis remains a matter of conjecture, for no portion has been removed for section and it is only possible to believe that the enlargement was due to some inflammatory change.

It is always advised that in these cases a Wassermann test should be carried out, and there is no doubt that in all such doubtful cases it should be performed. I have, however, only once seen a definite case of syphilis of the thyroid. Here there was a localised swelling in every way resembling a simple adenoma, but owing to the strong syphilitic history a Wassermann test was performed and found to be positive, the lesion yielding to appropriate treatment. In not one of the doubtful cases was the test positive. In these inflammatory conditions the swelling is, as a rule, less sharply defined and not quite so hard and irregular.

In this group, as in the last, there is the onset of pain at an early date. At first limited to the site of the lesion, it soon begins to radiate more widely, and frequently passes up to the side of the neck, to the ear, and the side of the head, the patient frequently complaining of earache. Another point which I believe is frequently of value in making a positive diagnosis is that the carotid vessels may be pushed outwards, whereas it is more common in the innocent varieties for these structures to lie deep to the thyroid, which tends to expand forward as it grows. In the later stages the diagnosis becomes the more certain as the prognosis is more hopeless. Dyspnoea increases and there may be the expectoration of blood-stained mucus. Dysphagia is present and there is serious interference with the recurrent laryngeal nerve. The mass, and with it the trachea, becomes more firmly fixed as the growth invades the surrounding tissues. The lymphatic glands above and not infrequently in the posterior triangle become enlarged and hard, and later they in turn become fixed. The superficial veins are dilated and tortuous and the skin may become adherent and reddened.

The important difficulties in diagnosis, therefore, lie in the early stages when there is still some hope of bringing about a cure from surgical interference. In the localised group it may be said, as in the first variety, there is no one sign which is certain evidence of carcinoma. The short history, the steady growth, the hardness, and especially a nodular hardness which distinguishes this condition from a calcified adenoma, and a certain amount of fixation to the trachea will make a positive diagnosis almost certain. In my own experience any definite degree of hyperthyroidism has been absent in this group.

In the diffuse variety the difficulties are much greater, but fortunately the tendency is rather to mistake innocent lesions for carcinoma rather than carcinoma for inflammatory changes, but here again the combination of the short history, the steady progress, the hard mass, and the nodular surface are the important factors. In neither case do I believe that the local removal of a small portion of the growth will be of any value in arriving at a diagnosis. So often both neoplastic and inflammatory changes are combined that the absence of carcinomatous changes in so small a portion would still leave the diagnosis in doubt. It must be remembered here that the younger and more healthy the patient the more readily will operation be advised in all doubtful cases. It is in old, feeble patients on whom any operation of this sort might be a grave danger that such care has to be exercised in excluding inflammatory lesions from the diagnosis.

In this group, as in the other, the prognosis will depend upon the time at which operation is undertaken, but even here there is a great variation in the rate of growth. In one of my cases showing a small mass of only six weeks' duration recurrence took

place four months after operation and death occurred four months after the recurrence, while another with a year's history was well nine years after operation. Of the seven cases three were inoperable when first seen, two died of recurrences within a few months, one was lost sight of after eight months when she was still apparently well, and one remained free of all trouble to date, nine years after operation. (Table II.)

Cases Showing a Slowly-Growing Primary Lesion with Large Secondary Deposits.

There is a curious variety of carcinoma of the thyroid in which the primary lesion is so slowly-growing or is so small that it is frequently overlooked entirely, and this even upon careful examination. Scattered throughout the literature are accounts of cases in which metastatic deposits have occurred, and these most frequently in the long bones. The patient has been subjected to an operation, very often an amputation, in the belief that the condition was one of primary sarcoma of bone, and after operation a microscopic examination revealed the fact that the tissue was apparently carcinoma of the thyroid gland. The most remarkable, perhaps, of these cases is that reported by Sir Frederic Eve,⁷ which occurred at the London Hospital. This was the case of a woman who had a large pulsatile tumour in the upper end of the femur for which an amputation was performed at the hip-joint. At the time of the operation no lesion could be found in the thyroid gland, but some few months after the amputation the gland became enlarged. This enlargement had steadily but very slowly progressed so that at the time of the report, three years after the operation, the thyroid was considerably enlarged, but the patient was in perfect health. There are several points of interest in this group of cases. First, there is the fact that the secondary deposits are more common in the parietes, whereas usually the other varieties when advanced give rise to secondary deposits in the viscera and especially in the lungs. The other point of importance is that the primary growth is relatively benign and slowly growing. De Quervain has laid stress upon this and states that the mildest form of carcinoma of the thyroid is presented by those cases which look innocent but are associated with secondary deposits. In many of these cases the rate of progress is so slow and the metastases so limited in number—it is, in fact, very common to find only one such deposit in a bone—that it is not uncommonly possible to remove a secondary deposit and then to operate upon the condition in the thyroid with a very good chance of obtaining a radical cure. Unfortunately, in a certain number of these cases, even when a metastatic deposit has been removed and the diagnosis of its origin has been made certain by a microscopic examination, it is still impossible to operate upon the thyroid, for the primary lesion is so small that it cannot be discovered.

There occurred in my series only one example of this type of case. This was a male, aged 36, who four years before he was seen had developed a swelling in front of the left ear which had been removed elsewhere. For 18 months the swelling in front of the ear had recurred and a second swelling had developed below the right clavicle. The latter in its clinical characteristics suggested a sarcoma in the pectoralis major muscle. Both swellings were excised, the lower with a surrounding area of healthy muscle, the diagnosis of both masses being doubtful. On microscopic investigation it was found that they were formed of a secondary carcinoma sarcomatoides of the thyroid tissue type, but a most careful examination failed to reveal the presence of any lesion in the thyroid gland. There was no local swelling and no general enlargement. A year after operation he developed enlargements in the axillary glands for which X ray treatment was advocated. Shortly after this he developed dyspeptic symptoms which suggested that there might be secondary deposits in the liver, but no enlargement of that viscus has yet been

determined. With the use of X rays the condition is for the time being held in check and there is still no palpable enlargement of the thyroid gland.

These cases present extreme difficulties in diagnosis, but they are difficulties which are of very little practical importance, for even if the nature of the metastatic deposit is not recognised an operation is usually undertaken, and with so slowly growing a primary lesion and a single metastasis this should be regarded as correct treatment even if the condition were recognised. In every case where any change is manifest in the thyroid gland the affected lobe should also be excised. (Table III.)

References.

1. Balfour, D. C.: Medical Record, 1918, xlv., 847.
2. Berry, J.: Diseases of the Thyroid (Lond., 1901).
3. Bloodgood, S.: Surg., Gynec., and Obstets., February, 1906, p. 121.
4. Chambers: Arch. of the Middlesex Hospital, 1909, xv., 29.
5. De Quervain, F.: Goitre (Lond., 1924).
6. Dunhill, T. B.: Surgical Treatment in Auricular Fibrillation Occurring in Toxic Goitre, Brit. Med. Jour., 1924, ii., 611.
7. Eve, Sir Frederic: Discussion following Case of General Thyroid Malignancy, Proc. Roy. Soc. Med., November, 1911.
8. Pemberton, J. J.: End-Results of Surgery of the Thyroid Gland, Arch. of Surg., July, 1923, No. 1, vol. vii.
9. Plummer, H. S.: Clinical and Pathological Relationships of Simple and Exophthalmic Goitre, Amer. Jn. Med. Sc., 1913, cxlvi., 790.
10. Porter, C. A.: Analysis of My End-Results in Thyroid Surgery, Surg., Gynec., and Obstets., May, 1923, p. 621.
11. Speese, J., and Brown, H. P.: Malignant Degeneration of Benign Tumours of the Thyroid Gland, Ann. of Surg., December, 1921, p. 684.
12. Walton, A. J.: Surgery of the Thyroid Gland, THE LANCET, 1923, ii., 54.
13. Wilson, L. B.: Malignant Tumours of the Thyroid, Ann. of Surg., No. 74, August, 1921, pp. 129-184.
14. Wilson, L. B.: Pathological Changes in the Thyroid Gland as Relating to the Varying Symptoms in Graves's Disease: Based on the Pathological Findings in 294 Cases, Amer. Jn. Med. Sc., 1908, cxxvi., 851.

THE RENAL THRESHOLD FOR GLUCOSE

IN DIABETES ASSOCIATED WITH NEPHRITIS.*

BY E. WORDLEY, M.C., M.D. CAMB.,
M.R.C.P. LOND.

(From the Pathological Department, South Devon and East Cornwall Hospital, Plymouth.)

It is frequently stated that in chronic nephritis the renal threshold for glucose is raised to a greater or lesser degree. Reference may be made to Bang (1913), Myers and Bailey (1916), and Todd (1923). The latter states that while the renal threshold in such cases is generally raised, it is not always so. During the investigation of a large number of diabetics with a view to establishing their correct insulin dosage, a certain number were found to be suffering from nephritis and diabetes, and observations were accordingly made to see what effect the renal lesion had on the excretion of sugar.

It will be seen that all the cases described below were of middle age or older, and that in all instances the renal lesion was of the chronic and azotæmic type. It will be seen from a study of the figures in individual cases that no evidence was present of increased nitrogen bodies in the blood as shown by the fact that all had a low blood-urea content, but it must be remembered that all these patients were on a reduced diet and a low nitrogen intake. All of them showed, however, a marked inability to concentrate urea, and furnish excellent examples of the fact that MacLean's urea-concentration test (MacLean, 1919) is an exceedingly delicate means of detecting faulty renal excretion.

It is to be noted that few of these cases showed any symptoms suggesting nephritis. The evidence for nephritis is in nearly every case given by a low urea-concentration figure in conjunction with the

presence of protein and casts in the urine, and often a raised blood pressure, except in Case 5, where acute nephritis was present, and the urea-concentration figure normal.

Clinical Records.

The patient in the case here described was a male, aged 52, who had been invalided from the army in 1917 with nephritis, had been in receipt of a pension, and had been regularly attending medical boards since. He complained of shortness of breath, polyuria, and frequent swelling of feet. Pulse irregular; heart enlarged ext: to N.L.; blood pressure 210 mm. Hg. Is a very thin man, looks much older than his years, nose and extremities cyanosed. Sugar was noticed in urine during a recent pension board, and he was sent into hospital for further investigation.

Condition on Admission.—At this time he was passing about 2.5 per cent. sugar on a full diet and was accordingly starved for four days. The sugar was diminished but was still present (1 per cent.) and he was put on a slowly increasing diet, as it appeared impossible to make the urine sugar-free by starvation. He was sent to the laboratory for further investigation, with results as follows.

It was found that on a 900 calorie diet, the blood-sugar was fairly constant at about 0.075 per cent., with a urinary sugar of about 1 per cent. The urine contained much "acetone." The sugar tolerance was investigated with the following results:—

	Resting blood-sugar	Per cent.
	1 hour after 50 g. of glucose by mouth	0.081
1	"	0.162
1½	"	0.218
2	"	0.237
2½	"	0.150
3	"	0.100
3½	"	0.075

Urinary sugar 2½ hours after taking glucose was 7.7 per cent. Urinary sugar secreted between 3 and 3½ hours after taking glucose, when blood-sugar was between 0.100 per cent. and 0.075 per cent., was 5.15 per cent. He was therefore put on a full diet, acetone bodies quickly disappeared from the urine, and the patient felt much better. The ammonia coefficient on a full diet was normal, it became slowly higher as the food intake was reduced. It was found that when he was on a full diet the urinary sugar was fairly constant at about 2.5 per cent., the blood-sugar being about 0.150 per cent.

At this period the renal function was investigated with results as follows:—

Urine, a thick cloud of protein, a few leucocytes present, no casts seen. The urea-concentration test gave a figure of 1.45 per cent. in the second hour. His blood-urea was 33 mg. Thus his urea-concentration was poor, while the blood-urea was normal.

After having been for some period on a full diet, he was submitted to absolute starvation with the exception of water to drink, to find at what level of blood-sugar his urine became sugar-free.

The patient was starved for 106 hours, frequent estimations of blood and urinary sugar being made. The urinary and blood-sugar gradually diminished until at the end of this time the blood-sugar was reduced to the low figure of 0.075 per cent., and even then he was still passing 0.9 per cent. sugar in the urine. By this time the urine reacted very strongly to Rothera's test, and as his condition was rather feeble it was not considered advisable to continue the starvation. It was found that for the first 85 hours of starvation the blood-sugar was constant at about 0.088 per cent., when he was excreting as much as 2.5 per cent. of sugar in the urine; later it slowly fell, as did the urinary sugar to the levels mentioned above.

The effect of a dose of lævulose was next tried, with results as follows. His weight was 10 st.

Thirty-five g. of lævulose were given dissolved in 100 c.cm. of water five hours after last meal, which consisted of two eggs, bread and butter, and tea. Blood-sugar before lævulose, 0.125 per cent.; 30 min. later, 0.168 per cent.; 60 min. later, 0.112 per cent.; 100 min. later, 0.156 per cent.; 130 min. later, 0.202 per cent. Urinary sugar before lævulose, 3.0 per cent.; after lævulose, 3.9 per cent.

It will be seen that after lævulose the blood-sugar rises during the first half-hour, then drops to below the initial figure before the lævulose was given, and then rises again. There was a slight increase in the urinary sugar.

The patient was again put on a full diet, and examination of the blood and urinary sugar gave the same figures as before—i.e., blood-sugar 0.120 per cent. to 0.130 per cent., and urinary sugar about 2.5 per cent. He was then given pil. codein. gr. ½ b.d., to see if this had any effect in

* Being in part the substance of a thesis submitted for the degree of M.D. Cambridge.

decreasing the permeability of the kidney for sugar. Very little, if any, effect was noted, the amount of sugar remaining practically the same.

Commentary.

The interesting point about this case is the very low threshold for sugar in a patient with advanced renal disease. The threshold is, in fact, so low that even if he had no defect in sugar utilisation he would resemble a true diabetic, owing to the inability to store sugar consequent on the continuous loss through the kidneys. Inspection of his blood-sugar curve following ingestion of sugar appears to show that there is some slight defect of sugar utilisation present, also his normal blood-sugar on a full diet is definitely raised in spite of the continuous leak via the kidneys. This defect, however, appears to be slight, and not to need treatment. The patient himself feels much better on a full diet. In addition, the permeability of his kidneys for sugar is the reverse of what is said to be found in patients with advanced renal disease. Further instances of this condition will be quoted later. It should be noted that the blood-urea was not raised, in spite of the fact that the urea-concentration figures showed that the kidneys were seriously damaged, probably due to the low nitrogenous intake. Thus, this case shows an abnormally low renal threshold for sugar and severe nephritis. It also appears that he has a mild degree of diabetes. MacLean (1922) states in his book that this is a rare condition and quotes one case, but in it the renal threshold was only reduced to 0.140. Here the renal threshold for glucose is at the very low figure of about 0.075 or lower.

Details of Additional Cases.

For briefness particulars of the other cases examined are shown in the following table. All were cases with severe diabetes and chronic nephritis. They were all starved until their urine became sugar-free, constant examinations of the blood-sugar being made.

Case.	Age.	Urea-concentration test (per cent.).	Blood pressure (mm. Hg.).	Urine.	Blood-sugar level at which patient was sugar-free (per cent.).	Blood-urea (mg. per 100 c.cm.).
2	54	1.5	200	Alb. + + +. Granular casts numerous.	0.112	44
3	62	0.9	186	Alb., trace. No casts.	0.255	66
4	51	2.0	190	Alb. + + +. Granular casts numerous.	0.184	33
5	67	2.0	186	Alb. +. Hyalo-granular casts (a few).	0.181	32
6	54	1.4	200	Alb. +. Granular casts numerous.	0.181	—
7	58	2.2	178	Alb., cloud. Hyalo-granular casts numerous.	0.172	—
8	58	1.65	190	Alb., cloud. No casts.	0.180	48
9	58	1.6	194	Alb. +. Hyaline casts (a few).	0.186	32
10	41	1.65	190	Alb. + + +. Hyaline casts numerous.	0.186	29

Methods Employed.

The blood-urea was estimated by MacLean's modification of Van Slyke's method (MacLean and De Wesselow (1918)).

Urea was estimated by the hypobromite method. The urea-concentration test was carried out in all cases first thing in the morning before the patient had had breakfast.

Urinary sugar was estimated by Bertrand's method.

Blood-sugar by MacLean's method (MacLean (1919)).

Total nitrogen in urine by Kjeldahl's method.

Ammonia nitrogen in urine by aspiration of air through a measured volume of urine plus sodium bicarbonate, into a measured volume of acid and subsequent titration.

Plasma bicarbonate was estimated by Van Slyke's method Van Slyke (1917)).

Conclusions.

In all, ten cases are described of diabetes associated with renal disease; in all there is present a marked inability to concentrate urea as judged by MacLean's urea-concentration test. In eight of these ten cases the renal threshold for glucose was normal, in spite of the inability of the kidney to concentrate urea. In two cases the renal threshold for glucose was raised, one case (Case 2) slightly, in the other (Case 3) to a greater extent.

It would appear, therefore, that chronic nephritis of the azotæmic type does not, in the majority of cases, alter the permeability of the kidney for glucose. In addition, these observations show that MacLean's urea-concentration test is of greater value in estimating the function of the kidney in diabetes than an estimation of the blood-urea, since the prolonged period during which many of the patients have been on a low diet tends to lower the blood-urea. It is, of course, well known that it is possible, in cases of nephritis, by giving a diet containing very little protein, to reduce the blood-urea, when previously on a full diet it had been very high, to an almost normal figure. Examples have been given in a previous paper (Wordley, 1920).

References.

- Bang: Der Blutzucker, Wiesbaden, 1913, p. 128.
 MacLean, H., and de Wesselow: Quart. Jour. Med., 1918, xii., 350.
 MacLean, H.: Biochem. Jour., 1919, xiii., 135; Albuminuria and War Nephritis among the British Troops in France, 1919, Medical Research Committee Special Reports, No. 43; Modern Methods in Diagnosis and Treatment of Glycosuria and Diabetes, London, Constable and Co., 1922, p. 48.
 Myers and Bailey: Jour. Biol. Chem., 1916, xxiv., 147.
 Van Slyke: Ibid., 1917, xxx., 347.
 Todd, J. T.: Clinical Diagnosis by Laboratory Methods, London: W. B. Saunders Co. 1923. P. 369.
 Wordley, E.: The Effect of High Protein Diet on Albuminuria and Blood Urea in Cases of Nephritis, Quart. Jour. Med., 1920, xiv., 88.

INCIDENCE OF GLYCOSURIA DURING PREGNANCY.*

BY ARTHUR CROOK, M.R.C.S. ENG.,
 CONSULTING OBSTETRICIAN TO NORWICH MATERNITY
 INSTITUTION.

THESE notes are based on the result of the examination of the urine of 548 patients during their pregnancy. The routine has been generally a monthly examination, supplemented (in those cases in which sugar or albumin was found) by more frequent tests. The total number of urine examinations was 1346, which gives a rough average of between two and three per patient. The specimen of urine examined has not been always the early morning fasting urine, for this would, as pointed out by Joslin, lead to some cases not being detected at all, sugar being present in the urine only after a meal in some patients.

The records date from 1908 to this year, therefore the majority of the cases were under observation before the modern test of the blood-sugar index was in use, and are in many of the cases, due to the exigencies of general practice, very imperfect.

As to the nature of the clinical material, most of the patients belonged to the rather better working classes of a manufacturing town, whose diet is on a more generous scale in the use of meat than in the purely agricultural districts. The cases included some with complications (see Table).

Method of Testing.—Boiling the Fehling solution freshly made in the test-tube and adding the urine, a few drops at a time, and keeping the mixture at boiling point till nearly as much urine as test solution had been used. Later the reaction has been carried out by boiling the test solution and urine separately, and mixing equal volumes, then boiling the mixture for five to ten seconds, and allowing the tube to stand

* Read before the Section of Obstetrics and Gynaecology of the Royal Society of Medicine.

and cool for about a minute. Positive results have been checked by the fermentation method, noting a diminished sp. gr., and again testing the filtered fermented urine for sugar by the same method and finding it absent.

Table showing Incidence of Glycosuria in Cases of Pregnancy with Complications.

Complication.	Total No. of cases.	Glycosuria—		Remarks.
		With.	With-out.	
Eclampsia ..	1	—	1	Severe; 40 fits; recovered.
Acute alcoholism ..	1	—	1	Fatal; nearly full-time gestation.
Morbus cordis ..	7	3	4	—
Syphilis ..	1	—	1	Second stage (untreated).
Chorea ..	1	—	1	—
Tuberculous disease of hip ..	1	—	1	Chronic discharging sinuses.
Mediastinal tumour ..	1	—	1	Secondary growths of suprarenals.
Simple fibrous goitre ..	2	1	1	—
Insanity ..	3	1	2	Morbus cordis in the case with glycosuria.
Uterine fibroids ..	4	3	1	—
Epilepsy ..	1	—	1	—
Pertussis ..	1	1	—	—
Tuberculous meningitis ..	1	1	—	Fatal at third month.
Intractable boils ..	2	2	—	One patient; two pregnancies.

Incidence of Sugar.

Of the 548 patients, 166 had, at some time or other, during pregnancy, sugar in the urine—that is, a little over 30 per cent.; 23 patients had sugar in the urine in more than one pregnancy, but not in all—that is, about 4 per cent.; 8 patients had it in all their recorded pregnancies—that is, nearly 1·5 per cent. Of the 166 detections of sugar, 40 were first noted before the 21st week of pregnancy, while 126 were first detected between the 21st and 40th weeks, the week showing the largest number being the 28th; the next two highest being the 22nd and 30th weeks.

With regard to the 40 cases that were showing sugar at a period of pregnancy not later than the 20th week (if we exclude one quite exceptional case in which the glycosuria was accompanied by pernicious vomiting, albuminuria, and abortion in all three pregnancies), in 24 cases (59 per cent.) it was definitely recorded to have disappeared before the end of the pregnancy; while of the 126 cases in which it was detected first at the 21st week and afterwards, only 34 cases (32 per cent.) are recorded as not showing sugar in the urine again.

Of the 40 early cases, if we exclude the exceptional case before mentioned, there is no record of toxæmia at all, while in the 126 later cases there were 4 with albumin as well, 2 had albumin in the next pregnancy, 1 had sugar still 13 years later, and 1 showed sugar still 10 years afterwards, and 10 had marked signs of toxæmia. One had chorea, and 3 tachycardia of doubtful origin.

It appears from these figures that about 30 per cent. of these pregnant women passed sugar in the urine at some time during their pregnancy, and in about one-third of all the cases and in quite one-half of those which were first detected before the fifth month it was of short duration, and not associated with other serious signs of disturbance of metabolism, while in those cases in which it appeared at about the 28th to 30th week it is more often associated with signs of toxæmia and more allied perhaps to the "renal diabetes" so-called, and in about 10 per cent. of them it lasted till labour and afterwards.

In the small proportion in which the sugar appears in every pregnancy (1·5 per cent.) the proportion of definite toxæmia is higher still, 50 per cent. at least, though the total number of these cases is perhaps too small to allow any conclusion to be reliable. In cases only first detected at a very late date—that is,

after the 34th week—just under 3 per cent. of them had sugar till labour, and afterwards; some of these cases were of the intermittent type.

No special incidence of septic infection was noted in these patients, though it was the rule to record all vaginal discharges, or any septic condition which a complete examination revealed. The average weight at birth of the children of mothers who had glycosuria at any time during pregnancy was 7·2 lb. Sugar was absent in the fasting urine in most of my cases. As to the effect of diet, I found that, if strictly adhered to, it caused the disappearance of the sugar, thus differing from what is generally said to occur in "renal diabetes," and from most of the cases related by Dr. Mackenzie Wallis in his paper read before this Section in November, 1921; but his statement that the sugar is mostly detected about the sixth month, and as to the frequent occurrence of severe vomiting at an earlier period of the pregnancy, corresponds with my experience. In one particular case (No. 2) the result of dieting was disquieting, the urine when sugar-free becoming loaded with acetone, and the patient manifested symptoms of severe weakness and faintness. This appearance of acetone in the urine where there had been none before the dieting was begun, was noticed in the case described by Dr. Graham in his paper before this Section in May, 1924. But that was when the patient was at an early age, and before pregnancy had occurred.

Clinical Records.

CASE 1.—Mrs. —, aged 30; her second pregnancy. No history of first pregnancy. Sugar now present at 33rd week up to 5 gr. per oz.; blood pressure 155 mm. Hg; cedema of legs and troublesome pruritus; normal labour; hydramnios. Third pregnancy: now 37 years old; 31 weeks pregnant; urine containing sugar 5 gr. per oz.; it persisted till 14 days before labour, which was normal, except for hydramnios. This patient had amenorrhœa for four months with enlargement of thyroid and nervous symptoms just before the commencement of this last pregnancy; the thyroid enlargement and nervous signs disappeared with the onset of pregnancy; now, 10 years after, she has no glycosuria or thyroid enlargement, and is in good health and has regular periods.

CASE 2.—Mrs. —, primipara, aged 29; 23 weeks pregnant; sugar in urine (after meals only) 10 gr. per oz., no thirst or polyuria, but excessive frequency of micturition, sometimes half-hourly. Blood-sugar fasting 0·083, after 100 g. glucose, 0·136 after one hour, 0·104 after two hours, 0·079 after three hours. Taken when on ordinary diet at two hours after midday meal, 0·166. Had excessive vomiting and "air hunger" first two months—these symptoms now gone but has pain under right shoulder and in breasts if exposed to cold (it was mid-winter); these symptoms relieved by large doses of sodium bicarbonate. With strict non-carbohydrate diet, urine became sugar-free, but produced symptoms of giddiness and weakness and "drunken feeling" and large quantity of acetone appeared. Sugar reappeared directly carbohydrates were taken even in small quantity, and eventually some present in fasting urine as well; total amount being up to 400 gr. per diem. After premature labour (induced) sugar persisted for six weeks, then disappeared; three months after labour 50 g. glucose gave blood-sugar 0·18 three hours afterwards, and urine showed 9 gr. sugar per oz.

CASE 3.—Mrs. —. Three successive pregnancies: first pregnancy, aged 32; 11 weeks pregnant, seen because of intractable vomiting for 14 days. Pulse 100 (persistent); blood pressure 150–160 mm. Hg; scanty urine, high colour, excessive acid reaction, sugar, and trace albumin; ferric perchloride test positive. Vomiting ceased after one passage of stomach-tube and gastric lavage; urine increased in volume and contained more sugar; a fortnight later aborted spontaneously. Second pregnancy: about eight weeks pregnant; vomiting began a week ago and said to be continuous. Pulse 108, temp. normal. Urine as before but no sugar; volume very scanty. Improved under gastric lavage for a fortnight, and sugar appeared in urine, then relapsed. Blood pressure 120 mm. Hg; pulse up again; delirium at night; total urine 16 oz. per day only. Uterus emptied under anæsthetic and sugar absent from urine by 14th day. Third pregnancy: now aged 33; seen at eighth week, vomiting severely, no sugar but albumin. Seven days later sugar present. Still vomiting continuously; after 12 days, vomiting better, but patient certified for acute mania and removed to mental hospital; discharged in seven weeks recovered. Vomiting still

severe; sugar still present. Pulse persistently over 100; some night delirium; uterus emptied under anæsthetic; large quantity liq. amnii of dark green colour; no sugar in urine three days later. Now, nine years after, has had no more pregnancies, has become very fat, and has no sugar in urine, and periods are regular.

The Question of "Renal Diabetes."

It has been suggested that these cases were really cases of "renal diabetes" such as has been described apart from pregnancy—that is, sugar in the urine, with no hyperglycæmia or other diabetic signs. It appeared in two of my cases to be so—the sugar being still present 10 and 13 years afterwards, and yet the patients still in fair health, certainly not diabetic. In these, too, others of the same family had glycosuria.

In considering this question of renal diabetes and its importance, I mention the work of Barrengen and Roper¹ who, analysing insurance statistics, found that after five years 20 per cent. of their supposed "renal diabetics" had developed diabetes, 25 per cent. were "suspicious," and 55 per cent. remained free. They also noted that if the glycosuria was recurrent—that is, detected more than once—8 out of 11 cases became diabetic. These figures make one hesitate to say the matter is not important.

Types.—Perhaps there are at least two distinct types—first, a benign type, which is generally first noticed before the fifth month, but may only be detected very late in the pregnancy, viz., after the 34th week; this may be transient or intermittent, or may be a condition, unaccompanied by serious symptoms, which was present before the pregnancy, and will persist after it; and secondly, a type where the sugar generally appears at about the 21st to 23rd week, is often accompanied by symptoms usually associated with some toxæmia of pregnancy, and does not disappear till the termination of the pregnancy, and in some cases recurs with succeeding pregnancies. It is especially associated with cases having had severe early vomiting, which often has subsided, and also in the later months with œdema (not necessarily accompanied by albuminuria)—a link perhaps with chloride metabolism, and also sometimes associated with hydramnios.

In connexion with the supposed comparative innocency of glycosuria before the fifth month which I suggest as the result of my experience, it may be of interest to recall that in the early months of pregnancy the detection of sugar in the urine after a glucose meal has been used as a test for pregnancy (Frank and Nothmann). These writers assert that the test is useless after the fourth month, and if that is so, it seems that the normal pregnant woman can meet most demands after that period on her carbohydrate metabolism.

Though the glycosuria met with in pregnancy after the fifth month may have some relation to "renal diabetes" it does not seem to explain all the other cases (excluding of course true diabetics).

The two cases in my series in which sugar is still present in the urine 13 and 10 years after the pregnancy, although still in good health and showing no signs of true diabetes—did not when pregnant present symptoms complained of by the patients who rapidly ceased to pass sugar after labour and the puerperium—such symptoms as, namely, excessive early vomiting, pruritus, considerable œdema of legs without albuminuria, and the presence of hydramnios.

My only excuse for recording these crude figures and the deductions from them I have suggested, must be the present position of our knowledge of pregnancy and so-called "toxic" pregnancy. Recent work on the glands of internal secretion seems, at any rate for a time, to have increased the fog between our eyes and the clear picture we all desire of the relationship (if any) between pregnancy, "toxic" pregnancy, acidosis and carbohydrate metabolism, and otherwise, to each other. My hope is that by placing this fragment, as one may figuratively describe it, on the

table where the parts of an, as yet, unarranged puzzle lie, I may help others to fill the gaps and so aid in its ultimate solution.

PS.—Since finishing these notes, I find that I have overlooked that Dr. Herbert French, quoting Saleim in the Goulstonian Lectures, 1908, gives the incidence of glycosuria in pregnancy as high as 66 per cent., and observes on the frequency of hydramnios in this condition; also a case recorded by Dr. R. Wise and published in the Transactions of this Section in March, 1923, in which death of the foetus occurred at the eighth month of the first pregnancy, while in the second pregnancy the symptoms specially noted in addition to polyuria and thirst were pruritus and faintness, the sugar disappearing after a normal labour with living child. With reference to this tendency to death of the nearly mature foetus before birth, I give very briefly notes of a case occurring to me within the last few weeks. A primipara, aged 35, sugar 2 gr. per oz. found at the 24th week. Hydramnios detected at the 28th week with great œdema of legs. Sudden death of child at 35th week, almost complete subsidence of the œdema and sugar before the birth of a 7½ lb. macerated foetus at the 38th week.

Clinical and Laboratory Notes.

VERONAL POISONING.

WITH NOTES ON A CASE.

By E. P. SCOTT, M.B., B.S. LOND., M.R.C.S. ENG.

IN patients with any cardio-renal affection veronal or other hypnotics must be given with caution, as their excretion must necessarily be delayed, and their accumulation considerably hastened. The following is an instance which came under my care some months ago.

I was called to see the patient (a woman aged 62) in consultation, and found her in a comatose state. She had been suffering from insomnia, the result of anxiety. The diagnosis lay between (1) cerebral hæmorrhage, (2) cerebral tumour, (3) diabetic coma, (4) uræmic coma, or (5) that associated with a drug toxæmia. The patient was well nourished with no obvious gross lesion. There was slight cyanosis; breathing stertorous, and inclined to be shallow; pulse 90, regular, full, and of high tension. There was some slight cardiac hypertrophy. The pupils were both widely dilated; no reaction to light; corneal reflex absent. Knee-jerks absent, and Babinski's sign present in one toe; no ankle clonus. Blood pressure approximately 200-120.

Diagnosis, therefore, rested largely on examination of the urine and blood. No previous history of illness was obtainable. The blood-sugar was 0.133 per cent.; urea 0.033 per cent. The urine was acid, contained 1/10th albumin, 2.5 per cent. urea, specific gravity 1026. Rothera's test was positive. Centrifuged deposit showed only very occasional hyaline casts. Further examination showed albumin varying from a faint trace to a definite cloud, while a week later Rothera's test was still positive and the ferric chloride test negative. A fortnight later Rothera's test was negative and ferric chloride positive. A fortnight later again both ferric chloride and Rothera's tests were negative. A drastic purge and hot packs were given. I also drew 25 oz. of blood from the right arm, and gradually the comatose condition began to subside. The reflexes gradually returned; movement returned to all limbs and body.

Onset of Ophthalmoplegia.—After 36 hours it was noticed that the patient had developed ophthalmoplegia, and hæmorrhages were observed in both eyes. Mr. Ernest Clarke, who saw the patient with me, has sent the following notes:—Jan. 25th: Some ophthalmoplegia still remaining in both eyes, pupils very sluggish and still dilated. The fundi of both eyes presented about the same appearance, viz., papillitis, swelling +3 in the right and +2 in the left œdema spreading from the discs, small streaky flame-shaped hæmorrhages. No sickness or vomiting, and no other symptoms pointing to cerebral tumour. Feb. 6th: General condition better, ophthalmoplegia disappeared, and there was a slight convergent strabismus of the right eye, and pupils were normal but sluggish; the appearance of fundi much the same, except that the swelling was about 0.5 D. less in both eyes. 24th: From this time the patient rapidly

¹ American Journal of Medicine, June, 1907.

improved. June 24th: Both fundi absolutely normal, vision with glasses 6/9. Sept. 23rd: Can now read part of 6/6 with glasses and J.5 well.

In course of time the reflexes became normal and the strabismus disappeared.

The condition, then, pointed to the effects of a drug which, owing to the probable presence of some cardio-renal affection, had exerted a powerful action on the nervous system. It has been noted that in cases of veronal poisoning, nuclear ophthalmoplegia is an occasional concomitant symptom. I therefore suggested that search should be made, and in one of the patient's boxes were found powders of veronal, each containing 7 gr. The patient's mental state improved, though slowly, and after several weeks she informed me that the night before she was taken ill the last thing she remembered was taking two of these powders (14 gr. in all) to give her sleep.

Dr. P. N. Panton, to whom I owe the pathological examination of specimens, thought it probable that the veronal may have been excreted as a carbamide, but it was impossible to determine this fact. I have examined the urine of patients who have taken medinal (a preparation allied to veronal), but have been unable to confirm the above. The patient has apparently recovered, after several weeks' nursing-home treatment. The blood pressure has dropped to 160, and her urine is normal.

I have recorded this case as Mr. Clarke considered the eye condition of great interest and undoubtedly due to the veronal.

Portland-place, W.

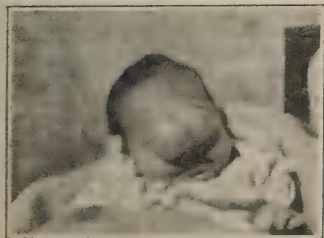
A CASE OF ENCEPHALO-MENINGOCELE.

By EMILY G. STUART, M.B. LOND.,
OF QUETTA.

THE following case of encephalo-meningocele in an unusual situation seems worthy of record.

In October, 1923, I attended a Sindhi woman in her third confinement. She had had a normal pregnancy, and both previous children are alive and healthy. This third confinement was quite easy and short, though the patient complained that it was longer than her previous labours. The child, a

girl, was born by vertex presentation, was well nourished and healthy, but had a fluid swelling growing from the nose, and covering the inner side of each eye; the nostrils could be seen below the lower border of the tumour; there was not any nasal discharge, and the baby could breathe through her nose. She could open her eyes slightly and could take the breast and move her limbs naturally. The



From photograph taken immediately before operation.

tumour was lightly bandaged to save the mother's feelings, but on the third or fourth day it had grown larger and was covering the eyes more. I aspirated and drew off clear fluid, after which it was evident that about one-third of the swelling was of solid consistency. The swelling soon filled up again and the anterior fontanelle became prominent. I aspirated the swelling several times, at intervals of two or three days, and after aspiration the fontanelles became less prominent. The tumour was increasing in size in spite of aspiration, and after consultation with Dr. Holland, Major Haughton, I.M.S., and Captain Fry, I.M.S., it was decided to operate.

The operation was performed by Dr. Holland, assisted by Captain Fry, and after incision in the mid-line of the tumour the fluid escaped from a very thin-walled cyst. The sac wall could not be separated from the underlying tissues, so part of the wall was removed and an attempt was made to close the sac, the root of which came from inside the cranial cavity through an opening above the nasal bones. The optic thalami were found to be in the tissue removed. The thin outer skin was sewn up and dressings applied. After five days the wound opened up and fluid oozed through. The child gradually sank and became unconscious and died three weeks after the operation.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

NON-SPECIFIC DISTURBANCES OF HEALTH DUE TO VITAMIN DEFICIENCY.

THE resumed discussion¹ on this subject took place on March 23rd, the President of the Society, Sir ST. CLAIR THOMSON, occupying the chair.

The PRESIDENT, in a brief reintroduction, quoted a letter which the late Sir Clifford Allbutt wrote to the *Times* in his eighty-eighth year in criticism of the white bread usually sold, and calling public attention to the great value of vitamins in food.

The openers of the original debate, Dr. LEONARD WILLIAMS, Lieut.-Colonel R. MCCARRISON, Dr. W. CRAMER, and Dr. G. M. FINDLAY, briefly reminded the meeting of their contentions, the three last-named showing again the slides with which they supported their theses.

Dr. WILLIAM HUNTER said the very able opening by the four speakers had raised the subject beyond the region of mere hypothesis, for it was now clear that when vitamins were withheld from the diet the health of the animal suffered at once, and if this deficiency were continued over a long period actual disease, such as beri-beri, ensued. This lack certainly predisposed to infections of various kinds. He stressed the importance of the lymphopenia as a feature in cases in which there had been deficiency of vitamin B in the food, this vitamin having a direct influence on the blood-forming tissues. The bone changes which Dr. Findlay so well demonstrated were, Dr. Hunter said, identical with the aplastic marrow changes which he had so frequently found associated with what he termed aplastic anæmia, and as a cause of which he usually expected to find some streptococcal sepsis.

Dr. ROBERT HUTCHISON agreed with the discussion being limited to the three accessory food factors A, B, and C. It was contended, he said, that a deficient supply in the food of these specific vitamins was a cause of widespread disorders of health, and mainly the evidence brought was experimental. But it was very difficult to be sure that disturbances of health in animals fed on a vitamin-less diet were solely due to the absence of vitamins, as such diets were usually very abnormal in other respects also. Some were "synthetic" diets, others were deficient in proteins of high biological value, or in a proper balance of the inorganic salts. But granting, for the purposes of argument, that the disorders referred to were usually caused only by vitamin deficiency, was there reason for supposing that disorders comparable to those in the animals experimented upon were being produced by a similar cause in the community as a whole? This he doubted. If the contention of the openers were true, why did not more people show the final link in the chain? In 25 years' work at the London Hospital he had never seen a case of adult scurvy, nor one of beri-beri unless it had been imported from the East. The case of vitamin A, however, was somewhat different, as it was fairly clear that deficiency of this in the diet resulted in interference with growth and a lessened power to resist infections, though there was evidence that at the same time there was a shortage of calorie value in the food given during the growing years. He quoted with approval the following extract from "Food, Health and Growth," by the late Prof. Emmett Holt: "The physician can fall into no greater error than to assume that vitamin deficiency is the chief cause of all chronic nutritive disorders; just as not very long ago these were all referred to auto-intoxication The use of vitamins without definite indications will be popular for a period, but, like other fads, it will pass."

¹ THE LANCET, Feb. 21st, p. 385.

With time and further investigation their true place will be determined."

Dr. J. M. ROWLANDS spoke of his experiences in connexion with pigs on his own farm. He contended that one of the terminal events in the chain of vitamin deficiency was tuberculosis. He had been able to eliminate tuberculosis from herds of animals which previously had been very widely affected with that disease, and he had done it by feeding them on foods known to be rich in the three important vitamins. He held the strong belief that unless cows were fed on such diets, bovine tuberculosis would still be rampant among children, and would increase.

Dr. H. SCURFIELD contended emphatically that there existed plenty of evidence of widespread derangements of health which might be due to diets of deficient quality. It had been shown that intestinal stasis was one result of vitamin B deficiency, and practically the whole nation suffered from constipation. Also there was good reason for believing rickets to be due to defective diet. It was only reasonable to assume that infections could be warded off if the general dietary were improved in the respect alluded to. It had been shown that native races who lived on dairy products and fresh fruit and vegetables were remarkably free from the intestinal disorders which were so common in this country, and the same people were practically free from cancer.

Dr. F. PARKES WEBER said he had seen a good deal of evidence in the East End of London that the terminal link in the chain spoken of by Dr. Hutchison was reached; often it arrived in the form of tuberculosis, and in death from various acute infections. The bad cases were divisible into two classes: those with digestive disturbances, muco-membranous colitis, and visceroptosis, who all suffered from constipation. Secondly, there were those of corpulent body whose terminal stage took the form of cerebral hæmorrhage and arterio-sclerotic disturbances. These had taken excess of food, and perhaps a sufficiency of vitamin, but it had been their undoing.

Mr. ASLETT BALDWIN, referring to Dr. Hutchison's statement that he had never seen in his hospital practice beri-beri or scurvy, said the reason could probably be found in the fact that it would be difficult to find in London a person who was absolutely deprived of vitamins in his food; in that case one could not expect to see end-results which were typical and such as laboratory animals exhibited. He had had some gold fish for a number of years and he fed them on crumbs of whole-meal bread; friends of his who fed theirs on white bread crumbs soon lost them.

The PRESIDENT said that at Midhurst sanatorium as soon as the patients left the dining-room the sparrows flocked in at the windows, and he noticed that whereas they eagerly devoured any butter they could get, they never touched the margarine. It had, in fact, become necessary to cover up the butter after the meal was over.

Replies.

Lieut.-Colonel MCCARRISON, in a brief reply, said Dr. Scurfield's remark about cancer gave him the opportunity of stating clearly what was in his mind on that matter. What he had seen, and what he had said, was that cancer and chronic gastro-intestinal diseases were generally very uncommon amongst certain races in the extreme North of India, races whose diet was extremely well-balanced and rich in vitamins. He had not generalised on this subject because his experience did not go beyond those particular races. He believed it was not a question of civilisation *versus* want of civilisation, or of native races *versus* Western races. For instance, cancer was quite as common in the people of Bengal, whose food was very faulty, as it was now in this country. The important desideratum was that the food should be well-balanced and rich in vitamins and the other essential substances. In the present state of our knowledge—or ignorance—it would be as unwise to disregard the possible action which faulty food might

have as a predisposing cause of gastro-intestinal cancer, as it was at present unwise to assert that faulty food was the cause of gastro-intestinal cancer. A recent report of the Medical Research Council stated that without vitamins normal metabolism was impossible. The Book of Ecclesiasticus said: "The Lord hath created medicines out of the earth; he that is wise will not abhor them." He, the speaker, knew no medicines created out of the earth on which normal metabolism was dependent with the exception of vitamins, and the wise man would not abhor vitamins.

Dr. CRAMER, in his reply, said he thought there should be further experiments from this standpoint on animals which were normally susceptible to tuberculosis. His answer to Dr. Hutchison's criticisms was that one could give the animals experimented on carbohydrates, proteins, inorganic salts, and other substances in due proportion, but if vitamins were omitted the animal died and showed specific lesions. But if animals so deprived were given a little butter, fat or yeast, a dramatic change came over the whole animal in two or three days. The terminal stages of this deficiency were not generally recognised, because they were called by the name of the particular disease from which the patient died, such as pneumonia, though the resistance to that disease had probably been fatally lowered by neglecting to give vitamins. And in some cases, though they had not enough vitamins in their food to keep them in the best health, they might yet have enough to ward off the terminal conditions. The mere fact that cases of beri-beri and xerophthalmia did not occur was no evidence that the people as a whole were taking food sufficiently rich in vitamins.

Dr. FINDLAY, in his reply, spoke of his investigation of an outbreak of pneumonia in an industrial school near Edinburgh. There had been previous outbreaks, and various hygienic improvements were introduced, but without checking the outbreaks. The diet was not thought to be at fault, as it was drawn up by Prof. Haldane. But the speaker found that, in order to save expense, the whole of the food for the boys was put into huge cauldrons, which were screwed down and the food stewed for three or four hours. In previous years there had also been conjunctivitis, which was not cured by applying disinfecting lotions. He recommended to the Scottish Office the giving of cod-liver oil and raw swede juice, and since that was carried out there had been no further outbreaks. In some experiments on animals he found that animals fed on food deficient in vitamins, particularly the A form, quickly caught and died from inter-current infections.

SECTION OF ELECTRO-THERAPEUTICS.

TREATMENT OF CARCINOMA OF THE BREAST BY X RAYS.

A MEETING of this Section took place on March 20th, Dr. STANLEY MELVILLE, President, being in the chair.

The PRESIDENT, in opening the meeting, said the subject was one of great importance, especially at the present time, when, partly from within their ranks, but chiefly from outside it, attempts were being made to divide practitioners of electro-therapy into two camps, the old and the new. This threatened to be a danger to the whole question, and already surgeons were sending patients to electro-therapists with the stipulation that they were not to be treated by so-called "deep therapy." The speaker strongly deprecated such an attitude, as it was undesirable for those in the specialty to become slaves to any particular form of radiation. The researches of Prof. Russ and others, and the various experiments on animals, were an answer to those who said that treatment by the short wave-length was the only one of value. There could be no doubt that high voltage radiation was required, but equally the soft, long-wave radiation was needed. His own view was that too much thought was given to voltage and too little to the other factors.

Dr. GILBERT SCOTT then read a paper entitled

A General Survey of Radiation,

with special reference to treatment of carcinoma of the breast by X rays.

He said he proposed to make a brief survey of the position from three points of view: that of the disease, the therapeutic agent, and the patient. With regard to the disease, he said that when the high voltage technique was published he thought it would prove a short cut to the object, the control of cancer. He particularly avoided using the word cure, when recurrences of so-called cured conditions came after as long as 22 years. A sufficient time had now elapsed since the introduction of the high voltage method for it to be realised that there was still a long way to go. Some said that cancer was a local condition. That might be true within narrow limits, seeing that it was first evident as a local lesion; but it was not safe to plan the attack upon it on this assumption. The surgeon only rarely saw early cases of cancer, the radiologist never. He considered that the development of the primary growth was merely a local indication that the patient had malignant disease; it gave no clue to the extent of such disease. Many schemes had been devised for giving a primary growth its lethal dose, but even when that had been done the patient succumbed in a short time to secondary deposits elsewhere, even though gland areas were irradiated also.

Considering next the therapeutic agent, X rays, he pointed out that the high voltage was a homogeneous technique, the low voltage was a heterogeneous irradiation. These two kinds could not be divorced from each other. The newer methods should be welcomed as an addition to the older, not regarded as their substitutes. Radiation, he said, did not destroy or remove unwanted cells, but the malignant cells were so changed that they were replaced by others, without necrosis taking place, a metamorphosis without cellular death. If such tissue reaction could not be brought about in a particular case, no amount of radiation would destroy the pathological cell. In most cases the pathological cells were replaced by fibrous tissue, not destroyed as when the cautery was used. This meant that radiation produced an indirect effect, and the question arose whether this indirect effect could be utilised on a larger scale. The work of many physicists supported the possibility of liberating for action, by irradiating a large area of the body, some anti-body which was antagonistic to the disease-producing cells.

With regard to the patient, every subject of cancer or other disease must be carefully studied before deciding on irradiation, and an idea formed as to whether curative results were likely to be achieved or only palliative ones.

Dr. Scott said that radiation sickness or malaise was a bugbear to the radiologist. Sometimes this sickness might be sufficient to turn the scale against the patient. It might take the form of vomiting during or shortly after the séance, or the patient might leave feeling well, but in a few hours would feel strange, the stomach feeling upset, or he might have intense headache. In the case of the high-voltage technique the vomiting might become uncontrollable. With low voltage only treatment over a considerable area seemed to cause the sickness, but with the high voltage the sequel followed the treatment of only a small area. He said that during the last 14 years he had used X rays on over 2000 cases of carcinoma of the breast. If the best method of attack in these cases could be decided upon, it would lead well on the road to the successful dealing with cancer as a whole. The primary growth having been removed by the surgeon, the radiologist had not now a tumour to direct his attention to; therefore he had to devise a technique which gave a reasonable chance of destroying cells at various depths and in unknown positions. To prevent recurrences in these cases he considered that heterogeneous irradiation was more valuable than homogeneous. The rays

were absorbed at various depths, and large fields could be covered.

He held that there were objections to the high-voltage technique. The field of radiation was too limited, there was no indication of the depth at which the dose should be delivered; damage to lung tissue in breast cases was comparatively frequent; somewhat serious blood changes were set up. A low-voltage treatment embracing practically the whole trunk seemed to extend the range of control of the disease in a gratifying way. He said he would be glad if speakers would state their experiences on the following points: (1) Reduction of secondary nodules or glands after application of the rays to the primary growth. (2) Cases of skin reaction developing on the side of the body opposite to that irradiated. He had not himself encountered such. (3) Deep or late reactions six months or longer after the last irradiation. He had seen it five years after the last séance. (4) The occurrence of radiation sickness and results of its treatment.

Dr. Scott concluded by showing a number of illustrations on the epidiascope.

Problems in Deep Therapy.

Dr. J. H. DOUGLAS WEBSTER thought three kinds of radiation therapy should be recognised: superficial, medium (to 100,000 volts) and really deep therapy (100,000 to 140,000 volts). Cases of breast carcinoma were best treated prophylactically by medium-deep therapy, with 3 mm. of aluminium and 0.2 zinc. In one series published, 140 cases not too far advanced, 60 per cent. remained free of recurrence after three years. The prophylactic post-operative treatment of breast cancer differed, he said, from that of cancer in most other sites, because of the danger of diminishing the effective lung area and inhibiting the vitality of the pleura by the scattered rays. In breast cases the prophylactic treatment should extend over months. When, during the low-voltage treatment, a small recurrence was detected, the high-voltage technique was substituted, and in a large proportion there had been a successful result, the parts involved becoming normal to palpation. Sometimes the great fatality of breast cancer was forgotten. It had been computed, on the basis of statistics, that a patient with breast cancer and involvement of axillary glands had only a 1 in 25 chance. Lee, of New York, said that only 15 per cent. of patients with breast cancer remained alive at the end of five years. Owing to the large surface involved in these breast cases, and the configuration of the region, combined with the question of the degree of mobility of the arm, the problem of an even irradiation was a very difficult one. It was wrong to divide the area into squares and to irradiate each square, as there was a danger of treating twice the edges of the squares, and missing some parts altogether. The irradiation should be done, preferably, by a near technique over a large surface; his practice was to apply the rays from the top of the neck down to the level of the umbilicus at an angle of 30 degrees, from above, from below, from both sides, and from the back, giving, in some cases, an additional dose to the axillary apex and to the clavicular triangle.

Dr. Webster said he had analysed 335 cases of cancer of the breast treated in the last three years; 148 of these were treated with the medium therapy, but 30 of these could be excluded, as they had only one or two treatments and then left. Of the 118, 34 (29 per cent.) died, 36 were still continuing treatment, and 9 of the 36 were well a year after the operation; 38 were well at the end of two years, and were not now having treatment. This meant that 40 per cent. of the cases showed a good result. Many patients had been treated with high voltage in one part, and in another site with a medium voltage. Of 188 breast cases treated with high voltage, 84 had died, and 45 showed a good result and treatment had been discontinued. In some of the cases in which the surgery was incomplete irradiation produced good results. He contended that each bad result should be carefully investigated, owing to the valuable

knowledge it would probably afford. He described the method of "in advance" prophylactic treatment he had carried out for two years, on the basis of Mr. Sampson Handley's idea of centrifugal spread. It was not of a routine nature; what was done was special to each case. He asked whether there was such a dose of rays as could be called stimulant. Growing seeds could be stimulated by a small dose of the rays. Rays directed to a small tumour on the forehead at once increased the activity and growth of a tumour behind the ear.

The debate was adjourned to a date to be determined.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the University, Bristol, on March 11th, Dr. J. O. SYMES, the President, being in the chair.

Dr. R. C. CLARKE opened a discussion on the

Catarrhal Child.

He said that his views were based on extensive observations in children's clinics of several thousand children, and represented ideas that had forced themselves upon him. The subject was one that had not received the attention that it deserved. Only of late years had the routine examination of children supposed healthy been systematically undertaken. When advice was sought only for acute bronchitis or broncho-pneumonia, the significance of preceding bronchial infections might escape notice. Among children between 3 and 6 weeks old, not less than half were already subjects of respiratory catarrh—in the last 1000 cases the exact figures were, 499 with catarrh, 501 without. "Catarrh" was diagnosed on the simultaneous presence of three signs: (a) snuffles, (b) Harrison's sulcus, and (c) definite bronchial catarrh, determined by auscultation. In this connexion, he wished to warn about "snuffles." A nasal catarrh, a napkin rash, and the marasmus which followed inability to suck, from nasal obstruction, must not lead to the (false) diagnosis of congenital syphilis.

When a young infant "caught cold," the first thing that occurred was nasal obstruction. The whole respiratory mechanism was thrown out of gear, for infants refused to breathe except through the nose. Only when half stifled would they open the mouth and breathe through that, so that sleep was disturbed. The drawing in of the lower ribs produced Harrison's sulcus; the latter was a sign solely of nasal obstruction. Rickets might emphasise it, but did not cause it. Since sucking was deficient, feeding became very difficult; if the child did not suck properly, the natural stimulus of the breast was lost, and the breast-milk might go—a disaster of the first magnitude, especially among the poor. The earlier the catarrh affected the child the longer it took to clear up and the greater the certainty that the chest would be affected. If the first "cold" could be postponed till after the sixth month it was practically certain that the chest would escape. But every baby that had nasal catarrh under 4 weeks old (in a series of 400 sufferers) had bronchitis. Further, he believed that once a child became bronchitic it remained bronchitic; every cold "flew to the chest," and it was proper to describe some children of only 6 months old as "chronic bronchitics." As the children grew up the attacks continued; but between the acute attacks there could always be found signs in the chest. The bronchitic baby produced the bronchitic child, and later the bronchitic man—witness the almost invariable presence of Harrison's sulcus in pensioners with bronchitis. Further, he believed that chronic nasal catarrh was the one and only cause of "tonsils and adenoids"; the latter phenomenon was merely a part of the picture of chronic respiratory catarrh. A badly developed nasal organ, leading to deflection of the septum, and a permanently damaged mucosa

leading to chronic sinus disease, were other sequelæ of the same condition. The otitis media which was so very common among school-children was probably only a recurrence of an unnoticed otitis of infancy.

The development of this catarrhal condition depended on two factors: (1) the number and virulence of the organisms reaching the mucosa and (2) the local and general resistance. (1) The amount of infection depended on the presence of persons carrying these organisms, and the lack of ventilation. (2) As to resistance, he did not think the mucosa of the young infant had any power of resistance; and the membrane which had been subjected to repeated infection never gained this power, which was otherwise definite. The very young baby invariably got the whole respiratory tract infected if any part was involved.

Prophylaxis of this condition was not difficult. During the first six months of life every effort must be made to avoid infection. The baby should live in the open air, even in a draught; this rule should not be broken even during the bath. The mother should be examined to exclude chronic *suppurative* rhinitis; if this was found, the use of a mask during the whole time that she was doing anything for the infant was important. The same rule applied to the nurse, though no nurse with a definite nasal infection should be engaged. All visitors should be subjected to the same rule, and never allowed to kiss the child. The parent, nurse, or other children who were carriers presented a difficulty—that is, those who nourished the organisms of disease without manifesting symptoms. As for treatment of older children, this was important because the mucous membrane, if preserved from repeated infection, did recover some power of resistance. Hopelessly infected tonsils and adenoids should be removed. The same general hygienic rules as for infants should be observed; the child should live in the open air; and visits to the cinema and parties should be reduced to a minimum. Cod-liver oil was the only medicine of any value.

The PRESIDENT thought that Dr. Clarke had described an entirely new disease. He had not himself met with this disease. He thought that up to 6 months of age children were extraordinarily immune to infection. The picture they had had presented might be produced by underfeeding, rickets, or teething—all might manifest "catarrh," without there being any infection. He suggested that small children did not readily clear the trachea of secretion, which might lead to râles.

Dr. C. E. K. HERAPATH agreed with Dr. Clarke, but he thought it a disease of the hospital class. As for clearing the air-passages, very young babies sneezed more than adults.

Mr. J. P. I. HARTY believed that infection of the air-passages could take place at a later age than that discussed by Dr. Clarke, especially from parent or nurse. Otitis media was quite common at the very earliest ages. He thought adenoids should be removed at any age, without waiting.

Dr. P. WATSON-WILLIAMS said that the tonsils should not be removed in very young children; these glands had often great value in the fight with infection, and should be preserved as long as possible. Having had many years' experience as a physician, and given especial attention to the chest, he could not agree with the large incidence of bronchitis described. He was interested to hear Dr. Clarke's observations relating to the occurrence of sinus disease in families; he (Dr. Watson-Williams) had had many cases where sinus disease occurring in all the children of a family co-existed with a latent sinus infection—perhaps producing no symptoms—in one or other parent.

Dr. R. A. ASKINS (school medical officer) thought 20 per cent. of all children of school age suffered from adenoids. The prevention of so much sickness was of first importance. Further, bronchitis was very common among the children at primary schools. He had observed the frequency with which the operative treatment of tonsils and adenoids was needed in

all members of a family. He considered that children had some inherited immunity, as regards ordinary infections, which lasted for some months after birth; but this did not apply to catarrhal infections.

Dr. J. A. NIXON thought that though Dr. Clarke's views were extremely heterodox, they drew attention to an important aspect of catarrh. Why should the chronic sequelæ of catarrh occur only in the poorer classes? What factor was concerned other than perhaps feeding? He thought it was very necessary to guard the new-born from loss of heat—was this properly done among the poor? One need never mistake catarrh for congenital syphilis; in the latter the discharge was *purulent*. He agreed that Harrison's sulcus was a sign of nasal obstruction only. Dr. Clarke had omitted the question of asthmatic children, those sensitive to certain proteins; such a condition might lead to bronchitis.

Dr. J. R. R. TRIST called attention to the extreme sensitivity of other mucous membranes in the young child, such as the vaginal. He agreed with the view that young children should be properly protected from loss of heat.

Dr. C. J. C. FAILL pointed out that the tuberculous child was not "catarrhal." If children were to be exposed in all weathers to the open air—i.e., naked—they must have bronzed skin and be well fed—then they did not require clothing.

Mr. A. W. ADAMS pointed out that new-born babies seemed immune from empyema; he thought this could hardly be consistent with such a very high incidence of bronchial infection.

Dr. J. A. BIRRELL asked what was the death-rate among these children. He felt that perhaps Dr. Clarke had mistaken the sounds produced by a flapping soft palate for bronchial râles. Did asthma occur at the age of a few weeks, and was "croup" a condition analogous to asthma? He could not agree that new-born children might safely be exposed to cold.

Dr. CLARKE, in reply, said that he thought the new-born child was infected very readily. Pneumonia did occur in children of this age, and explained some of the cases of "sudden death" in infants. His figures were from four clinics, but all from the lower strata of the population. Catarrh did not confer any immunity, but rather predisposed to a further infection. He had formerly thought that repeated infection was the principal factor in producing the chronic catarrhal child, but now he thought that the *earliness* of the infection was the real deciding factor. Children did not seem to mind the cold, but the poor used much more clothing for their children than the well-to-do. He thought that most cases of asthma in young children were really bronchitic.

Exhibition of Cases.

Mr. H. CHITY showed three cases: (1) Osteomalacia in a girl of 18. Union of ununited fractures of the tibiae followed local injections of colloidal magnesium. (2) Ununited fracture of the tibia, in a child of 5. Local injections of magnesium, and a rib graft, had alike proved ineffectual. (3) Double pleural empyema in a child. Both sides of the chest were opened at the same operation, with perfect result.

Mr. ADAMS showed a case of malignant disease of the thyroid, with secondary glands, relieved by operation; specimens and sections were shown with the case.

Election of Honorary Member.

On the motion of Dr. NIXON, Dr. James Swain was elected an honorary member of the Society. Dr. Swain had been for 25 years a member of the Editorial Committee of the Society's Journal, and for longer a very active member of the Society. The PRESIDENT, in announcing the result of the vote, pointed out that honorary membership was very rarely conferred, there being only two other living honorary members.

ROYAL ACADEMY OF MEDICINE IN IRELAND. SECTION OF STATE MEDICINE.

A MEETING of this Section was held in the Royal College of Physicians of Ireland on March 13th, Dr. N. M. FALKINER, the President, in the chair.

Dr. BRIAN CRICHTON read a paper on

Infant Mortality.

He compared the infant mortality rates of various English towns with that of Dublin (125). To produce a healthy child, healthy parents, healthy surroundings, and good food were necessary. The greater portion of the centre of Dublin was hygienically bad and to be condemned. Not more than 50 persons should be allowed to live on each acre, but in some wards in Dublin the number per acre was as high as 117 or even 138. Dr. Crichton then outlined a scheme for the improvement of child life in Dublin. Use should be made of the existing maternity hospitals in Dublin, the Rotunda, the Coombe and the National Maternity, to which mothers have been accustomed to go for advice. Attached to these there should be welfare centres, both antenatal and postnatal. At these the mothers could be advised as to the health and feeding of their children and food could be supplied at as near cost price as possible. Almoners and specially trained district visitors could go from these to visit the infants in their homes. These centres would also be very useful for the training of students and nurses. As regards older children, he pointed out the need for special schools for mentally deficient children and also for open-air schools for delicate children. In concluding, Dr. Crichton referred to the death-rate among illegitimate children, which was six times that of legitimate children.

Sir JOHN MOORE emphasised his belief that it was the bounden duty of every mother to feed her child during the first nine months of the child's life, and he thought this was a duty which was very often disregarded. Sometimes, of course, it was impossible for the mother to feed her child, but the natural food for an infant was the mother's milk. Recently there had been a great practice of feeding children with milk which was contaminated, or with preparations of milk which were very often probably poisoned.

Prof. J. W. BIGGER drew attention to the position regarding infantile mortality in Ireland compared with that in England. The mortality in Ireland in 1923 in the Free State was 66 per 1000, while in England and Wales it was 69 per 1000. Therefore Ireland was in a rather better position than England and Wales. He felt that Ireland at present was contented with her position, because it was said that the Irish infantile mortality rate was much less than anywhere else, and so nothing was done to get it still lower. It had been recognised in England and Wales since 1904 that the rate there was too high, and steps had been taken to bring it down, and had been successful. If this had been done in Ireland, the rate in 1923 should have been only 47 per 1000, instead of 66 per 1000. Premature births, he said, were accountable for about 6 deaths out of every 1000 births, and if the scheme which Dr. Crichton had outlined, of setting up pre-natal schools in connexion with the maternity institutions in Dublin could be brought about, he thought that a great many of these deaths could be avoided.

Dr. R. H. MICKS referred to the number of sickly wasting children who had come to general hospitals and whose parents thought they could be cured in a week, whereas they could not even be cured in a month, for it sometimes took several months to effect any improvement in their condition. Really bad cases of marasmus took a year to cure. He referred to the danger of the "tuberculosis houses" of which there were so many in Dublin, and the number of children suffering from tuberculosis, which was probably due to the unhealthy state of their

surroundings. This was not the fault of the parents, for no better houses were obtainable.

Prof. J. T. WIGHAM said that it had been asked why infant mortality should be avoided, since an easy way of limiting the population was for children to die soon after birth. It had been pointed out that at present there was a great excess of unskilled labour, and a great many of the town-born children grew up as unskilled labourers. He thought that the answer to such a question was that infantile mortality was an index of children's disease, and that a great many children who did survive from disease in childhood were unfitted to be proper citizens.

Dr. W. D. O'KELLY, Dr. N. M. FALKNER, jun., Dr. P. DE BURCA, and Dr. KENNEDY CAHILL further contributed to the discussion, to which Dr. CRICHTON replied.

PLYMOUTH MEDICAL SOCIETY.

At a clinical meeting of this Society, held at Beaumont House on March 17th, Mr. C. L. LANDER, the President, showed a case of splenomegalic polycythæmia of many years' duration.—Mr. H. F. VELLACOTT showed a tumour of the lower part of the thigh in a man aged 27, who gave a history of six years' duration. A cystic tumour had been removed elsewhere two years before. It was generally held that the present condition was sarcomatous, and such it appeared to be to the naked eye on examination of a fragment removed next day for microscopic report.—Mr. C. M. KENNEDY showed two cases: (1) A young man with an ulcer of the tongue suffering, in addition, from tuberculous epididymitis and chronic phthisis. It was an example of the solitary tuberculous ulcer of the tongue. (2) An old man with a mass in the back of the tongue, not ulcerated. The glands beneath the jaws were extensively involved. The history extended over a month; Wassermann negative. This was probably an epithelioma, and not inflammatory.—Mr. J. R. ROLSTON showed the eyes of a child, aged 10 months, removed on account of gliomata growing from both retinae.—Mr. EDRIC WILSON showed a man suffering from hypertrophic biliary cirrhosis, bronzed, with large liver and spleen. He showed also the plates of a case of Perthe's disease and outlined the treatment of this condition of the hip-joint, which formerly was taken to be tuberculous. It was probably of the nature of a mild staphylococcal infection, and had to be differentiated from slipped epiphysis and osteo-arthritis of a juvenile type.

The PRESIDENT read a note on the relation of herpes to chicken-pox.—Dr. J. RIDDEL read the notes of a case of puerperal septicæmia which recovered after many rigors with temperature 107° F. The uterine condition quickly settled down after a large-sized tube had been placed in the uterus to allow of frequent eusol irrigations, but septic thrombosed piles seemed to provide the source of infection which led to the rigors with hyperpyrexia. Blood cultures were negative.—Mr. HAMILTON WHITEFORD read notes of 11 cases collected from the literature to illustrate the results of the operation of lymphaticostomy as practised by Costain. It was possible to trace four recoveries and three deaths, and the operation appeared to be worthy of further attention, though it seemed, at first sight, strange to operate in the neck to cure a pathological condition of the abdomen.

TWO YORKSHIRE HOSPITALS.—Princess Mary has opened the King Edward VII. Memorial Wing of Pontefract General Infirmary free of debt, the whole of the £12,000 which it has cost having been subscribed. The wing contains two wards, each of which will accommodate 12 patients; there is, in addition, a small private ward of three beds. During 1924 the out-patients at Batley and District Hospital increased by nearly 1000, and £24,000 is about to be spent upon extensions and improved equipment.

Reviews and Notices of Books.

A SYNOPSIS OF SPECIAL SUBJECTS.

Diseases of the Skin. By H. C. SEMON, M.A., M.D.
Obstetrics and Diseases of Women. By MALCOLM DONALDSON, M.B., B.Ch., F.R.C.S.
Diseases of the Ear, Nose, and Throat. By ARCHER RYLAND, F.R.C.S. Edin.
Diseases of the Eye. By J. F. CUNNINGHAM, O.B.E., F.R.C.S. London: H. K. Lewis and Co. 1924. Pp. 376. 18s.

THIS handy volume will undoubtedly receive a warm welcome from the busy practitioner, and will take its place on his shelf beside the well-known companion volumes of Tidy, Hey Groves, and Wheeler and Jack.

The authors state in their preface that their work "cannot be commended from the literary or educational point of view. Its aim is practical." The practical aim is not one to be deprecated, and the need of the average medical man in special subjects such as these is primarily for some reliable condensation of modern knowledge that will help him to accurate diagnosis and immediate treatment. The conduct of a long or serious disease or major operation in special regions is not usually carried through without consultant advice, and too much detail in a text-book is both superfluous and irritating to the busy man. The error here lies, perhaps, in over great condensation; the sections headed "treatment" are in some cases disappointingly brief. The practitioner who relies wholly on this book for information as to the management of such common complaints as acne and pruritus, for instance, will find himself at the end of his resources sooner than he need be. The subject of dermatology is, in the present state of our knowledge, so difficult that the practitioner would be grateful for ample variety in the possible treatments to be applied, and for rather more definite guidance as to the length of time that must be allowed to elapse before a change may be anticipated.

The section on obstetrics is particularly up-to-date and adequate, considering its condensation, and to those who desire a synopsis of this subject can be cordially recommended. It seems open to question, however, whether it is wise to include this difficult subject in such a book. It is a part of medical practice in which the average doctor is rightly expected to be more competent than in the other "special subjects." He should not be encouraged to acquire a smattering, and he is not in the habit of calling in specialist advice for any case which deviates from the normal. His acquaintance with the varieties, dangers, and treatment of normal and abnormal childbirth, therefore, ought to be extensive, and a synopsis, however excellent, may not help him much. The gynaecological part of the book is less satisfactory than the obstetric; it gives the impression of having been written from the point of view of a gynaecological surgeon rather than that of the practitioner. The word "leucorrhœa," for instance, does not occur in the index, yet its colloquial equivalent is ever on the lips of the patient. The great need of the practitioner is for some advice on the management of such symptomatic disorders. Again, there are many psychological and domestic factors in sterility which should be investigated before the patient is "examined thoroughly from head to foot" or oxygen is passed through the cervical canal, but these preliminary considerations are not mentioned. In the treatment of dysmenorrhœa there is no reference to the use of antipyrine and caffeine or the endocrine preparations, while the frequent psychological factor is completely ignored. The only treatment suggested for senile endometritis is the application of radium. These are the considerations which present themselves in the consultant's house after the ground has been cleared for him by the less elaborate or "common-sense" procedure of the local doctor, but for a practitioner who is not sufficiently experienced to do these things without the

aid of a "synopsis" there should be some reference, at least, to the part he has to play.

Such criticisms cannot be directed against the two other sections—viz., those on diseases of the ear, nose, and throat, and the eye. Here particular attention has been paid to the points which are of importance in the earlier stages and simple everyday management of the conditions dealt with. The treatments are given with full practical detail and, in the former section, with plenty of actual prescriptions, which are always a welcome sight to the young practitioner. The ground covered is extensive, but the condensation is adequately carried out, room being found for such matters as geographical distribution, ætiological theories, comparative tables of diagnostic symptoms, and valuable cautions as to the use of certain forms of treatment. These two sections alone would make the book a sound investment, and there is a great deal in the section on obstetrics which is of value. A minor fault of production which is somewhat irritating to the reader is the use of too thick capitals for the headings of "Diagnosis," "Treatment," &c., which causes these to stand out more clearly than the varieties of disease which are being considered. This makes it difficult for a searcher to find quickly the point desired.

The compilation will assuredly be welcomed.

THE LIFE-STORY OF THE ADDER.

By NORMAN MORRISON, F.Z.S. Scot. Paisley : Alex. Gardner, Ltd. 6s.

FROM Bible story down through mythological legend, mediæval therapeutics, and folk-lore to Freudian interpretations there are many evidences how deeply the snake family has interested mankind. No doubt the danger of snake-bite has much to do with this, and, even in our island, there are plenty of instances (one is recorded, for example, in THE LANCET of March 14th) that such an accident may be no trivial matter. In themselves, however, these creatures are well worth careful study, and Mr. Morrison, in this unpretentious but most interesting little book, has rendered a real service to natural history. We can never have too many students of his kind, who devote themselves to the observation of the living animal.

Those of our readers who practise in the country will add one interest more to their walks if they submit themselves to the spell of this book.

LOUIS PASTEUR.

By S. J. HOLMES, Ph.D., Professor of Zoology in the University of California. London : Chapman and Hall. Pp. 246. 7s. 6d.

Prof. Holmes, in his preface, says that he makes no apology for adding to the number of books upon Pasteur. We fancy that some is needed. Apart from the Life, by Vallery-Radot, we do not know exactly how many shorter accounts have been published, but the field in English seems adequately filled by the admirable American version of Duclaux and by Descour, which has been translated by the Wedds. If the present account had any new facts to bring out, or if it looked at the subject from any new point of view, there might be something to be said for it, but it is, as the author says, just a brief and simple account of Pasteur's methods and his chief discoveries such as has been given again and again. It fails, too, as others have failed, to bring out Pasteur's real importance which is, not that he made human life more convenient by teaching Frenchmen to make as good beer as Germans or by discovering a cure for hydrophobia, but that he persuaded the world to believe that bacteria were of importance and not merely the objects of curious interest they had been since Leeuwenhoek first clearly described their appearances. Let it be added, too, that Prof. Holmes follows his

predecessors in easily falling into a vein of hyperbolic exaggeration; talking of the relations of Pasteur to the Academy of Medicine, he says (p. 156): "Little did his medical colleagues then realise that they were dealing with a man whose discoveries with regard to disease were to be of greater value than those of all the academies of medicine in the history of the world," which is a nonsensical comment on the natural and desirable scepticism with which Pasteur's views were at first received. A cult pursued in this vein finds its suitable goal in canonisation; it is out of place in scientific biography.

THE WEBER COLLECTION.

Vol. II. Macedon, Thrace, Thessaly, North-Western, Central, and Southern Greece. By L. FORRER. London : Spink and Son. 1924. Pp. 579. With portfolio of 102 plates. £3 3s.

THE first volume of Mr. Forrer's catalogue describing the Greek coins collected by the late Sir Hermann Weber, M.D., was reviewed in THE LANCET in 1923 (i., 199). The splendid second volumes of text and plates which Mr. Forrer has now produced deal with that part of the collection comprising the cities of European Greece from Thrace and the Euxine to Peloponnesus, together with Crete and the islands of the Ægean Sea. Nearly 3000 coins are here described, including many individual specimens of outstanding merit and interest, and a number of unusually full and important series of the coins of a particular mint. There are, for example, 150 coins of Athens (including three specimens of the later gold coinage), 175 coins of Corinth (with important specimens of the earliest coinage), 82 coins of Elis, of which no less than 47 are staters, the highest denomination of the silver coinage of this mint and among the most treasured of ancient coins for their supreme artistic merit. Of less importance are the 39 coins of the Thracian Chersonese, but it may be noted that no less than 14 varieties were not to be found in the British Museum collection to which they have now passed. The coinage of the kings of Macedonia, the interesting early coins of the wild Macedonian tribes, the coins of the kings of Pæonia, and those of Thrace in general are all well represented. There are many beautiful specimens of the coinage of the Thessalian towns where, except in a few cases, the output was never large.

Among the more important individual coins may be noticed three staters of Amphipolis with the famous type of the full-face head of Apollo, a unique stater of the Acarnanians struck at Eniadae and showing figures of Apollo and Herakles, an example of the famous staters of the Amphictyonic Council, probably struck for the Pythian festival in 346 B.C., after the Phocian War, the stater of Arcadia with Pan seated on a rock, and the beautiful stater of Pheneus showing Hermes running with the child Arkas. There is also a drachm of Pheneus with Hermes seated on a rock. The more important gold coins include a stater of Panticapæum and the half-stater of Pyrrhus, King of Epirus. Among rare Thessalian coins may be noticed the didrachm of the Cetai with the lion's head and Herakles for types as on the commoner smaller denominations. There are fine specimens of the rare but better known silver coins of Abdera, Ænus, the Chalcidic League, Larissa, the Opontian Locrians, and Messenia. Two large coins of Dicæa, weighing 283 and 150 gr. respectively, with the usual type of a head of Herakles as found on the smaller coins, call for special mention, as does the tetradrachm of the Thracian Chersonese with a lion and an archaic head of Athene for types. With this coin may be classed two very rare coins assigned by Mr. Forrer, with a query, to Olynthus. Both show on one side a quadriga viewed from the front: for the other type one has an irregular pattern, and the other, the only specimen known, a male head. Mr. C. T. Seltman, in his recent work "Athens: Its History and Coinage," assigns all these coins to the Athenian tyrants—Miltiades I. and his nephews Stesagoras and

Miltiades II., who made themselves lords of the Thracian Chersonese during the period 559-493 B.C.

It has been stated that Sir Hermann Weber's interest in ancient coins was "first roused by types referring to the healing art." In this connexion one naturally turns to the coins of Epidaurus, where the types refer to the worship of Asklepios. No. 4223 is an example of the very rare drachms of Epidaurus, which have for types on one side a head of Apollo, the father of Asklepios, and on the other, Asklepios seated on his throne with his right hand extended over the head of a serpent. Beneath the throne is a dog. As is well known, a kind of faith-healing was practised at this place. The sufferers slept in the sacred shrine and the god manifested himself to them in their dreams. It would appear from the record of the "cures" which have been left on inscriptions that sacred serpents and dogs were kept in the shrine and were supposed to heal the sick by licking them. Examples of the "cures" are given by Dr. Singer in his interesting chapter on Greek medicine in the volume of essays, "The Legacy of Greece," published in 1922 by the Oxford Press. Other coins show Epione, the wife of Asklepios, and the instrument known as the cupping vessel occurs as a symbol beside the main type. The cupping vessel is a type found elsewhere, at Astacus in Acarnania and, with forceps, on coins of the Thessalian town Atrax. Thessaly was another centre of the worship of Asklepios and was the home of Cheiron, the wisest of the Centaurs and renowned for his skill in medicine. At Tricca, the legendary birthplace of Asklepios and mentioned by Homer as subject to his sons Podaleirios and Machaon, the doctors of the Greek army at Troy, was the oldest of all the temples of Asklepios in Greece. On the coins of Tricca appear an interesting type of Asklepios feeding his sacred serpent with a bird. A similar type appears on coins of Larissa and Magnetes. It is perhaps appropriate that the most famous of ancient sufferers, the hero Philoctetes, had his home in Thessaly, though it will be remembered that his pains could not be alleviated by the medical skill of the time, and his cries so distressed the Trojan host that he had to be marooned. Philoctetes is shown on the coins of his native town Lamia. Specimens of all these coins are to be found in the Weber collection.

It only remains to add that the publication has been carried through by Messrs. Spink and Son in the same lavish way as was the case with Vol. I., and that Mr. Forrer is to be congratulated once again for the care with which he has described the coins. There is only one place where what seems to be an error can be noticed. No. 3140, a coin of the Opuntian Locrians of the period before 338 B.C., has been re-struck; according to Mr. Forrer the original coin was "apparently a Syracusan tetradrachm." But the piece weighs 184 gr.—i.e., it is of Æginetan weight, as would be expected for Locris, while if it had originally been a Syracusan tetradrachm the weight would be c. 260 gr.

Christ's College, Cambridge.

S. W. GROSE.

JOURNALS.

SURGERY, GYNÆCOLOGY, AND OBSTETRICS. Vol. IX., No. 1.—Basic Principles and Supreme Difficulties in Gastric Surgery. A survey of the end-results of the various operations of gastric surgery is given by H. B. Devine in a series of 1000 cases. Evidence is produced to show that a good result is only achieved if regurgitation is established, no matter whether the operation used be a simple gastro-enterostomy or a partial gastrectomy, and it is suggested that as the former procedure does not always succeed in accomplishing this object, partial gastric exclusion may be used with less risk to the patient than partial gastrectomy, with equally good results. It is thought that this procedure by partly cutting off the sympathetic supply to the stomach alters its tone and so allows of better regurgitation.—

L. R. Whitaker and G. Milliken: A Comparison of Sodium Tetra-Bromphenol-phthalein with Sodium Tetraiodo-Bromphenol-phthalein in Gall-bladder Radiography. As the iodine salt is nearly twice as opaque as the bromine to X rays and the toxicity is shown to be about equal, it appears that the iodine salt is the better. The author's experiments confirm their suggestion that this is so.—Margaret S. Witter: Post-operative Leucocytosis. The author gives the result of careful post-operative leucocyte counts and shows that there is a leucocytosis which reaches an average maximum of 18,000 four hours after operation and returns to normal by the fifth day.—R. W. McNealy: The Place of Electrol Vein Ligation in Blood-vessel Surgery. Simultaneous ligation of both artery and vein of a limb is less likely to be followed by gangrene than ligation of the artery alone. Cases are quoted showing that in threatened gangrene the vein may be ligatured as a therapeutic measure in selected cases.—C. W. Rand: Tumour of the Left Gasserian Ganglion. A report of a case of endothelioma successfully removed at operation.—R. H. Jackson: Extensive Resection of the Small Intestine in an Infant. There is some doubt as to how much of the small intestine may be removed without seriously affecting the nutrition of a child. A case is reported in which 4 ft. 8 in. of the lower part of the small intestine was resected in a child of 2 years. This is thought to be about 2/5ths of the total in a child of this age. This child is now 9 years old and is of normal weight and development.—F. M. Pottenger: Pain from Pleura Simulating that from Abdomen. It is shown by a consideration of segmental nerve distribution that pleural injury may give rise to pain simulating that of an abdominal lesion.—Richard Lewisohn: The Frequency of Gastro-jejunal Ulcers. In the writer's series gastro-jejunal ulcers developed in 34 per cent. of gastro-enterostomies. Partial gastrectomy is advised to cure these cases, and it is suggested that if performed in the first instance it would prevent them.—W. H. Goeckerman: The Effect of Surgical Trauma in Patients with Syphilis, with Special Reference to Healing of the Post-operative Wound. Although it is advisable that syphilis should be treated before operation, evidence suggests that the tissues of the syphilitic heal as well as those of the non-syphilitic patient.—Howard K. Tuttle: The Treatment of Abortion. The question whether early operation or expectant treatment in abortion gives the better result remains doubtful. In this article the results of early operation in all cases (1164) are given, and show that under hospital conditions the results of this treatment are similar to those given in recent papers advocating the expectant measures. In selected cases expectant treatment is advised.—Hugh H. Young: The Treatment of Infections, General, Local, and Urinary with Intravenous Injections of Mercurochrome. A review of 255 cases in which mercurochrome injections were used convince the author of its value. Various cases of septicæmia, pneumonia, and encephalitis are quoted, many of them severe, in which rapid recovery followed. The dose used varied up to a maximum of 7 milligrammes per kilo. 75 per cent. of the patients recovered and of these results 42 per cent. were thought to be due to this drug. Severe reaction occurred in 28 cases and two patients died soon after an injection.—The department of technique is largely occupied by two articles on the Treatment of Fractures of the Femur by H. E. Conwell and Mrs. Langworthy.

ERRATUM.—A commendation to our readers in THE LANCET of March 14th of a small book on "Pernicious Anæmia and Aplastic Anæmia," written by Dr. Arthur Sheard, unfortunately stated the name of the author wrongly. We are sorry that Dr. Sheard's useful contribution to a difficult subject should have been credited in the wrong place. The book is published by John Wright and Sons, Ltd., Bristol.

THE LANCET.

LONDON: SATURDAY, MARCH 28, 1925.

THE MEDICAL CURRICULUM: AN INTERNATIONAL SURVEY.

EVERYONE who read with interest Mr. ABRAHAM FLEXNER's first critical account of medical education in Western Europe and America 12 years ago will welcome his new volume,¹ in which he re-surveys the field. Apart from the writings of Sir GEORGE NEWMAN, the debates at the General Medical Council, and the consequent articles and reports in our own columns, there has been little said on the general bearings of the medical curriculum, either in this country or elsewhere, before his first report. It was consequently something of a revelation to many people that there was so much that wanted saying on the subject and so many problems to be discussed and, if possible, solved. There has indeed been a troubling of the waters since, and the widespread reforms achieved in America have brought home to us on this side healthy doubt as to the perfection of our own methods and results. Twenty years ago there were in the United States about 400 schools producing qualified medical men; four or five were good, a few mediocre, the rest ranged from pretty bad to scandalous frauds. There are now about 90; almost all might fairly be called good, while ten or a dozen reach a level which in most respects is not bettered elsewhere. In our country the situation was, of course, different; there was nothing scandalous enough to attract attention, but Mr. FLEXNER draws attention to a good deal which in the natural course of development has come to be inadequate and out of date. We are not prepared to agree with Mr. FLEXNER always, but every thinking medical man must be grateful to him for the stimulus of his visits and the help which his critical discussions have given to those who believe that the excursions and alarms in our own medical schools in recent years have been properly directed to the ventilation of questions which needed consideration. Grateful, too, should we be for the restraint which has reduced to a moderate and most readable compass the results of repeated visits to many of the chief medical schools of Western Europe and America; we doubt whether there is a word for each mile that must have been travelled. To those for whom science consists in reducing facts to numbers, considering the possibilities of the subject, the volume will seem about as unscientific a product of such an inquiry as one could imagine; for Mr. FLEXNER gives hardly any statistics. But all engaged in medical education will be grateful for the work, and many will be grateful for the lack of percentages.

Mr. FLEXNER's book covers broadly two topics. It describes the facts as they are now in relation to what they were 15 years ago, and it discusses the theory of medical education with the object of discovering the best possible method of achieving it. Easy reading as it makes, it is closely written and no summary of the facts is possible; those who are not familiar with them will find much food for thought

in the fundamental differences of ideals and methods which characterise French, German, and British practice. And on the theoretical side we must equally urge our readers to resort to the original for an adequate appreciation of Mr. FLEXNER's conclusions. In taking up certain of his points which are of particular interest to ourselves, let it be pointed out that no attempt is made by the author to value the relative virtues of the different methods of education, which he exposes, by measuring the efficiency of their products in terms of the work-a-day medical man. Whether the practitioners trained in didactic clinical French schools are any more or less fit to take care of their patients than those brought up in the German university clinics, or in the practical British schools, is apparently regarded as being either beside the point or an insoluble point. Insoluble it almost certainly is, and if the facts could truly be ascertained we could not fairly attribute any demonstrable contrasts to differences in the medical curriculum without being sure that the curricula were brought to bear on similar material. Which they are not. And Mr. FLEXNER is right in arguing the matter from general principles rather than by embarking on what must necessarily have been an unconvincing direct comparison of results. He has a complete faith in the ideals of university education; better education cannot fail to produce a better product. And what he has to say will appeal with less cogency to those less well equipped in that faith. His main argument is roughly this. Medicine is a science or so near a science as makes no difference. Whether it is called an art, or a science, or an empiric art making its way towards becoming a science, it has accepted the fundamental criteria of a science and has pledged itself to the critical scrutiny of facts, thus adopting the scientific spirit and aim. It is therefore best studied in the way which has proved most successful in other sciences—i.e., for its own sake and by people whose sole concern is with the advancement of knowledge by teaching and original inquiry. As examples of success the German universities in the third and fourth quarters of last century are the most conspicuous; physiology in our own country is also an obvious model. Medicine should, it is argued accordingly, be treated in the university spirit and by the university technique, and the ideals of its teachers should be identical with those which vivify zoology, philology, or mathematics. If these general principles are to have effect in medicine, it is obvious that a good many of the medical schools in America, all of those in this country, and still more markedly the French establishments, require considerable revision. Dealing with our own schools in regard to clinical subjects, we note that Mr. FLEXNER criticises the schools in the following ways. The hospitals, which are the necessary laboratories of the clinical staff, are not under university control; they exist primarily for the treatment of the sick poor and not for teaching and investigation; though good-will and common-sense may effect a fair compromise, the two objects are by no means always compatible; the heterogeneous collection of diseases, for example, which is desirable for under-graduate teaching is most unsuitable for investigation and may make real investigation impossible; the selection of cases on the test of illness and poverty is not what a university school would choose as the best procedure. On the question of staff, he is quite definite that the "whole-time" system can alone achieve the best results, and that the arrangement by which professors of medicine may have their main preoccupation in private practice is incompatible with university ideals. "Whole-time" is perhaps rather an unfortunate

¹ Medical Education: A Comparative Study. By Abraham Flexner. New York: Macmillan Co. Pp. 334. 1925.

expression; it means not that a man should spend his whole working time in the business of his wards and laboratories, but that his real absorbing interest in life is the progress of knowledge, and that he should be relieved of the necessity of earning his living in a competitive professional life in order that he may freely exploit his passion. In other words, the "whole-time" ideal is reached by having the right spirit, not the correct time-table. And in the presence of the right spirit the details may work themselves out in a variety of ways. The professor must indeed be "whole-time" in fact; even that is far less than he needs for his own education. And if he thinks he can profit by seeing private patients, let him do so by all means so long as he has no pecuniary interest in his consultations. Of his assistants some may be whole-time, some may be part-time; the right spirit again will be able to bring into useful coöperation a varied and varying collection of human instruments; enthusiasm is more than organisation. Mr. FLEXNER criticises severely the sad in-breeding habit of our schools—a habit which, it seems, prevails in America as well and is almost unknown in the Germanic countries. Other things being equal, the scale ought to be against the local man rather than in his favour; a wider horizon, a different training, a fresh outlook, are worth more than the clubbable qualities which sometimes determine appointments.

Such are some of the comments which are passed on our own methods of conducting medical studies, which, based on an entirely different ideal, have aimed at producing men ready for practice. This, Mr. FLEXNER urges, is impossible; the medical school cannot expect to produce fully-trained doctors; it can at most hope to equip students with a limited amount of knowledge, to train them in the method and spirit of scientific medicine, and to launch them with a momentum that will make them active learners for years to come. And yet with a curious flair, on which he comments in another passage, Mr. FLEXNER judges that our actual clinical teaching is probably the soundest in the world. Its merits are great and obvious: "they are" (we quote) "fully appreciated by the British themselves and not unappreciated in other countries." But this excellent finish he finds to be applied to ill-prepared and unsuitable material, for the standard of general education necessary for admission as a medical student is lower than anywhere else—lower on paper than in America, and lower in fact than on the Continent. Medical education, we agree, cannot be for everyone: it is too exacting; the ill-taught and badly-trained schoolboy cannot legitimately find a place in it with advantage to himself or the public. When the student passes from school to college to begin his specialised career, he is apt to be met with an *ad hoc* conception of the medical sciences which is wholly mistaken and short-sighted. "Anatomy, physiology, and pathology are sciences as such, just as they would be if it had never occurred to anyone to include them in the medical curriculum," says Mr. FLEXNER, and if they are not cultivated in a broad university spirit as legitimate objects of human curiosity they will be sterile. If, as is often said now-a-days, they must be presented from a medical aspect to arouse the interest of the student, the remedy is to change the student. Mr. FLEXNER, therefore, would have us believe that our ideals and methods need examination and perhaps revision, while his remarks on the curricularisation of American education, the mediæval French procedure, and the didactic clinical teaching in Germany will give warning of many, perhaps unsuspected, fires to those who want

to get out of their own frying-pan. And, if we have emphasised his criticisms, let it be realised that he is always constructive both in urging on everyone the ideal which he serves and in indicating the practical details through which it may be served. After all, as the cover of the book reminds us, medical education is not medicine but education—and it is at least possible that this point of view has been rather overlooked. Few, perhaps, will go with Mr. FLEXNER all the way at once: everyone who has to do with medical education will be well advised to listen to what he has to say in his valiant effort to raise the profession to higher levels.

THE INTERPRETATION OF PULMONARY RÂLES.

IN the course of a survey of the Union of South Africa, undertaken by the Union Department of Public Health with the object of obtaining information about the incidence of tuberculosis among native races, attention was drawn to an interesting clinical condition known as "defective lungs." By this term is meant, in the great majority of cases, a condition in which characteristic fine, crepitant râles are detectable in the marginal areas of the lungs of natives who otherwise appear to be perfectly healthy. That it is of some importance is shown by the fact that it was detected in 2679 out of 76,534 natives recruited for work in the gold mines. The peculiar conditions of the Rand mining industry make it highly undesirable to employ any individual about whose pulmonary health there may be the slightest doubt, and these natives have hitherto been rejected by the mine medical officers. In view of the fact, however, that the last word as to the interpretation of physical signs has not yet been spoken, it was decided to conduct an investigation into the significance of these particular signs, and the results of this inquiry have been published by Dr. W. WATKINS-PITCHFORD and Dr. PETER ALLAN.¹

The investigation was conducted with characteristic thoroughness. 111 natives were chosen as typical examples of this condition and were submitted to a complete physical examination. They were kept in hospital under observation for an average period of five days, pulse, temperature, and respiration records were made, the sputum and urine were examined, Wassermann and von Pirquet tests carried out, and radiographs taken of the chest. A complete clinical picture having thus been obtained, the individuals were then drafted to one of the mines. While on the mines the natives underwent special clinical examinations once a month, and at the end of the period of the experiment, varying from 6½ to 2 months, final examinations were made at which radiographs of the chests were again taken. Five months after the experiment was concluded the records of the subjects were examined to see whether any had developed tuberculosis or tuberculosis with silicosis. The data supplied in the paper are, as is usual in the publications of this Institute, very complete, and the conclusions drawn from them are of interest not only to the industrial medical officer but also to the general physician. It is concluded that these râles are a physiological peculiarity rather than a pathological manifestation. In some cases—28 per

¹ An Investigation into the Significance of Localised and More or Less Persistent Râles in the Marginal Areas of the Lungs of Apparently Healthy Natives. By W. Watkins-Pitchford and Peter Allan. Publications of the S. African Institute for Medical Research. 1924.

cent. in this series—they may possibly be due to demonstrable inequality in the movements of the two sides of the chest. But in all cases they are believed to be of pleural origin, due to abnormalities in the supply, distribution, or removal of the natural lubricating transudate of the membranes. They may coexist with tuberculosis or silicosis, but are not specially indicative or prognostic of these diseases. But they may, on the other hand, obscure the auscultatory signs of tuberculosis, and it is of paramount importance, therefore, that all labour recruits presenting this condition should be submitted to X ray examination.

While this investigation is of immediate importance to the Rand mining industry, its general significance should not be lost sight of. Until it is possible to record physical signs in the same way as it is possible to record a pulse tracing, or to demonstrate abnormalities in the renal secretion, every physician must judge for himself the degree and extent of abnormal pulmonary and cardiac sounds. He must establish for himself the standards by comparison with which he may determine the significance of physical signs. He is, in fact, himself the variable, the experimental, or instrumental error in the observation of his patient, and it is only by careful and controlled work that he can so reduce the margin of error as to raise his technique from an art to a science.

THE NEW PUBLIC HEALTH BILL.

A MONTH ago the Minister of Health announced in answer to a question in Parliament that he hoped to introduce a Public Health Acts Amendment Bill on the lines of the legislation of 1890 and 1907, embodying for the benefit of the whole country various provisions at present contained only in local legislation. The Government Bill is known to be in an advanced stage of preparation, but there is scant hope of its introduction this Session. Fortunately a private Member's Bill, drafted with a similar object, has turned to good account the opportunity of a Friday afternoon debate; at the end of last week it secured an agreed second reading with the assent of all parties, the support of the Association of Municipal Corporations, and the blessing of the Ministry of Health. Mr. WOMERSLEY's Bill, the terms of which are outlined this week by our Parliamentary Correspondent, will do three excellent things. It will lighten the burdens of progressively-minded ratepayers, who will no longer have to pay the heavy cost of promoting special legislation to obtain the public health facilities which other local authorities enjoy; it will ensure a measure of administrative uniformity throughout England and Wales; and it will save valuable Parliamentary time. We have more than once commented on the repeated recommendations in the annual reports of the Local Legislation Committee in favour of the passing of such a Bill. One other admirable consequence will be the fact that the way will thus be cleared for the re-casting of our public health law into a single, orderly, comprehensive, and comprehensible code,—a matter which the then Minister of Health admitted to be of urgent importance two years ago. It is almost inconceivable to think that our principal legislation on the subject was passed as long ago as 1875, and that it has undergone no substantial revision in the past half century, though both the central and the local authorities have been altered, though research has enlarged our powers of preventing disease, and though a constant increase in public interest has made acceptable a general improvement in health standards. It is gratifying that Sir

KINGSLEY WOOD was able to state on Friday last that, if Mr. WOMERSLEY's Bill were placed upon the statute-book, the Government would produce a further amending Bill, probably in 1926, and would then propose consolidation of the whole law.

Meanwhile Mr. WOMERSLEY's Bill should be regarded as a valuable instalment. Its prospects must not be obstructed. Like every other Bill, it is open to criticism. Those who fear the extravagances of municipal socialism have already noted Clause 61, whereby local authorities which possess slaughter-houses or markets are to be allowed also to possess refrigerators, and to make reasonable charges for cold storage. Critics on the other side will complain that the Bill does not go far enough. Those who care to pick up a modern Local Act and to scan the elaborate clauses which the ingenuity of Parliamentary agents has multiplied, can make a list of the fashionable provisions which Mr. WOMERSLEY's Bill omits to include. He would, for example, allow local authorities to put up drinking fountains, but not to put up seats for the weary. He includes clauses for dealing with disease in common lodging-houses, and clauses against offensive trades, against nuisance from occupation of tents and vans in unsuitable places, and against verminous premises, articles, and persons. He does not include other clauses which are common form in modern local legislation—the power to close Sunday schools in times of epidemics, the power to regulate ice-cream manufacture and sale, the power to make by-laws for better inspection of meat, and the power to prohibit persons from selling food who are suffering from advanced tuberculosis. Criticism on these lines, however, is neither fair nor reasonable. The Bill, neatly as much of it is drafted, will doubtless be improved in Committee; but it is better to obtain a legislative instalment in the form of the greatest common measure of agreement than to lose the Bill by concentrating on points of difference. The general scheme of the Bill is permissive. This fact in itself should disarm hostility.

HIGH MATERNAL MORTALITY: RESOLUTIONS BY THE MIDWIVES' INSTITUTE.

At the last annual general meeting of the Midwives' Institute the following resolutions were passed:—

1. That there should be a post-mortem examination, by a duly appointed pathologist, on every woman who dies in childbirth, unless otherwise disallowed by a competent official. If the post-mortem examination did not reveal the exact cause of death, the coroner should be communicated with and further medical investigation should be made.
2. That the Ministry of Health should be asked for uniformity in the notification of births card, which should have a special place for the name of the person who actually delivers the woman.
3. That the Ministry of Health be asked to request the medical officers of health in their annual reports of puerperal mortality to distinguish between those cases in which a midwife was engaged, and those cases in which a doctor was engaged to attend.

The objects of the three resolutions will commend themselves to our readers. First, the desirability of an autopsy to clear up the pathology of an unexpected, unusual, or sudden event is common to the whole practice of medicine; secondly, infringements of the Midwives Act should be provided against; and, thirdly, any connexion between high mortality and the working of that Act should be made clear. At present the facts demanded by the third resolution can be ascertained only from certain of the annual reports of medical officers of health.

Annotations.

"Ne quid nimis."

THE BATEMAN FUND.

WE publish this week the new subscriptions to the Bateman Fund, and are encouraged to bring the salient points of the appeal before our readers by the following letter which we have received, signed "A. Morse, Staunton-street, Deptford," and "written in the name of Dr. Bateman's patients and friends." Mr. Morse, addressing the Editor of THE LANCET, writes: "We all feel we cannot thank you enough for sending him (Dr. Bateman) back to us so soon. We, the people of Deptford, know what a valuable friend he has always been to the poor. He is called here the poor man's Doctor. We have read and heard how you are subscribing to help Dr. Bateman in his heavy expenses for his trials. God bless you and the medical profession for their loyalty and kindness to him." We have had many letters from members of the medical profession approving our action in opening this Fund, from which we might, with excusable gratification, have extracted sentences for publication, but it is particularly desirable that readers should understand that, in our view, the appeal was *necessary* and not the outcome merely of sympathy in a particular case. This is the reason why the appeal was made. The medical man, and especially the general practitioner, in the course of his business must often find himself in a position of the gravest anxiety, when the procedure that he adopts, his actions, or it may be his inactions, can be placed before a jury of laymen in the wrong light. It is needful, and increasingly needful, that such disasters should be made as rare as possible. The pecuniary risk in such circumstances can be avoided for practitioners by subscription to one of the two excellent Defence Funds, and over and over again we have urged upon our readers to shelter themselves from unavoidable risks. Many of those who have followed the Bateman case must have been led to take this advice, and we bring before them the position of Dr. Bateman as one worthy of their help, if only because his misfortune has stimulated them to obtain security.

INTRATHECAL MEDICATION IN MENINGITIS.

THOUGH the need for drainage and the efficacy of intrathecal medication in certain forms of meningitis are unquestioned, the attempt to administer serum is often abandoned if lumbar puncture is for any reason unsuccessful. Dr. C. Worster-Drought, in the article which appears in our present issue of the series entitled *Modern Technique in Treatment*, points out that even where lumbar puncture fails through the presence of adhesions or through the progressive thickness of the pus, the subarachnoid space may be drained and the appropriate serum administered through other regions. Puncture in the thoracic region is not advisable, since in many normal individuals a posterior subarachnoid space is absent in this region, owing to adhesions between the meninges and the posterior aspect of the spinal cord. But cervical, cisternal, sphenoidal, or ventricular puncture are possible avenues of approach, of which the first, at any rate, has led to successful results in cases of cerebro-spinal fever, reported by several observers, including Cantas and Gerard and Dr. Worster-Drought himself. It is essential to gain access to the subarachnoid space for the application of a specific immune serum, since the full power of the latter can only be exerted when brought into contact with the infecting organisms in a concentrated form. For the actual meningitis, serum injected subcutaneously or intravenously is of little value; not only does it undergo an extremely high dilution in the blood-stream, but there is no evidence that it ever reaches the subarachnoid space. Although the lining membrane of the subarachnoid

space is permeable to substances passing from the cerebro-spinal fluid to the blood, it appears quite impermeable, except in the case of a few drugs (e.g., hexamine), from blood to cerebro-spinal fluid. On the other hand, the absorption of antibodies from the subarachnoid space is fairly rapid, serum injected intrathecally appearing in the blood within 10 minutes¹ and disappearing entirely from the cerebro-spinal fluid within 24 hours.² Dr. Worster-Drought throws doubt on the practical value of hexamine by the mouth in cases of meningitis. It has been given as a routine on theoretical grounds; but though it is certainly one of the few drugs to be even partially excreted by the cerebro-spinal fluid, it must reach the subarachnoid space only in extremely high dilution. Moreover, hexamine dissociates only in an acid medium and the cerebro-spinal fluid is rarely, if ever, acid, even in cases of meningitis. He is probably right in considering the therapeutic action of this drug on the cerebro-spinal fluid as negligible.

THE MIND OF THE MINER.

THE discontent among coal-miners is no post-war affair. The coal trade has been for years in a condition of unrest. Any industrial psychologist who could offer constructive suggestions as to how to make conditions of this work less uncongenial would place the community as a whole deeply in his debt, for in this country the mining industry is more fundamental even than that of agriculture. In an article in last month's *English Review* Mr. James A. Bowie sets out fairly the attitude of owners on the one hand, and miners on the other, and seeks to account for that bellicose mental condition of the worker which appears to be an undeniable factor in the industry. He points out that from 1904-13 the average annual percentage of workers in the coal industry, involved in disputes entailing loss of work, was 21.4; next to these came the textile industry with only 6.4 per cent., while the mean average of all trade groups was 4.4. Since the Armistice matters have been worse; in 1920 and in 1921 national stoppages occurred; in 1922 over one million and a quarter working days were lost due to local disputes, and in 1923 the amount was only slightly less. Yet there has been less unemployment in recent years in this industry than in any other, for in December, 1922, the percentage of unemployed among miners was 4.6, as against 12.2 in all trades, the corresponding figures for 1923 being 2.4 and 10.7. Although coal-mining must for a variety of reasons, such as lack of sunlight, accident risk, and dust and dirt, be an unpleasant occupation, it is not, comparatively speaking, an unhealthy one. The general mortality is not unfavourable, and, according to the Occupational Decennial Supplements issued by the Registrar-General, has been falling steadily, as have also the rates for the chief causes of death among miners. In gold-mining countries silicosis takes a heavy toll, but the Secretary for Mines stated recently in the House of Commons that though the alleged prevalence of silicosis among coal-miners in this country has been under consideration by the Health Advisory Committee for about two years, the evidence so far laid before the Committee is quite insufficient to justify any recommendation in respect of compensation. The fear of silicosis, then, in this country can hardly be a factor conducive to unrest. Moreover, during recent years the accident mortality-rate in mines has continued to fall from 1.6 per 1000 in 1913 to 1.4 in 1918 and to 1.1 in 1923. At the same time, judging from statistics supplied in the House of Commons on Feb. 24th, great mining disasters have been fewer in number and have claimed fewer victims.

Such records must present a difficulty for any medical sociologist who holds that social unrest is an expression of social ill-health. According to Prof.

¹ As shown by Debré with the sensitive precipitin reaction for a foreign serum. (Thèse de Paris, 1911.)

² Hohn, Klin. Jahrbuch, 1909, xx., 377.

E. I. Collis (*Western Mail*, Jan. 21st, 1924), the records within the industry itself show some confirmation of this theory. Mortality records vary widely on the different coal-fields; during over 30 years the comparative mortality-rates for Lancashire and for South Wales have been nearly double those for Nottingham and Derbyshire, and he points out that on all recent occasions, when ballots of the miners have been taken, the greatest unrest has been revealed in Lancashire and South Wales, and the least in Nottingham and Derbyshire. Mr. Bowie suggests that a "dungeon complex," comparable to the "prison complex" of the factory hand, is present in the subconscious mind of those who toil in darkness amid dirt and dust. Support for such a line of argument comes from the existence among coal-miners of a disease peculiar to them—nystagmus; a disease which, while it prevails directly as illumination in pits diminishes, is recognised to possess a pronounced neurasthenic basis. As coal-mines are steadily being deepened, danger from mine gases increases; hence the use of safety lamps, which give less illumination than naked lights, has been rapidly on the increase. Thus in 1907 there were about 600,000 safety lamps in use, while in 1923 there were over 900,000. The solution of problems existent in the miner's psychology may possibly be found closely associated with the *raison d'être* of miners' nystagmus. This thought is worth pursuit, for provision of better illumination in our coal-mines would seem to be a simpler expedient than many of the economic and administrative proposals which to-day are vaunted.

INFECTIOUS DISEASES IN SCHOOLS.

THE closure of any school on grounds of infectious disease is usually resented by parents, since the responsibility for watchful care and possibly for isolation is thrust on them. Their resentment is increased if they believe economic considerations to be a factor in the decision to close down. Headmasters of private preparatory schools who are tempted to spare themselves anxiety by packing off the children even a few days before the end of any term know well that they will not escape abuse unless the step is taken on the urgent representation of the medical officer in charge. It is the latter, therefore, who is usually made responsible for a decision and should prepare himself by mastering the complicated issues involved. An attempt to obtain guidance by studying the procedure adopted in schools not run for profit shows him that here financial considerations have been an important factor in the decision, since grants from the Board of Education depend on the maintenance of good average attendances throughout the term. To run the school with a bad attendance sheet for any reason is to run it at serious economic disadvantage. New regulations, however, have just been issued whereby local authorities will, in future, be secured from loss, if the low attendance is due to the prevalence of infectious disease, and closure of primary schools will only be allowed strictly on medical grounds. These regulations are set out in a memorandum¹ addressed to medical officers of health and school medical officers. Published under the joint auspices of the Ministry of Health and the Board of Education, the memorandum includes a theoretical discussion of the principles involved as well as specific rules for action in particular diseases, and will doubtless be welcomed by medical officers attached to every type of school. It is a new edition of a pamphlet first issued in 1909, and reaffirms the principle, then laid down, that if, during epidemics of infectious disease, the power to exclude individual children from school be used to the best advantage, it is only in special and quite exceptional circumstances that it will be necessary to close a school in the interests of public health. There will, indeed, be no temptation in the future for local education authori-

ties to close down on any other grounds, since security against loss of grant is assured to secondary as well as primary schools.

The mode of procedure recommended is carefully set out in the memorandum, and the medical officer of health is advised in certain cases to act, not as such, but as school medical officer, since he has greater powers in the last-named capacity. Incidentally, it is again urged that these two offices should be held by the same person. The general effect of the new regulations is as follows: (a) Schools or departments may be closed or individual scholars excluded by the Sanitary Authority or by any two members thereof acting on the advice of the medical officer of health. (b) Schools or departments may be closed for medical reasons by the Local Education Authority acting on its own initiative—i.e., without orders from the Sanitary Authority—but the closure must be advised or approved by the school medical officer on the ground that such closure is needed for medical reasons. (c) Individual children may be excluded from school by the school medical officer (without special authorisation by the Local Education Authority in each individual case) provided that the Board are satisfied that proper arrangements have been made by the Local Education Authority for this purpose. Generally speaking, the advice given in that part of the memorandum which deals with specific diseases is admirably complete. The omission from the discussion of diphtheria of any reference to the Schick test will disappoint those who will look for a critical estimate of its value in these pages. The recommendation that cases of influenza should not be readmitted until a careful examination of the heart and lungs has been made to eliminate possible latent complications is a counsel of perfection. There can hardly be a school medical officer who would put such a proposition before his Authority during an epidemic, considering what the risks amount to and what the cost would be. The remarks under the heading *Acute Poliomyelitis* should receive strict attention. It is emphasised that a careful watch should be maintained in non-paralytic cases for the supervention of paralysis, as recurrent cases occur in which the paralysis is manifested after acute symptoms have subsided. Paralytic cases require a long period of school exclusion and are afterwards better treated, if practicable, in special orthopaedic institutions. In such cases early care and educational measures maintained over a prolonged period may prevent or at least mitigate crippling. Recommendations for the care and after-care of children suffering from encephalitis lethargica conclude the memorandum. Children exhibiting signs or symptoms suggestive of a mild or abortive form of encephalitis lethargica should, it is said, be kept from school for a minimum of six weeks. Six months from the time of exclusion from school is suggested as the earliest period at which a child who has had encephalitis lethargica may return to work; in many cases this period has to be extended to a year or longer. So little is known about the epidemiology of this disease that more concrete advice is not to be expected.

THE VISIT OF FOREIGN PUBLIC HEALTH OFFICERS.

THIRTEEN nations have during the last few weeks been represented by their foreign public health officers in an official visit to this country under the auspices of the League of Nations.¹ The representatives visited certain typical selected centres, such as Leeds and a Yorkshire district, the borough of Wolverhampton, a large suburban borough, and various areas in the counties of Middlesex and London, and under the auspices of the local officials were given full information as to national and municipal public health organisation. The visit concluded at the beginning of this week, when the representatives left for Geneva, there to present a report to the League.

¹ Memorandum on Closure and Exclusion from School. H.M. Stationery Office. 1925. Pp. 32. 4d.

² THE LANCET, Feb. 14th, 1925, p. 354.

and its termination was marked by a luncheon given to them by the Government, over which Sir John Gilmour, Secretary of State for Scotland, presided. The luncheon was not allowed to offer opportunity for many or long speeches, but in proposing the health of the visitors Sir John Gilmour struck a note that was acceptable to the company and would be received with acclamation by any thinking audience, when he said that all persons of intelligence were looking anxiously to a peaceful settlement of the world, and that preventive medicine furnished a means for mutual development and intercomprehension between all nations. Dr. M. D. Horst, the representative of Holland, replied for the visitors, and while acknowledging the pioneer part played by Great Britain in health organisation and extolling the extent to which multiple activities were ranged under the common title of Health Department, raised laughter by saying that this country appeared to pay no special regard to the value of vaccination. The company, however, warmly applauded his further remarks founded on personal observation of the value of vaccination. The luncheon took place at the Carlton Hotel, London, W.

THE SEASONAL PREVALENCE OF DISEASE.

PERIODICITY is one of the interesting phenomena in epidemiology, and a study of the causes of cyclic tendencies of disease discloses fundamental factors of importance. To be able to elucidate the laws which govern these periodic eruptions is to be able to presage their advent and to formulate measures for preparedness and prevention, and to this subject Dr. M. J. Rosenau made a valuable contribution in a paper read at the International Conference on Health Problems in Tropical America.¹ Pandemics of influenza have been quite irregularly spaced. Measles, again, is a disease which tends to recur in a cyclical manner with considerable regularity. In the endemic regions exacerbations recur every two or three years. The explanation appears to depend upon the accumulation of a new crop of susceptible children. Infantile paralysis in Massachusetts displays a sort of regularity in its tendency to an excessive prevalence about every fourth season. These epidemic recurrences are followed by a regular decline until the next period. Despite the vagaries and uncertainties of this disease, we do know that, as long as the disease prevails, there will be more of it in the summer-time than in the cold season.

A good instance of the uncertain manner in which epidemic diseases recur is shown by the visitations of plague in London from 1563 to 1680. Consequently, plague is one of the diseases which have become stamped upon art, science, and literature. Plague was raging in Stratford-on-Avon when Shakespeare was a baby. Another example of irregular periodicity is shown by the story of diphtheria epidemics in Boston, New York, and Chicago, but within recent years such epidemic outbreaks have not taken place and the disease should never again be allowed to get out of hand. Many diseases recur annually with the regularity of perennials. However, seasonal prevalence of disease may to a certain extent be violated when a communicable infection is introduced into a virgin population. But on the other hand, when certain contact diseases which prevail especially in the winter season in temperate latitudes are introduced into the tropics, they have a tendency to die out; thus scarlet fever has never gained a foothold in tropical countries, and measles and diphtheria do not, as a rule, become serious problems under the vertical rays of the sun. Yet influenza, pneumonia, and tuberculosis play havoc in tropical lands just as they do in temperate zones. The effect of latitude is striking and significant; thus rheumatic fever reaches its highest incidence in March and April in the United States, but in September and October in

England. A number of diseases show two peaks of incidence, one in the spring, the other in the autumn. This is frequently the case with the acute respiratory and throat infections, but also with tuberculosis, nephritis, and rheumatism. The causes of seasonal changes in health and disease are varied, complex, and largely undetermined. The insect-borne group of diseases prevail almost entirely during the summer-time—that is, during the hot, moist season of the year when the insect vectors most abound. These insect-borne diseases give us the best examples in epidemiology of endemicity. We have, therefore, no record of an epidemic of yellow fever in the winter season.

An exception to the rule is typhus fever, which prevails in winter-time, but subsides with the warm weather. This paradox is, however, easily explained by the fact that lice are more common in cold weather. There is evidently some factor in the bionomics of the louse which makes cold weather favourable for the completion of the cycle of events. Malaria may, however, occasionally be more prevalent in winter than in summer. An instance of this has recently been reported from Russia in the winter of 1922-23, where an epidemic spread steadily throughout the winter with the thermometer varying from 20° to 30° C. below zero, the spread of the disease being apparently due to the fact that the butts of drinking-water in the almost tropical heat of the log houses of the peasants afforded ideal breeding-places for the anopheles. The seasonal prevalence of the intestinal diseases has a general resemblance to that of the insect-borne infections. This is the case with typhoid fever, cholera, dysentery, and the summer diarrhoea of infants. The incidence and intensity of these infections become greater as we approach the tropics. Winter-borne outbreaks of intestinal infections frequently occur. Water-borne typhoid fever has a predilection for the winter season. When cities like Albany, Philadelphia, and Chicago improved their water-supplies the typhoid fever rate became markedly lower and the seasonal prevalence was reversed.

The importance of the seasonal prevalence of disease is further emphasised by the fact that such diseases as poliomyelitis and encephalitis lethargica, which in Britain have their period of maximum incidence in the late summer and autumn and in the winter respectively, occur under reversed conditions in Australia, where poliomyelitis is a disease of the first half of the year, and encephalitis of the third and fourth quarters. This point was mentioned by Dr. A. K. Chalmers, medical officer of health for Glasgow, in the course of the Watsonian lectures delivered recently to the Royal Faculty of Physicians and Surgeons of Glasgow.

THE CARE OF CRIPPLED CHILDREN.

THE County Borough of Portsmouth has found a happy solution of the problem of how to deal with the crippled children in its district. At a meeting in Portsmouth Town Hall on March 20th the Mayor, Councillor F. Privett, was enabled to hand over to the trustees of the Lord Mayor Treloar Hospital for Cripples, Alton, a cheque for £10,000, raised by voluntary subscription, in return for which the trustees have agreed to set aside 50 beds in perpetuity for the treatment of the young cripples of Portsmouth. It is little over a year ago that certain citizens of the borough decided to raise a fund in order to provide treatment for the town's crippled children. The first idea was to erect a small orthopaedic hospital on the outskirts of the town; further consideration, however, showed that the money could be more advantageously expended by endowing beds in an existing institution. As a result of this decision the trustees of the Hospital at Alton were approached and agreement was arrived at. By a trust deed the Portsmouth Corporation have now allotted to them 50 beds for which they pay a maintenance charge of 30s. a week. The

¹ International Conference on Health Problems in Tropical America, United Fruit Company, 1924, pp. 28-54.

surgical staff of the Hospital, whose original efforts took cognisance mainly of crippling caused by tuberculosis, has been extended to cope with different forms of orthopaedic work, and the crippled children of Portsmouth up to the age of 16 years, no matter to what cause the infirmity may be due, can now secure at Alton whatever treatment, surgical or otherwise, may be necessary. The agreement has received the cordial approval of the Ministry of Health and Board of Education, and the procedure adopted by Portsmouth is one which, provided the trustees of the Treloar Hospital were agreeable, might well be followed by local authorities in the locality. Other counties might well consider the advantage of similar centres in their midst, and make the development possible by financial support. Education authorities must shortly make provision for the crippled children of their districts, and to attempt to do this by the erection of small *ad hoc* hospitals will not only prove expensive but, what is still more important, such a course can never secure for their patients the efficient treatment which is available at a large institution capable of engaging a highly specialised surgical and medical staff.

OXALURIA.

Calcium oxalate is a normal constituent of the urine, but in conditions of health the amount is small, between 15 and 20 mg. being excreted during 24 hours. Upwards of 30 mg. may be considered as pathological, though this quantity may not cause any definite symptoms. Its solubility in the urine is small and varies with the reaction, for in very acid urine probably the normal quantity present is completely dissolved; but in amphoteric, alkaline or even slightly acid urines only a minute trace goes into solution, the remainder being passed as crystals. Oxalic acid is produced from a large number of substances in the human body—for example, from the carbohydrates by oxidation, from protein and nucleo-protein by breaking down of their complicated structure, and even from fats and allied substances such as glycol. In addition, oxalic acid and its salts are present in varying proportions in many common foodstuffs, amongst which the following are examples—spinach, rhubarb, sorrel, gooseberries, strawberries, beetroot, cocoa, tea, and chocolate. Briefly, the sources of oxalic acid formation in the human body during the processes of digestion are very numerous. There is one additional fact of physiological importance—viz., the relatively greater solubility of magnesium oxalate than the calcium salt, for the suitable administration of magnesium salts in the diet can increase the amount of oxalate excreted, and so diminish the tendency to oxaluria.

The surgical manifestations of oxaluria are not realised, and Mr. Bathe Rawling was able to collect an interesting array of facts and warnings in his paper to the Medical Society of London on Monday evening. He dealt first with that group of cases in which the oxaluria produces an abdominal condition, which may be, and has been, diagnosed as acute intestinal obstruction. Mr. Rawling's first patient, manifesting this condition, was his own house surgeon, who was suddenly seized with abdominal pain accompanied by vomiting, abdominal distension, and complete constipation. The patient was seen by Sir D'Arcy Power and Sir Anthony Bowlby as well as by Mr. Rawling. All agreed that acute intestinal obstruction was present and a laparotomy was performed with a negative result. The next day, the patient having shown no improvement, a general surgical consultation revealed a unanimous opinion that acute obstruction was still present, and a second exploration was advised. Fortunately the patient passed small quantities of flatus, and enemata now succeeded in producing admirable results, a second operation becoming unnecessary. The urine was later found to be smoky with blood and heavily laden with oxalate crystals,

and later a small calculus was passed. Quite soon after Mr. Rawling saw a second example, again in a medical man, who presented a very similar clinical picture, but the condition was diagnosed without operation. The noticeable feature in both cases was that the patients neither felt nor looked as ill as they should have done if their trouble had really been acute intestinal obstruction. Furthermore, in the first case the patient was convinced that the paralytic condition of the intestine was largely due to a dose of morphia. These cases Mr. Rawling cited as examples of acute abdominal manifestations accompanying oxaluria, but there are other and more numerous examples of chronic intestinal disturbances due to the same cause. They may be somewhat vividly described as "windy" patients, who suffer from recurrent attacks of abdominal pain with distension, neither very severe but of sufficient intensity to make the patient seek advice. The explanation suggested by Mr. Rawling is that there is a reflex disturbance of the sympathetic nervous system controlling the intestines from the renal nerves. The existence of such abdominal manifestations calls attention to the great importance of a routine examination of the urine, and further it must be realised that the general condition of these patients is not consistent with the diagnosis of acute intestinal obstruction. Apart from the well-recognised group of patients who suffer from hæmaturia due to oxaluria, there is one other surgical condition found at times complicating an excess of oxalates in the urine, and that is a urethral discharge, which may vary from a slight mucous stickiness to a frank muco-purulent discharge. The importance of this class of case cannot be overestimated, for the obvious mistake in diagnosing gonorrhœa may have disastrous effects to both patient and surgeon. Sir William Willcox, in the course of the same debate, dealt with the physiological source of the oxalates and the treatment of their excess in the urine, and in doing so afforded a well-timed warning that the presence of calcium oxalate crystals does not necessarily entail oxaluria, and that such grave conditions as had been mentioned can only be attributed to oxaluria in the absence of definite evidence suggesting other more obvious lesions. He recommended careful dieting by excluding all those foodstuffs known to be rich in oxalates, by choosing foods rich in magnesium, by avoidance of hard drinking waters, and the establishment of a proper hygienic habit of life.

A SOCIAL evening will be held by the Royal Society of Medicine at 1, Wimpole-street, London, W., on Monday, May 4th, when Dr. Robert Hutchison will give an address on "Dr. Samuel Johnson and Medicine," illustrated with 18th century portraits.

THE announcement was made last week, as these pages were in the press, that Sir Humphry Rolleston, in accordance with universal expectation, has been appointed to follow his old friend Sir Clifford Allbutt as Regius Professor of Physic in the University of Cambridge. On every ground the appointment has been hailed with satisfaction.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The twenty-second meeting of the Commission was held at the Home Office, Whitehall, on March 19th, Sir Andrew Duncan in the chair. The examination of Sir Norman Hill, Bart., on the working of the Seamen's National Insurance Society was resumed and at its conclusion he gave evidence as to the special fund for seamen. Thereafter the Insurance Committees of Coventry (Mr. H. W. Wale and Mr. Lee Gordon), Cheshire (Mr. G. Wright and Mr. F. T. West), and Leicestershire (Alderman Goodacre and Mr. T. Crew) gave evidence on the constitution and administrative work of insurance committees, particularly with reference to the medical and treatment benefits. The Commission announce that proof copies of the oral evidence and the relative statements submitted at the meeting of March 5th are now on sale at H.M. Stationery Office (2s. 3d.).

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXV.—THE TREATMENT OF MENINGITIS.

THE prognosis in acute and subacute leptomeningitis varies according to the organism responsible for the infection. Cerebro-spinal fever (meningococcal meningitis) is by far the most hopeful as regards response to treatment, but many cases of recovery have now been reported in the pneumococcal, streptococcal (especially of otitic origin), and influenzal (*B. Pfeiffer*) forms of meningitis, as well as in that due to various other organisms. Even in tuberculous meningitis, which has the worst possible prognosis, some 46 authentic cases of recovery are recorded in the literature.

General Management.—Careful nursing is of paramount importance. The patient's head should be kept fairly low, not more than one pillow being allowed; sitting up is not permitted. Unconscious patients must be turned frequently, since hypostasis is a predisposing factor in the development of pneumonia. In cases running a course of longer than ten days a water-bed should be provided to obviate bed-sores. The patient must not be allowed to suffer from retention of urine; if necessary, the catheter must be used twice daily.

Diet.—In acute cases, milk, beef-essences, cocoa, and lemonade are given. If vomiting is present, four-hourly feeds consisting of 5-15 oz. of citrated milk (sod. cit. to gr. 2 per oz. of milk) diluted with an equal part of water are often kept down. Peptonised milk whey, and albumin water are also useful. In cases recovering, semi-solids—custards, bread-and-milk, eggs, under-done mutton—should be given as early as possible. Infants suffering from posterior basic meningitis should be breast-fed if possible.

Bowels.—Constipation is the general rule. Calomel or castor oil may be given at night, followed by a saline purge next morning. Liquid extract of cascara and compound liquorice powder are also useful, but enemata are frequently required.

Vomiting.—To allay mild vomiting not due to hydrocephalus, the following mixture is often helpful: R Acid hydrocyanic dil. M4, liq. morphinae hydrochlor. M10, sodii bicarb. gr. 10, aq. chloroformi ad 3 i., t.d.s. The most efficacious measure for the prevention of vomiting, however, is repeated daily lumbar puncture (vide infra).

Headache.—Cold applications are beneficial. Phenacetin (gr. 12) with caffeine (gr. 2) may be given twice or three times daily.

Sleep, &c.—Sulphonal (gr. 20-30) is often useful. For obstinate insomnia, or when continued delirium with restlessness is present, morphine (gr. ½) should be administered hypodermically and repeated if necessary. When morphia fails, potassium bromide (gr. 15-25) sometimes gives good results. Paraldehyde is of little value in meningitis, and hyoscine should be avoided. Warm sponging and occasional warm packs are also of help.

Should symptoms of cardiac failure or a falling blood pressure develop, hot saline infusions (T. = 100° F.) should be given rectally or subcutaneously in the pectoral regions, together with digitalin (gr. 1/100). Strychnine, owing to its tendency to precipitate convulsions, is contra-indicated. Cases recovering should remain in bed at least 14 days after the termination of the course of disease. Patients recovering from cerebro-spinal fever should sniff a solution of 1 per cent. chloramine into the nose twice daily in order to sterilise the naso-pharynx; relapses may be due to a reabsorption of meningococci from this situation.

Special Treatment.

Two principles are important. (1) The establishment of adequate drainage for the meningeal exudate;

(2) the application of a specific immune serum in as close contact as possible with the inflamed tissues.

Drainage.—Adequate drainage can usually be supplied by the performance of repeated daily lumbar puncture. Since 1916, more especially in cerebro-spinal fever, my routine practice has been to follow a period of intrathecal serum administration by repeated daily lumbar puncture, with complete drainage of the subarachnoid space, until the cerebro-spinal fluid becomes clear to the naked eye. With this method I have encountered no recrudescence nor relapses. When no cerebro-spinal fluid is obtained by lumbar puncture ("dry-tap") by reason of adhesions existing between the meninges and spinal cord at a higher level or a progressive increase in the density of the pus, one has to consider puncture at other sites.

Cervical Puncture.—Puncture of the theca below the seventh cervical vertebrae I have found quite a safe procedure provided the needle is inserted without a stylet.¹ Puncture in the thoracic region is not advisable, as in many normal individuals a posterior subarachnoid space is absent in this region.

Puncture of the Cisterna Magna.—The technique of cisterna puncture is as follows: With the patient prone and his forehead supported, the needle (graduated in centimetres) is inserted directly over the spine of the second cervical vertebra, the point being directed upwards in the mid-line at an angle of 45°. The needle pierces the occipito-atlantal membrane between the occipital bone and atlas, and reaches the cisterna magna at a depth of 4 to 6 cm. This method of puncture is indicated when no fluid can be drained off at any lower level. Occasionally, when purulent exudate occludes the region of the foramen magnum, even this puncture may fail in its object.

Sphenoidal Puncture.—If the above measures are unsuccessful, sphenoidal puncture—after the method of Bériel and Cazamian—may be tried. This consists of introducing a needle 2 mm. external to the supra-orbital notch, upwards and inwards along the outer wall of the orbit in its upper part, and entering the most external portion of the sphenoidal fissure.

Ventricular Puncture.—In children with open fontanelles, puncture of the lateral ventricle is easy and may be resorted to at once if lumbar puncture fails to yield fluid. The needle is introduced at the lateral angle of the superior fontanelle, the direction being downwards, slightly backwards and inwards to a depth of 3 cm. In older children and adults, the usual method of draining the lateral ventricles is to trephine, a procedure which causes considerable "shock," especially as it is necessary to operate on each side. The patient seldom survives, and this operation should not be considered unless the patient's condition is almost desperate.

More recently, instead of trephining, I have merely drilled a hole through the skull over Keen's point and punctured the ventricle through the small opening thus made. In most cases it is possible to perform this operation without an anaesthetic, the "shock" is negligible as compared with that resulting from a trephine, and drainage appears equally effective. Two cases of apparent internal hydrocephalus complicating meningococcal meningitis treated by this method recovered.

As regards meningitis secondary to otitis media or other local infection, an attempt should be made to remove the original septic focus and to establish free drainage of the subarachnoid space. In otitic meningitis the translabyrinthine method of drainage has resulted in several recoveries.

Administration of Serum.

In order to exert its maximum effect, serum must be introduced directly into the subarachnoid space and must be renewed at intervals not exceeding 24 hours. When there is evidence of systematic infection, the intrathecal medication should be

¹ Jour. Neurol. and Psychopathol., 1921, i., 216.

supplemented by the intravenous administration of serum in doses up to 200 c.cm. Herrick, indeed, advises doses up to 600 c.cm., the resulting serum-sickness being no more severe than with smaller amounts. Anti-meningococcal, anti-pneumococcal and anti-streptococcal sera are available for the respective forms of meningitis. Also, for the very rare cases of meningitis due to *B. typhosus* and *B. dysenteriae*, we have anti-typhoid and anti-dysenteric sera. The serum should be polyvalent for the specific organism obtained from the cerebro-spinal fluid and is administered at the earliest possible moment. Later, if the actual type of organism is determined in the case of the meningococcus or pneumococcus, the corresponding univalent serum can be substituted.

Method of Administration.—The usual method of introducing serum into the subarachnoid space is by puncture in the lumbar region, from which situation it quickly reaches the ventricles.

Following the evacuation of cerebro-spinal fluid in any region, the serum is injected either with a syringe or run in from a small funnel and tube—the last-named method being safer. The end of the bed should be raised for half an hour following the serum administration. For the performance of lumbar puncture and intrathecal injection, a general anaesthetic is only necessary when the patient is particularly restless or violent. In restless cases a hypodermic injection of morphine (gr. $\frac{1}{4}$) and atropine (gr. 1/100) given 20 minutes before the puncture will assist in keeping the patient calm.

Dosage of Serum.—The initial dose of serum is from 30–50 c.cm., followed by 30 c.cm. daily for at least four days or until clinical improvement is manifest. The quantity of serum injected should, however, be at least 5 c.cm. less than that of the cerebro-spinal fluid withdrawn. To children the following doses may be given: 1–5 years, 5–15 c.cm.; 5–10 years, 10–20 c.cm.; 10–19 years, 20–40 c.cm. However great the patient's improvement may appear, serum injections should be continued until no more organisms are present in stained films of the cerebro-spinal fluid deposit. After this period repeated daily lumbar puncture is advisable until the cerebro-spinal fluid is clear to the naked eye. At each puncture the fluid is allowed to escape until the flow practically ceases. Should signs of a recrudescence appear the injection of serum must be resumed; if the period since the last serum administration exceeds eight days anti-anaphylaxis must first be induced.

Other Methods of Treatment.

As regards other forms of meningitis for which no specific sera are available, it is best to rely on general treatment and the performance of repeated daily lumbar puncture. In very acute cases puncture may be performed at first every 12 hours. The introduction of chemical substances—lysol, protargol, flavine, hexamine, &c.—directly into the subarachnoid space is not to be recommended, nor have I observed any benefit result from attempts to wash out the intrathecal space with saline solution.

It is usual to prescribe hexamine (gr. 10, t.d.s.) by the mouth in all cases of meningitis. It is, however, of doubtful value. Recently Maloens² has advocated the intravenous injection of an iodo-urotropine preparation in septic meningitis, each injection being preceded by lumbar puncture. Vaccines are applicable only to subacute and chronic cases, and cerebro-spinal fever and tuberculous meningitis are the only two forms which exhibit such stages with any degree of frequency. In the former, an autogenous vaccine may be given, starting with a dose of 200 million organisms and increasing by 200 or 250 millions per dose every fifth day up to a maximum of 2000 millions. The reactions with these doses are negligible.

C. WORSTER-DROUGHT, M.A., M.D. Camb.,
M.R.C.P. Lond.,

Lecturer in Neurology, Bethlem Royal Hospital,
and Physician, West End Hospital for Diseases
of the Nervous System.

² Bruxelles Méd., Nov. 16th, 1924.

Special Articles.

THE ACTION OF WATER UPON COPPER PIPES.

BY JOHN C. THRESH, M.D. MANCH., D.Sc. LOND.,
F.I.C., &c.

COPPER pipes have apparently been used on a limited scale for many years as service pipes for conveying water; tinned copper pipes and cylinders are very largely used for hot water installations, and in many cases this hot water is laid on to the kitchen and the water is used for domestic purposes. Apparently in some cases plain copper pipes and cylinders are used, in which case the water would be in immediate contact with the metal.

Recently one of these installations was examined, and the water as supplied to the institution was found to contain 0.04 parts of copper per 100,000. The whole plant had been in use for years, and the hot water was used for all purposes without giving rise to any complaints or even to any suspicion of its being unwholesome. The question submitted to me by the architect was, whether I could approve of a similar installation for a much larger institution in the same district using water from the same public supply, which water had a marked effect upon iron and galvanised iron pipes, especially when hot. Before expressing a definite opinion I put myself in communication with people using copper pipes and with the "Copper and Brass Users Association." At their request a series of experiments were also undertaken (the results of which will be referred to later), and finally I expressed the opinion that copper pipes could be used for the institution with perfect safety.

Effect of Ingestion of Minute Quantities of Copper.

Meantime careful research was made for records of the action of copper on the human body, and it was only in out-of-date publications that the opinion was expressed that cases of chronic copper poisoning did occur from the ingestion of minute quantities of copper, and in these cases they never appeared to arise from the use of copper pipes for water or copper vessels for cooking. Until a comparatively recent period, however, there seems to have been a widely held opinion that copper was as poisonous as lead, but this opinion began to be doubted when the causes of food poisoning were investigated. Before this period, if any article of food or drink had caused illness, and had been in contact with copper, no further investigation was deemed necessary. The poisoning was attributed to the copper. Within the last five years a jury returned a verdict of "death from copper and lead poisoning" because the analyst who examined the stomach certified that he found traces of lead and copper therein. The water used in the neighbourhood was said to act on lead, but chronic lead poisoning was unknown, and when the water was, at a little later date, carefully examined it was found to have a barely perceptible action on lead. The symptoms as described by the parents indicated that death was due to food poisoning. The trace of lead found in the system may have been derived from the water; copper is a normal constituent of the body. Cases of this kind get recorded and the erroneous nature of the conclusion may be difficult to prove. In connexion with copper poisoning, if cases of this kind are excluded, there is no evidence of copper in small quantities being a poison or of its being able to produce a condition of chronic poisoning. Of all the authorities consulted two only need be quoted.

Prof. W. E. Dixon, F.R.S., in his "Manual of Pharmacology" (4th edition, p. 412), says:—

"There is no evidence that man is ever affected with chronic copper poisoning, so that the use of copper cooking

vessels and the employment of minute amounts of copper to 'improve' the appearance of peas, may not be so harmful as might be supposed."

Dr. Dixon Mann, in his "Forensic Medicine and Toxicology," 2nd edition, p. 484, refers to the older views about copper poisoning and adds:—

"Formerly toxicologists shared these views and never questioned the existence of chronic copper poisoning; modern authorities, on the other hand, with few exceptions, state that it is unknown . . . For the present, whilst allowing the possible existence of chronic copper poisoning, it may be accepted that the cumulative action of minute doses of copper is infinitely less injurious to human beings than is the case with similar doses of lead . . . Copper is almost constantly present in the system and is chiefly eliminated by the bowels."

It is now well known that wheat, barley, and many other articles of food and drink contain copper, hence the presence of traces in the human body.

The Limits of Safety.

Lehman (Archiv Hygiene, xxiv.) calculates that each individual takes into his body daily 20 mg. of copper, and Tschirch, confirming this, adds that so long as the total quantity of copper ingested does not exceed 100 mg. daily there can be no question of injury to health. In works on practical hygiene or water analyses, whilst details for the method of detection are given, an opinion is rarely expressed as to the amount permissible. Wanklyn deals with lead and copper as though their effects were identical, and simply says: "Water should contain less than 1/10 of a grain of lead or copper per gallon." Lehman, in his "Methods of Practical Hygiene," translated by the late Sir William Crookes, appears to regard copper as practically harmless, saying: "The danger of chronic poisoning by . . . or drinking water . . . probably never existed." From a careful consideration of all the evidence available I have arrived at the conclusion that when the average amount of copper in the whole day's supply does not exceed 1/10 gr. per gallon (= 0.14 parts per 100,000) the water can be considered as perfectly wholesome.

Action of Potable Waters on Copper and Tinned Copper.

Having arrived at this conclusion it became necessary to ascertain the action of potable water on copper and tinned copper, and, as these articles may vary considerably, certified specimens were obtained of (a) electrolytic copper, (b) copper complying with the specification of the British Engineering Standards Association, which contains 99.25 per cent. of the pure metal, and (c) the G.P. standard copper, which contains 99.7 per cent. of pure metal. It may be said at once that no appreciable difference in the action upon any of these three could be detected whatever the nature of the water used in the experiment. Two kinds of tinned copper were obtained, one in which the coating contained 99 per cent. of pure tin, and the other in which the coating only contained 50 per cent. of tin. The remainder was obviously lead, and whilst the copper coated with 99 per cent. tin practically withstands the action of all, except acid, waters, the 50 per cent. tin coating yields lead almost as freely as an ordinary lead pipe. Copper coated with 99 per cent. tin may be generally applicable, but the copper coated with 50 per cent. tin is as dangerous as lead, and its use for water service pipes should be strictly forbidden. If the water is one which does not act on lead, then the tinning is unnecessary, and only adds to the cost of the pipes. If the water acts on lead, then there is no advantage in using this so-called tinned pipe and it becomes a great source of danger, since the user, deeming himself safe in using tinned copper pipes, is running all the risks of lead poisoning exactly as though he were using lead pipes. One of the acid waters experimented with took up a dangerous amount of lead from a copper pipe coated with the 99 per cent. tin, but waters of this type are very exceptional.

New copper pipe is a little more freely acted upon for the first few days. This is probably due to the

rough surface and a thin coating of oxide. The effect of surface is shown if three copper slips of the same size are put into equal volumes of the same water and allowed to stand for an equal number of hours. A strip which has been exposed to air, used in this condition, yields more copper than a strip which has been cleansed by rubbing with petrol and finest emery, whilst a strip which has been burnished by more vigorous treatment in the same way will yield much less metal to the water than either of the others. If the water is changed daily from the third or fourth day the results obtained are practically identical, showing that the effect of surface has passed away.

The action of water on copper is similar to that of the action on lead, the metal taking up oxygen from solution and an oxide being formed. The solubility of the copper oxide is very much less than that of lead oxide, and the affinity of the copper for oxygen appears to be very much less than that of lead. Possibly about 0.025 part per 100,000 copper or oxide may be in molecular solution, but anything above this seems to be in a colloid condition or in a state of coarse suspension, since filtration through fine filter-paper, asbestos, or porcelain removes nearly all the copper. When any appreciable action is taking place the water becomes dull, but under ordinary circumstances (unlike lead) no visible deposit forms; therefore there does not appear to be any danger from deposits in the pipes.

Cautions in the Use of Copper Pipes.

Under certain conditions, as when an electric current traverses the pipes, action is enormously accelerated and a perceptible pale-blue deposit forms which easily dissolves in very dilute acid and gives a blue colour when an excess of ammonia is added. It is obvious, therefore, that such pipes should not be used for earthing currents. It may be added that in recent years complaints of the action of water on metal pipes have greatly increased in frequency, and there is little doubt that the cause is the use of such pipes, especially by amateur electricians, for this purpose.

When copper pipes are now in use the only complaints which occur are (1) of a green deposit at joints, and (2) the green staining of porcelain enamel by drippings from taps. These effects are due to the accumulation of copper oxycarbonate from the evaporation of the water, and are easily remedied if proper attention is given to the joints and taps. They do not necessarily indicate a dangerous condition of the water.

Experiments with Various Waters.

Experiments have been made with waters derived from large sources of supply from all parts of the kingdom, and waterworks engineers, analysts, and medical officers of health have shown their interest by collecting and sending typical samples.

With water of different types the following results were obtained:—

	Copper.*		Copper.*
River water of moderate temporary hardness—		Moorland water (cont.)	
London	0.04	Hardness 1° ..	0.057
Surrey	0.025	" 1° ..	to 0.075
Hampshire ..	0.035	" 2.75° ..	0.15
An unfiltered river water	0.06	" 1° (very acid) ..	0.65
Deep well waters—		Acid neutralised with chalk ..	0.01
Chalk	0.000	Hardness 2.3° ..	0.05
Limestone ..	0.05	" 4° ..	0.00
New Red Sandstone	0.01	" 0.5° ..	0.10
An alkaline water—		" 4° ..	0.045
Thanet Sand ..	0.04	" 5° ..	0.06
Ditto	0.025	Spring waters—	
Greensand water—		Hardness 21° ..	0.05
Hardness 4° ..	0.01	" 3° ..	0.075
Moorland water—		" 15° ..	0.06
Hardness 4° ..	0.033	Very pure distilled water—	
" 3° ..	to 0.065	Hardness 0° ..	0.14-0.20
" ..	0.01	+ 4 mg. MgCl ₂ , hardness 4° ..	0.020
		+ 4 mg. NaCl, hardness 0° ..	0.01

* Copper taken up in 24 hours (parts per 100,000).

The process for estimating the copper which gives the most reliable results is exactly the same as that for estimating the action of water on lead, described in "The Examination of Waters and Water Supplies"¹ (third edition, p. 332), copper foil being substituted for lead foil, and a solution of copper sulphate for the standard lead acetate.

Comparative Solvent Powers of Hot and Cold Water.

Experiments were made with hot water and the results indicate that so long as the water contains oxygen and remains in contact with copper some metal is taken up, for example—

A neutral water—	
Copper taken up by cold water in 24 hours..	0.005 and 0.01
Copper taken up by nearly boiling water in 48 hours	0.033 „ 0.065
An acid moorland water—	
Copper taken up by cold water in 24 hours..	0.065
Copper taken up by nearly boiling water in 48 hours	1.3
Repeated	1.44

In cold water the amount of copper taken up in three hours is one-third to one-fourth of that taken up in 24 hours. When the action is very slight in 24 hours, the amount of metal taken up in three hours is too small to estimate, though its presence can be detected by the reduced phenolphthalein test, which will show one part of copper in 100 million parts of water.

Whatever the nature of the service pipes used, the water which has stood therein throughout the night should be run off before any is drawn for drinking or beverage-making purposes. It is exceedingly likely that if this precaution were always taken there would be fewer complaints of turbidity, and the risk of any effect upon health would be largely decreased. It is especially necessary where lead pipes are used, and it will be advisable where copper or galvanised iron is utilised.

That very minute quantities of copper in water have an algicidal and bactericidal action is well known, but water standing in copper pipes for 24 hours cannot be depended upon to be free from objectionable bacteria. Very conflicting results have been obtained, yet the above statement seems well established.

Arsenic in Copper.

It is well known that arsenic, in traces, is found in most copper, and experiments were made to ascertain if any was taken up by water. Only one sample of water was found to take up any trace, and it was one which contained a considerable amount of sodium bicarbonate in solution and was therefore distinctly alkaline. This water, when kept in contact with arsenical copper for 11 days, took up 0.003 mg. of arsenic per 100,000. With one day's contact no arsenic could be detected. The small amount of arsenic allowed in the copper used can therefore be considered as without effect. Experiments made with "drawn" copper and "rolled" copper, both arsenical and non-arsenical, did not show that any one kind was preferable to another so far as the action of water thereon was concerned.

Conclusions.

Summarised briefly, the conclusions arrived at are:—1. That copper is far less acted upon by water than is iron or lead. 2. That copper being vastly less deleterious than lead, copper pipes are far safer than lead pipes. 3. That copper pipes can be used for all waters which are not acid in reaction. 4. That acid waters should never be used until the acidity has been removed by treatment. Having been so treated copper service pipes can be used. 5. That practically all waters take up traces of copper if allowed to stand sufficiently long therewith, but that under all ordinary circumstances the amount taken up is far too small to endanger health.

¹ Thresh and Beale. London: J. and A. Churchill. 1925.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 624.)

EVIDENCE OF THE HEARTS OF OAK SOCIETY.

THE first society to give evidence was the Hearts of Oak Benefit Society, which was represented by Mr. H. Dudley, Chairman of the Executive Council, and Mr. J. P. Lewis, the Secretary.

(Q. 2548-52.) The society has a membership of 433,000 insured persons and is administered under a centralised system with about 380 agents in the principal towns. The agents collect contribution cards and pay benefits; they also do sick visitation where men are concerned. Medical certificates and claims for benefit are dealt with at the head office. The society had a gross surplus of £728,000 at the 1918 valuation and a disposable surplus of £480,000.

The principal evidence of this society embodied recommendations as to the extension of medical benefit to the dependants of insured persons; the abolition of deposit contributors; the limitation of additional cash benefits; the provision of a specialist medical service for insured persons, and the inclusion of dental benefit as a statutory benefit under the Act. Their evidence also covered many recommendations on questions of machinery and minor matters.

Medical Benefit for Dependants.

(Q. 2553-61.) The witnesses suggested that medical benefit should be provided for the dependants of insured persons, broadly on the grounds that such extension is necessary for the improvement of the health of the community as a whole, and that the whole cost, which they estimated at a little more than 3d. a week per insured person, should be met by an increase in the weekly contribution, the increase to be borne wholly by the insured person. They estimated the cost at £10,000,000 per annum, and the number of dependants, they surmised, was 20 millions.

(Q. 2562.) Have you made any inquiry at all to ascertain whether the medical profession would be likely to accept the transfer of about 20 million patients from private to contract practice?—No.

Asked whether they considered that the large number of insured persons who had no dependants would accept a flat rate of contribution, and thus bear an equivalent burden with those who had dependants, the witnesses pointed out that unmarried men at present contributed towards maternity benefit, but they agreed (Q. 2622-6) that as this was a matter of ½d. a week as compared with a proposed 3d. it was not so serious a proposition, particularly in the case of women.

(Q. 2626.) Am I right in saying that single women who are employed are in much more danger of becoming dependent than having dependants?—Yes, that is so.

(Q. 2711-24.) Sir Alfred Watson questioned the witnesses closely as to the finance of their proposal, and they agreed that their estimate both as to the number of dependants and as to the cost per head might be under the mark. They therefore suggested that perhaps doctoring only might be provided and the free supply of drugs left for a later extension.

(Q. 2721.) Then you see no difficulty in providing medical attendance for the wife and children of an insured person and leaving that insured person to provide the

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247-8); The Provision of Medical Benefit (Feb. 7th, pp. 301-3; Feb. 14th, pp. 355-6; Feb. 21st, pp. 403-5); Financial Provisions of the Act (Feb. 28th, pp. 454-7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508-9); The Approved Societies and the Money Benefits (March 14th, pp. 564-5; March 21st, pp. 623-4).

References to the official statement which has been issued as an appendix in four sections are given thus; Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

medicine himself, however expensive it may be?—... I admit that there is a difficulty; but I submit... that the difficulties which you suggest are out of proportion to what would actually take place.

(Q. 2722.) Having regard to the indulgent way in which the medical profession treat the families of the working classes, do you really think that the insured would be substantially better off under your proposal than they are at the present time?—Yes, I do.

As the cost to the State of the proposed extension would appear to be about £3,000,000 per annum, the question was asked whether the Society could show that insured persons generally were not in a position to provide medical treatment for their dependants. (Q. 2725-46.) The witnesses agreed that the present insurance system so relieved the insured persons as to enable them the better to pay for their families, but they thought the case for the extension of the benefit rested on the broad principle that a measure of health would be thereby secured for the insured men and women of the future.

Objections to a State Medical Service.

(Q. 2608, 2750-91.) The Hearts of Oak representatives were opposed to a State medical service. Their chief objections were that there would be (they assumed) no choice of doctor and that the doctors would work by the clock. A State medical service would, they thought, be a soulless service. They agreed that the administration of some of the local medical services—e.g., the tuberculosis centres, child welfare centres, and the school medical services—were good, and also that if a choice of doctor could be secured under a State scheme their objections would largely disappear.

Retention of Insurance Committees.

(Q. 2679, 3661.) The Society recommended the retention of Insurance Committees for the administration of medical benefit and said that they would have no objection to their administering dental or other treatment benefits.

Abolition of Deposit Contributors.

(Q. 2926-3129.) With regard to deposit contributors, who form that group of persons who do not join an Approved Society, the witnesses recommended that societies should be required to take over the whole of these persons, and that such persons should be compelled to become members of societies. The witnesses were examined at great length on this proposal. It was pointed out that deposit contributors were not a fixed number of the same people, but were constantly passing into Approved Societies and being replaced by new deposit contributors (the number of 1914 deposit contributors now remaining is under 50,000). (Q. 2984.) Further, that compulsory allocation amongst Approved Societies would involve the societies being deprived of their rights to expel members, so that the Rechabites might be compelled to retain a drunkard, a Catholic society to retain a Protestant, and a trade union society to keep a man who had gone over to another trade. The witnesses were not, however, disposed to vary their evidence in this respect, nor did they think (Q. 2942) that the allocation of a section of the population among societies which in many cases have social or trade qualifications would be a task of great difficulty.

(Q. 2999.) To abolish the deposit contributor class, and possibly get 100,000 people, at the most, distributed among societies, people who would not otherwise join societies—do you think for that they are going willingly to give up their right of expulsion in respect of all the unsatisfactory characters that might develop among 15,000,000 people?—Yes.

It was also elicited that insured persons, even if compelled to join societies, could not be compelled to accept benefits, and that many contribution cards might get destroyed and thus go to swell the amount of the Unclaimed Stamps Account.

Married Women.

(Q. 3205-3230.) The witnesses thought that married women were not a satisfactory insurance

proposition, mainly because of the difficulties of supervising sickness benefit claims.

Pooling of Surpluses.

The witnesses were of opinion that not more than 50 per cent. of a society's disposable surplus should be used for the provision of additional cash benefits, and they thought that societies might be compelled to devote the other 50 per cent. to treatment benefits without being logically obliged at a later stage to accept the loss of their discretion with regard to the administration of the whole of the surplus. (Q. 3240.) They were absolutely opposed to the pooling of surpluses in general, but would not object to some portion being pooled to ensure that all insured persons became entitled to dental benefit.

Dental Benefit.

The witnesses more than once impressed on the Commission the fact that there was a growing demand on the part of insured persons for dental benefit. They thought that at least one-half of the cost of dental treatment should be secured to the insured person and provided as a statutory benefit.

(Q. 3246.) Of all treatment benefits, in our opinion, the one most desired by the insured person, and also the most desirable from the point of view of the country at large, is dental treatment, and that we would take out of the category of additional benefits altogether by making it a statutory benefit. We would not allow it to be administered by the Approved Societies in the way it is at present.

(Q. 3248.) They suggested that the benefit might be administered through the Insurance Committee or through some body representing the dentists, the Approved Societies, and the Ministry of Health together.

(Q. 3648-9.) As there is much more room for individual fancy in regard to dental treatment than with regard to medical treatment, the suggestion was made that the scope of the benefit would have to be closely defined and a proportion only of the insured person's expenditure met.

The Panel Service.

(Q. 3711-55.) The Panel Service in the view of the witnesses is very much better than the service that was given to members of Friendly Societies prior to National Health Insurance, but at the same time it is nothing like what it ought to be; and in a great many instances the doctors do not give the same attention to people who are panel patients as they do to people who are paying them as private patients. They also suggested that in London, at any rate, the practice of referring patients to hospitals was too prevalent. They considered that all capitation fees for persons who had not chosen a doctor might be paid over to the hospitals notwithstanding that the panel doctors as a whole were at risk in respect of such persons. (Q. 3726-9.) If a person delayed choosing a doctor, he might reasonably be required to pay the doctor's fee for the first illness for which he required attention.

Specialist Services.

(Q. 3544-8.) The Society advocated the extension of medical benefit to include specialist services and considered that the cost of these services might be met out of the surpluses of Approved Societies.

(Q. 3547.) We thought that this specialist service, if possible, should be set up, and that it should be a first charge on 50 per cent. of the surplus of societies; and if it could not be paid out of that you might even draw on the other 50 per cent. We are quite prepared for that, and as we are not against some modified form of pooling of surpluses for treatment benefits, my Society, I am sure, would be quite prepared to pool a small part of its surplus to assist those societies that had not a surplus and could not give this service.

(Q. 3450.) Amongst other matters recommended by the Hearts of Oak witnesses were the adoption of the view of the Regional Medical Officer on a question of incapacity for work as definitely overriding that of the panel doctor where there is a

difference of opinion, and the inclusion of medical attention at confinements as part of the general practitioner service under the Act.

EVIDENCE OF THE ANCIENT ORDER OF FORESTERS.

The Ancient Order of Foresters is a registered Friendly Society administering National Insurance through 2130 of its branches (called Courts). It is the fourth largest Approved Society, having 737,577 members at the date of the first valuation and a disposable surplus of £629,800.

Form of Government.

There is direct representation from nearly every Court to a district meeting, held either half-yearly or annually, and direct representation is available from every Court to the High Court of the Order, which constitutes the annual meeting of the Approved Society. The Society claims that a large number of the members participate in the actual administration, and that the form of government accords most nearly with the principles upon which the Act was founded.

(Q. 3796.) A society of the type of the Foresters permits a personal association which is not possible in a large centralised society. The members themselves are enabled by reason of the constitution to take a more direct interest in their own affairs and in the management of their branches. We think, possibly, there is a more humane administration in a system such as we operate than there could be in a completely centralised system.

The Friendly Society Spirit.

(Q. 3183-5.) The Friendly Society or private side of the work still remains undiminished and is, in fact, larger than before the Act.

(Q. 3925.) You will remember that some years ago this matter was looked into, and your witness on that occasion told us that the old fraternal spirit was dying. He looked forward very pessimistically to the old spirit being eliminated with the State coming in, and he foresaw nothing but nationalisation. You would not put that forward to-day? —No; and I doubt very much whether the former witness would in view of events since that period.

Objections to Pooling.

(Q. 4003-4012.) The Society is entirely opposed to any complete scheme of pooling of funds, and is of opinion that such an arrangement would result in lowering the standard of administration and in consequence lead to a greatly increased drain upon National Insurance benefit funds. Any possible saving of expenditure on administration would be greatly outweighed by the increase of benefit expenditure due to lack of incentive to protect the fund.

(Q. 4022-5.) They saw no objections to the present system whereby some branches—e.g., in a mining area—having no surplus owing to the heavy calls to which they were subject, were unable to share in the surplus enjoyed by other more favoured branches. This has been accepted on the voluntary side for years.

Medical Benefit.

(Q. 4111-44.) The witnesses did not agree with the statement sometimes made that the service given to the insured population is of a lower quality than that given to private patients of the same class. It may be true in isolated cases, but they had rarely come across cases of dissatisfaction with any real substance in it. They thought that there might be more pooling of medical skill in particular areas and also that there should be greater facilities for more skilled diagnosis.

(Q. 4207.) With regard to the suggestion that doctors were too ready to transfer a troublesome patient to hospital, the reply was that very few concrete instances which could be sifted satisfactorily had come under observation. It was thought that there were more loose views on this particular subject than upon any other.

Medical Benefit to Dependents.

(Q. 4211-2.) This was a tremendous proposition, as to which there was a considerable diversity of

opinion among the members. In a general way they would like the benefit extended, but the financial commitments made it difficult to advocate this as a practical proposition.

Travelling Consultants.

It was thought that there was an ample margin in the present contribution to pay for a consultant service. But even if an increase were essential the service would be worth paying for.

(Q. 4113.) The skilled consultant in certain complaints could be, so to speak, put on wheels and instead of being at one centre be taken to various sub-centres on given days according to a time-table.

State Medical Service.

As to this the witnesses did not give expression to any pronounced views, and suggested that until the views of the medical profession on the subject were ascertained they would hesitate to express any opinion.

Dental Benefit.

(Q. 3951, 4119, 4171-7.) In the view of this society dental treatment should be given as a statutory benefit. It should have the effect of conserving the funds of the societies and should be paid for as far as practicable by applying a part of the contributions to a central fund, thus restricting the societies' surpluses. Expenditure incurred by a member, say up to £1, should be met in full, but the service, though valuable, should not be given if it involved increasing the contribution.

(Q. 4172.) In other words, you would, if necessary, curtail the dental service which you think ought to be supplied because of cost?—Yes. Cost is a great consideration. There is a limit beyond which the insured person should not be mulcted for insurance contributions. There is quite a considerable volume of opinion that that limit has already been reached.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of the President and General Council of this Fund was held at St. James's Palace on March 17th, when the accounts and report for the year 1924 were adopted. The Prince of Wales occupied the chair.

Lord Revelstoke, the hon. treasurer, in moving the adoption of the account of receipts and expenditure and the balance-sheet, which were subsequently passed, said that it was a source of gratification to the Council that the income for the year 1924 exceeded the estimates submitted to the Council in November last. There was one item in the receipts which would seem to call for special mention—namely, that of "donations," the total of which figured as £22,659. This sum included two anonymous gifts, one of £5000 and one of £7000, without the receipt of which the distribution of £235,000 could not have been provided from the annual income. For the year 1925 the Fund has already received one donation of £5000 from Lady Strathcona.

The General Position in 1924.

Lord Stuart of Wortley, chairman of the Management Committee, moved the adoption of the annual report, which stated that the year 1924 was the first since 1919 in which the voluntary hospitals of London did not receive any assistance from exceptional distributions towards meeting their maintenance expenditure. They had received in 1923 the final instalments of the money collected by the combined appeal which began in 1922. The financial position, leaving out of account all the special distributions, had continued steadily to improve. The net aggregate annual deficit had declined from £381,000 for the year 1920 to £175,000 for the year 1922, and for the year 1923, although there were still 54 hospitals whose income did not meet their expenditure, there

was a net aggregate surplus of £227,000. The last figure took into account an exceptionally large legacy of £247,000; but even apart from this, the net aggregate annual deficit for the year 1923 was reduced from £175,000 to £20,000. In these circumstances the question of the need for hospital extensions, which had been generally postponed since the outbreak of war, began to come to the front.

The total receipts of the King's Fund for the year were £412,472 4s. 1d., of which £112,240 was from the estate of the late Mr. John Wells; £50,203 1s. 9d. from the estate of the late Sir Thomas Sutherland; £16,000 from the estate of the late Mr. Samuel Lewis; £19,563 8s. 6d. from other legacies; £122 15s. 5d. from gifts to capital; and £214,342 18s. 5d. from general receipts. The amount contributed by the League of Mercy was £14,500, as in 1923. The total received by the Fund from the League since its foundation in 1899 was now £368,000, apart from the sums awarded by the League to institutions outside the area of the Fund's distribution. During the year the amount spent on administration was £10,614 16s. 11d., or £2 11s. 5d. per £100 of the total received, as compared with £8904 17s. 6d., or £2 1s. 4d. per £100, in the previous year.

Sir John Bland-Sutton having seconded the resolution, the report was adopted.

Work of the Propaganda Committee.

Sir George Lawson Johnston, chairman of the Revenue Committee, presented the report of the Committee on the work of the Propaganda Subcommittee, and moved the recommendation that it be published in the annual report of the King's Fund for the year 1924. This Committee, the report stated, under the chairmanship of Lord Burnham, was appointed in 1923 as a subcommittee of the Revenue Committee, with a two-fold object—viz., to consider and promote schemes for raising money for the King's Fund in the fields of education, art, science, literature, and law, in general continuance of the work of the Education Auxiliary of the Combined Appeal; and to organise general propaganda of the work of the King's Fund and the voluntary hospitals of London. The Committee had been largely engaged in schemes of direct propaganda not aiming at any immediate financial return; and even in the money-raising schemes the amount and value of the publicity to be obtained had been taken into account quite as much as the profit to be expected. The total receipts from this source were £1864 19s. 8d.

The adoption of the report was seconded by Lord Burnham and carried.

Report of Management Committee on the Distribution of the Wells' Legacies and Ambulance Cases Disposal.

Lord Stuart of Wortley presented a report of the Committee on the Wells' Legacies Distribution, and the Ambulance Cases Disposal Committee's report, and moved recommendations. He said: 1. In connexion with the special distribution in aid of extensions and improvements, out of the legacies of the late Mr. and Mrs. John Wells, the Council in December last approved grants amounting to £81,000 for schemes which would provide 301 additional beds, of which 53 would be reserved for accident cases. 2. Of these beds, 54 have been opened during the last six months, including 24 for accident cases. 3. Arising out of the Ambulance Cases Disposal Committee's inquiry and report, but without financial assistance from the King's Fund, provision has been made for a further 20 beds for accident cases, making 44 accident beds opened to date. 4. Schemes are also being prepared which will provide yet a further 39 accident beds, making 112 in all. 5. The Management Committee consider that it would be desirable for the special powers of the Distribution Committee in this matter to be continued.

6. Recommendation No. (i.) of the Ambulance Cases Disposal Committee's report, on the subject of the provision of accident beds, is thus being put into operation by the Distribution Committee. Recommendation No. (ii.), on the subject of the lists of voluntary hospitals and Poor-law infirmaries to which ambulance cases should in the first instance be taken, is being carried out by the London County Council, the King's Fund, and the Ministry of Health. The Management Committee were informed in July last that Recommendation No. (iii.), on the subject of the law or procedure applying to Poor-law infirmaries, was under the consideration of the then Minister of Health, and they think it desirable that it should be brought to the notice of the present Minister of Health.

The Management Committee accordingly recommend—1. That, in connexion with the Wells' Legacies distribution, the Distribution Committee should be authorised to entertain further proposals on the lines approved by the Council in July, 1924, with power to act in cases where, for reasons of urgency, it is desirable to take action in advance of the Distribution Meeting of the General Council next December. 2. That a letter be written to the Minister of Health in the name of the Council drawing attention to the correspondence with the former Minister of Health on the subject of Recommendation No. (iii.)¹ of the Ambulance Cases Disposal Committee report, and expressing the hope that action will be taken.

The recommendations, having been seconded by Lady Hudson and supported by Sir William Collins, were carried unanimously.

The Prince's Speech.

H.R.H. the Prince of Wales said that he had already reviewed the events of the past year,² but had much to add to that summary. The accounts had come out rather better than the estimates, and that was encouraging for 1925. One thing was certain: the claims on the King's Fund would go on increasing. The first instalment of the Wells' Legacies distribution would help to provide 300 additional beds, and they would all have to be maintained; and there were more extension schemes coming along. Then the enlargement of the Fund's area to 11 miles from St. Paul's had already brought in 14 more applications. So the King's Fund and the hospitals would need increased income; and, if the progress of these last few years was any guide, they would get it, if only the public realised the need. This was where the value of our propaganda work came in. The Special Committee with Lord Burnham as chairman, and Prof. Winifred Cullis as vice-chairman, were making the name of the King Edward's Hospital Fund familiar where it was hardly known before, and, along with that, they were spreading a knowledge of the work of the hospitals which it was hoped would bring in a bigger income for the hospitals as well as for the Fund.

The report of the Ambulance Cases Disposal Committee continued to bear good fruit. Forty-four additional accident beds had been opened; and the Wells' Legacies grants would help to add others. When all the schemes that had already come before the Distribution Committee were carried out, there would be 112 more accident beds in London than there were when the inquiry began.

To a vote of thanks to the Prince of Wales, moved by the Hon. Sir Arthur Stanley and seconded by Sir William Church, His Royal Highness briefly replied.

The Propaganda Committee of King Edward's Hospital Fund for London has arranged a third series of lectures and counter-lectures to be held immediately after Easter in the Great Hall of the London School of Economics, on Tuesdays, at 5.30 P.M.

¹ THE LANCET, 1924, ii., 233.

² THE LANCET, 1924, ii., 1357.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

POST-GRADUATE TEACHING IN LONDON.

A DISCUSSION on post-graduate teaching in London took place at the Royal Society of Medicine on March 18th, under the auspices of the Fellowship of Medicine and Post-Graduate Medical Association. Sir Arbuthnot Lane, President of the Fellowship, was in the chair, and opened the debate by describing the inception and success of the movement. "Post-graduate education," he said, "is a habit which every medical man must acquire if he hopes to succeed in his profession and gain the confidence of the public."

Mr. H. J. Paterson said that the meeting had been called to receive from those present criticism and suggestions. The Association had been founded in 1918 and there were at the present time 40 hospitals associated with it. General course-tickets were obtainable for any period from two weeks to several years, while there were short general courses, refresher courses, and courses in special subjects, while appropriate lectures were delivered in the Royal Society of Medicine from time to time which were open to all members. The aim of the Association was to make London a great centre of post-graduate education for the world, and to encourage the post-graduate habit in British medical men. In America, he said, every self-respecting doctor attended a course at least once a year. Since the inception of the Association £7000 had been distributed by it to the different hospitals. The organisers wanted now to find out what more they could do to meet the needs of post-graduates.

Surgeon-Commander T. Brown Shaw spoke on behalf of the Navy, in which service every medical officer was obliged to pass an examination before promotion to the rank of Surgeon Commander. This requirement involved a five months' course of post-graduate study, three months of medicine and surgery, now taken at the London Hospital, where arrangements were made to meet their particular needs, and two months at the Greenwich Naval Medical School, studying such special subjects as naval hygiene, bacteriology, &c. Courses in tropical medicine were provided at the London School of Tropical Medicine. After 14 years' service it was customary, though not compulsory, for men to take a three months' course in general medical knowledge with special attention to any subject in which they wished to specialise. Seventy-one officers had taken such a course in the three years 1922-24. In this connexion the assistance of the Fellowship of Medicine had been valuable and the facilities provided most satisfactory. The needs of naval men lay chiefly in the realms of neurology, psychological medicine, balneology, dermatology, ophthalmology, and operative surgery. Centralisation would not be of value; it was better to have the work scattered over many hospitals. More clinical work might advantageously replace some of the lectures. The classes were apt to be crowded and further opportunities for operative surgery would be welcomed.

Sir William Leishman described the measures taken for post-graduate study in the Army, which had not yet made use of the Fellowship of Medicine. The Royal Army Medical College provided instruction for young officers and a refresher course for the seniors. A senior course of six months' instruction was compulsory, and the career was punctuated by examinations, on which the future of the officer might depend. The course took place about the tenth year of service—i.e., usually at the close of the first period of foreign service—and on an average 30 captains attended each year. The first part of the course consisted of medicine, surgery, pathology, and State medicine, mostly in lecture form, supplemented by attendance at cattle-markets and recruiting stations. The second part of

the course was more clinical and men were able to attend Charing Cross and St. Thomas's Hospitals. Those who showed satisfactory examination results were then given a chance to qualify as specialists in medicine, chiefly tropical, operative surgery, pathology, ophthalmology, ear, nose and throat, obstetrics and gynaecology, dermatology, including venereal diseases, radiology, anaesthetics, mental disease, or hygiene. With some of these subjects the College itself dealt satisfactorily; for others the men went to special centres, such as Bethlem Royal Hospital, and were encouraged to take the higher degrees and diplomas, such as F.R.C.S., D.P.M., and D.P.H. No expense was incurred by the officer in question; the State in this respect was no ungenerous master.

Dr. G. E. Orme spoke as a general practitioner of 25 years' experience who had recently taken up residence in London and associated himself with the Fellowship of Medicine; he found it difficult to speak too highly of the value of the work and the kindness of the administrators. He considered that it had proved itself to be an institution of national importance. If any criticisms were to be made he would refer to two which were commonly heard, though perhaps rather baseless. One was that strangers coming to London were at a loss to know where to go, and when they did arrive at hospitals no one took any notice of them, and they were apt to feel rather out of it. Possibly certain consultants or junior members of staffs would allow their names to be put on a panel and would be personally responsible for arranging tours round hospitals and collecting for demonstration cases suitable as subjects for diagnosis and treatment by every modern means of investigation and therapeutics. Another suggestion he would make was that there should be association between the Fellowship and the provincial post-graduate centres. Some men might wish to take a part of their course in London and a part in some other district of England. Perhaps also there might be some arrangements made for parties to visit important instruction centres abroad, a plan widely adopted in America.

Mr. Zachary Cope urged the institution of some scheme whereby every medical man who needed a refresher course should have some means of obtaining it. Many could not afford either the time or the money; there should be some grant, perhaps from the Government, to form an inducement to every doctor to improve his mind.

Dr. Muriel Lane, speaking as a woman post-graduate, said that what the women chiefly needed was instruction in diseases of women and children and in preventive medicine. Excellent courses of diseases of children had been held, and of particular value were the round-table discussions of differential diagnosis, which might well be extended. The gynaecological courses were too infrequent. There were many difficulties in the way of providing the practical experience needed in obstetrics, gynaecology, and venereal disease, but at least there might be courses of lectures in antenatal and postnatal care, and infant welfare clinics might be added to the list of places to be attended.

Dr. Sophia Jevons spoke as a practitioner living in London who was busy till 5 o'clock every day; she thought that for such as herself the most valuable provision would be a clinical lecture going on some four nights every week to which they could come when able. The London doctor did not want an intensive course to which he had to give up all his time. She was surprised to hear a suggestion of Government subsidy having regard to present taxation.

Dr. H. B. Newham referred to his experience at the London School of Tropical Medicine as post-graduate and teacher of post-graduates. He was sure that the Association was doing its level best, but the teaching itself was the source of the trouble. He was informed that in America no man, however brilliant he might be, had a chance of getting on to

the staff of a teaching hospital unless he could teach. This was not the case in London; many of the best clinicians were quite unable to impart information and would not try to learn the art. The average student loathed lectures, and what was wanted was more experience in practical work. Moreover, there seemed no arrangement for deputising; in his experience the chief was often detained or prevented from coming, and the student who had, perhaps at great inconvenience, attended at the stated time, was left without anybody to take him round. In many clinics there were far too many cases; the person in charge had no time for systematic teaching as he had to get through all the cases somehow. There was a tendency to dwell on rarities; the post-graduate needed instruction on bronchitis far more than on pseudo-hypertrophic pulmonary osteo-arthritis.

Dr. M. B. Ray asked whether the wealth of material available had been used to the best advantage. There were two classes of post-graduates—the casual, those resident in London doing extra work in their spare time, and visitors from abroad combining instruction with sight-seeing. These were admirably provided for. The second class, small perhaps now but of immense potentialities, consisted of those who wanted to spend some four to six months in real study. It would be a good thing if every doctor were bound to take a refresher course after a certain period in general practice. These at present could return to their old medical school, but this was not satisfactory, and the intensive courses provided were too short. There ought to be a thoroughly up-to-date and well-equipped post-graduate school, with its own teaching staff and attached hospital. Examinations taken at the end of the course should entitle successful candidates to a registrable diploma. He asked whether it were not possible that one of the undergraduate schools might close its doors to all but graduates and form the nucleus of such an institution.

Dr. Fortescue Fox said that the old Society of Balneology had engaged in post-graduate teaching of its subject; when it was amalgamated into the Royal Society of Medicine this activity ceased; he suggested that the present Section of Balneology and Climatology should be allowed to give their serious attention to the teaching of these subjects.

Mr. E. B. Turner referred to the suggestion that practitioners should take part in public health work and said that in this way doctors could combine post-graduate instruction with valuable civic service. Public health work was tending to fall more and more into the hands of whole-time officers, often very recently qualified. General practitioners should work more in municipal clinics, and, where possible, secure election to borough councils and health committees; they could also assist public health by lecturing and teaching, for they would teach themselves at the same time.

The discussion was adjourned to a date provisionally fixed for April 8th.

THE HEALTH OF THE ROYAL AIR FORCE.

THE report on the health of the Royal Air Force for the year 1923 has just been issued.¹ Excluding minor cases of disablement of less than 48 hours' duration, the ratio of fresh cases of admission to hospital per 1000 strength has reached the lowest point so far reported, and the death-rate, the invaliding-rate, the average number of days sickness per individual, and the ratio of the number of sick daily are also the lowest so far recorded. The number of cases of disablement of 48 hours' duration, due to common colds, slight pharyngitis, and nasopharyngitis, show an increase,

believed to be caused by the fact that 1923 was the wettest year on record since 1916.

When the separate diseases are analysed an increasing percentage of total invaliding for tuberculosis is revealed: a disquieting feature which is being specially investigated. The case incidence of venereal disease is slightly lower than that for 1922, and this is principally due to a reduction in the readmission-rate suggesting that treatment has become more effective. Upper air-passage infections also show a reduction. Injuries are grouped under the headings of those occurring while on duty and those due to athletics or accidents while off duty and on leave. The injuries due to flying have remained at an almost constant figure of just over 6 per cent. of the total injuries during the last three years, which is considered satisfactory in view of the fact that there has been a progressive increase in the number of hours flown during these three years. The nosological tables have been still further abridged as compared with previous years and require very little explanation in the text.

The Air Force Abroad.

The health of the Air Force abroad is, as usual, made the subject of a separate chapter, and here again the admission-rate, the death-rate, the average number of days sickness per individual, the ratio of the number of sick daily, and invalids from the service are the lowest on record. Sand-fly fever continues to be responsible for a large amount of sickness, especially in Iraq, although a considerable reduction has been effected in the case incidence-rates in each individual area except Malta. The disease appears to vary in intensity from year to year so that it is difficult to estimate how far such a reduction is due to prophylactic measures. Malaria has increased in incidence in most areas: in the case of the Mediterranean Littoral this is explained by an undue proportion of men exposed to infection for the first time, but, on the other hand, in the Basrah district of Iraq, blame is laid on the impossibility of carrying out preventive measures on anything like a large enough scale. In all units a vigorous anti-malaria campaign was prosecuted but without producing the hoped-for results on the case incidence. Dysentery, on the other hand, has continued to decrease, and taken as an index of sanitary efficiency among units stationed in tropical countries, this is very satisfactory.

An interesting feature of the report on the health abroad is an account of the transport by air of 200 cases of diarrhoea and dysentery which occurred amongst a column of British troops operating in Northern Kurdistan. The only available transport consisted of pack animals, so aeroplanes were despatched from Baghdad to deal with the situation and, despite exceptional difficulties and one "crash," fortunately without any untoward result, 198 cases were successfully carried all the way to Baghdad.

Miscellaneous.

A chapter with this heading deals with the work of the Central Medical Board and the results of examination for physical fitness both of recruits and of officers are analysed in instructive tables. Under the heading of hygiene and sanitation the various measures instituted for preserving the health of the Air Force, both at home and abroad, are fully set out. Further tables summarise the laboratory work and the surgical operations carried out at R.A.F. hospitals, together with the dental treatment provided during the year 1923.

CARDIFF ROYAL INFIRMARY.—This hospital of 310 beds has a waiting list of 1806. The number is swollen by the necessity of taking in street accident cases which are growing rapidly. To meet the difficulty to some extent it has been arranged, with help from the Rockefeller grant to the Welsh National School of Medicine, to buy a house for the accommodation of some of the nurses, whose present dining-room in the hospital is again to become a ward. Patients who do not belong to the contributory fund last year contributed just under £4000.

¹ H.M. Stationery Office. 1925. Air Publication 1103. 3s. 6d.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Results of Attempted Rejuvenation.

IN an interesting review covering the whole field and literature pertaining to the problem of sexual rejuvenation by means of surgical interference, Dr. Wilhelm has pointed out emphatically that the original enthusiasm over the boon conferred upon mankind by Prof. Steinach and his collaborators has given way to profound silence. Prof. Steinach at first believed that in the genital glands there existed two groups of cells or glands distinct as regarded their function. One was the "gland of puberty," which was supposed to be subject to hypertrophy if the other part, the "progenitory gland," was eliminated by ligation of the vas deferens. Several medical men of ripe age, amongst them Prof. Zeissl (who died recently in Vienna), underwent this operation and published the results obtained. Prof. Romeis is also strongly opposed to the views of Prof. Steinach. Prof. Zeissl published in the *Wiener Klinische Wochenschrift* an autobiographical account of the operation and denied absolutely that it had any of the effects of rejuvenation of his own body, as had been claimed by the "youth restorers." In all the cases of rejuvenation of rats, reported by Steinach, Kammerer, and Voronoff, an improvement of the general condition could be observed after the operation, but the effect was only temporary. After some time the old conditions returned, in some instances even there was distinct deterioration. The return or increase of sexual desire and function could not be proved to be other than a psychic one. Prof. Leschke, of Berlin, was able to demonstrate that the ageing of human beings was dependent not only on the interstitial substance of the testicles, but also on the other inner secretory glands. When it was finally shown by Harms and Romeis that an old male rat could be made to produce long glossy hair, not only by transplantation of testicles, but also of fragments of liver tissue, it became evident that a large proportion of all the "rejuvenation" symptoms were simply caused by reabsorption of non-specific products of metabolism from the transplanted material. Also the use of X rays and of diathermy on the female genital glands, so much in vogue for some time as methods of rejuvenation of the female organism, has become quite obsolete; nor have the original attempts at curing sexual perversion (homosexuality, sadism) by means of transplantation of genital gland tissue been successful. Dr. Lichtenstern reports on 22 cases of such attempts, and is forced to admit that the effect had been rather "overrated." It is therefore questionable whether we are altogether on the right track in trying to obtain a "prolongation of youth" by these means, or whether it is only a faulty technique that is responsible for the unfavourable results.

The Problem of Sleep.

At a recent meeting of the Biological Society of Vienna Prof. Economo discussed the problem of sleep. The outcome of all investigations into this problem is that we do not know yet why we sleep. Neither the theory of changes of the circulation in the brain nor that dealing with toxic substances produced by fatigue is satisfactory. If impressions from the outward world are withheld we may easily fall asleep. But it seems that there is a certain sleep-control centre in the brain which regulates—in a periodic way—sleep and wakefulness. The action of certain hypnotics, as well as somnambulism, shows that sleep is not a negative but a positive function of the brain. In human beings sleep is in close connexion with the change of day and night, but such is not the case in many lower animals. Also the function of the hypophysis seems to pertain to sleep. Experimental pathology has, according to Economo, a vast and fallow field of research to dig on this subject.

Trephining amongst Prehistoric Races and Aboriginal Tribes.

In a very interesting paper read before the Vienna Medical Society Dr. Wölfel discussed the problem of trephined skulls so often found amongst prehistoric and aboriginal peoples. It is now accepted, he said, that some races (in America and in Melanesia) still use this method for treatment of certain diseases and conditions, and in both countries, so widely apart from each other, the same method is used for the same conditions; a certain degree of civilisation is required for the knowledge of the procedure; and the peoples practising it have reached the agricultural stage. The method is used for treatment of fracture of the skull; wounds of the temporal bones were, he said, not treated because they were regarded as lethal. The aborigines of the Bismarck Archipelago have a fair knowledge of treatment of such wounds. They perform a regular surgical operation with removal of injured skin, bone, and fragments; they even know how to search between the sulci of the brain for dislocated fragments of bone. They also know how to elevate depressed portions of bone. Also in brain diseases (epileptic fits, headaches, mental disturbances) trephining is practised, and the bone is "eroded" by means of sharp instruments. A bandage consisting of a charred leaf and strapping is then applied. The mortality is low, less than 20 per cent. In some places persons have been found who had this operation performed on their heads five or six times. It is safe to assume, continued Dr. Wölfel, that the prehistoric people, who have left us so many trephined skulls, performed this operation for the same reasons as those on which we now base our surgical operations on the cranium. The prehistoric surgeons also used to make a round, regular, thin-edged opening, no doubt with sharpened flints or bones; Hippocrates tells of this custom amongst ancient and "modern" barbaric races; whilst nowadays in Peru, in Central America, in the Australian and Polynesian islands the custom is still in force, showing that the trend of mental development was in the same direction amongst different races. Dr. Wölfel rejected the idea of these operations having been done for religious or superstitious reasons.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Records of the Metropolitan Insurance Company.

SPEAKING in Baltimore on Feb. 9th on the experience of life insurance companies in preventive medicine, Dr. Lee K. Frankel gave interesting records of the years 1911 to 1923 for which accurate statistics are available. During these years the difference between the mortality-rates of the insurance company and of the "registration area" show a saving of 200,000 lives among the policy-holders. This is the more remarkable in that a great deal of this company's work has been amongst workers in industry and their families. Dr. Frankel showed how much greater in 1911 was the risk of death in this group of policy-holders than in the general population. The two death-rates have converged since then, and if the present trends continue, should cross in about two years time. In 1928 it may be safer to be an industrial policy-holder in this company than to be a member of the general public. Dr. Frankel is satisfied that these results are attributable to the health measures inaugurated by his company. Education of the policy-holders both by literature, printed in many languages, and by nurses who also care for the sick, and free medical examinations for those who care to take them were the chief measures employed. Their cost amounted to about one-third of the saving in death claims, which is calculated at 42 million dollars. It is interesting that only 8 per cent. of the policy-holders have availed themselves

of the privilege of regular medical examinations. This group shows a mortality 28 per cent. better than that of the whole group of insured.

Typhoid Epidemic Traced to Oysters.

In a previous letter (THE LANCET, Jan. 21st, p. 252) I mentioned the unusual prevalence of typhoid fever in New York and Chicago and indicated the probability that the investigation undertaken by the Federal Health Service was likely to produce important results. This investigation has already been completed and a preliminary report given by Dr. L. L. Lumsden to the press. It will be some time before the complete report with all the circumstantial evidence can be published, but I am reliably informed that the evidence already obtained is unusually complete, as indeed it must be, to justify the statement that has been made public. The epidemic lasted for two months—from Nov. 15th to Jan. 15th. In this period the actual number of cases of typhoid exceeded the "expected" by 650 in New York, 100 in Chicago, and 50 in Washington. Several other cities have shown an excess number of typhoid cases during the same period. A careful epidemiological record has been made of 98 cases in Chicago and its vicinity, of 42 cases in Washington, and 263 in New York City. The chronology of the outbreaks clearly suggested a common factor in the distribution of the infection in all three cities. The preliminary announcement incriminating oysters is couched in the following terms:—

"The preponderance of evidence is that the general supply of no large distributor of oysters was uniformly infected, but that oysters infected in one or more beds, or part or parts of one or more beds, or at one or more floats, and constituting but a small proportion of the total, were introduced into and distributed with a large supply of oysters of good sanitary quality."

The source of distribution was definitely traced to a company at West Sayville, Long Island, that handles a popular brand of raw oysters. In the interest both of the public health and of the oyster trade it is recommended that provision be made at the earliest possible date for—

"more nearly adequate official sanitary supervision, regulation, and protection of industries engaged in the production, preparation for sale, and distribution in interstate traffic, of shell-fish, vegetables, fruits, milk, milk products, and other foods eaten usually or frequently without being cooked."

Not only the New York oyster industry has suffered but the whole industry of the Eastern shore. The Illinois Commissioner of Health, on what seems to have been very slight evidence, put a ban on the oysters of Maryland, Virginia, and practically ruined the trade in these States. It is now required that before the oysters are readmitted to Illinois careful tests be made to ensure that no typhoid carriers are engaged in the trade.

MEMORIAL TO THE LATE SIR WILLIAM MACEWEN.

A FUND was inaugurated in Glasgow on May 22nd, 1924, with the object (1) of providing a bust of Sir William Macewen for presentation to the University of Glasgow, together with a replica to be presented to Lady Macewen; (2) of endowing a Macewen Memorial Lectureship; and (3) if possible, of instituting a Macewen Medal or Prize in Surgery, to be awarded annually (see THE LANCET, 1924, ii., 32). The General Committee of the Memorial Fund hoped to raise the sum of £3000 and of this figure about £1550 have now been received, the list of subscriptions including names from all parts of the world. The list is still open, and any further subscriptions should be sent to the hon. treasurer, Mr. James Macfarlane, Wesleyan-street, Glasgow, S.E. We commend to our readers this project of raising a fitting memorial to a surgeon whose fame was world-wide, and trust that the full sum aimed at will be obtained, in order that the scheme may suffer no retrenchment through lack of financial support.

The Services.

R.A.M.C. OFFICERS.

ON Monday, March 16th, when the House of Commons went into Committee on the Army Estimates for 1925-26, Lieut.-Colonel Pownall drew attention to the shortage of officers for the Royal Army Medical Corps. Many officers whom the Corps would have been glad to keep on, he said, had resigned in recent years as they were not satisfied with regard to their professional prospects in the Corps and very few had been coming forward. Of 80 vacancies advertised during the past two years only 25 had been filled, and during the year since Jan. 31st, 1924, only one candidate had been gazetted into the R.A.M.C. The total establishment in England and abroad was 884, and the wastage was about 60 or 70 a year. Before the war the pay of medical officers was considerably more than that of combatant officers. Now, while the pay of combatant officers has been greatly increased, officers of the R.A.M.C. receive very little more than in 1914. Once again he reminded the House of Commons that officers in the R.A.M.C. do not get their commissions until they are 24, whereas those in the combatant ranks are gazetted at 19. And once again he suggested that the Secretary of State might consider the question of making the Director-General of Medical Services a member of the Army Council. Lord Esher's Committee some years ago recommended that course, which would give an extra status to the R.A.M.C., and permit the position of the Corps to be represented directly to the authorities. The Secretary of State for War, Sir L. Worthington-Evans, agreed with Colonel Pownall that the position of the R.A.M.C. must be most carefully considered, as the number of medical officers required were not obtained, and consequently a greater burden was being thrown upon those in the Corps than they ought to be asked to support. It was very largely a question of money and conditions of service and in that he was not complete master. The conditions in the Navy and the Air Service had to be considered at the same time, and he hoped that proposals would be brought forward shortly which would enable that position to be remedied.

We share the hope of the Secretary for War, but seem to have heard before promises of remedy to be brought forward shortly. The Services, moreover, are not so much in competition with each other in respect of pay as with lay bodies offering larger pecuniary reward to medical careers that are attended with less sacrifice.

ROYAL ARMY MEDICAL CORPS.

Capt. W. H. Ferguson is granted the temp. rank of Maj. whilst empld. as Dep. Asst. Dir. of Pathology.

Capt. W. H. Dye is restored to the establishment.

TERRITORIAL ARMY.

Maj. A. J. Brown to be Lt.-Col. and to command 155th (Lowland) Field Amb.

Maj. A. E. Evans from Sanitary Companies to be Maj.

Capt. A. E. Chisholm resigns his comm. and retains his rank.

Lts. J. Robinson and H. B. Logan to be Capt.

J. J. Dykes Naismith to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

G. K. Foster to be Lt.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 14TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 137; scarlet fever, 1508; diphtheria, 883; enteric fever, 42; pneumonia, 1395; puerperal fever, 38; cerebro-spinal fever, 8; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 55; dysentery, 14; ophthalmia neonatorum, 141. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed a decrease of 198 from the number for the preceding week. Twenty-eight cases were notified from Derbyshire, 20 from Leicestershire (Leicester C.B., 20), 28 from Northamptonshire (Kettering, 26), 14 from Northumberland, 8 from Notts, and 30 from Yorks, North Riding (Middlesbrough C.B., 29).

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever, 100 from measles, 17 from scarlet fever, 104 from whooping-cough, 47 from diphtheria, and 283 from influenza, as compared with 361, 346, 352, and 354 in the four preceding weeks. In London itself the deaths from influenza numbered 36, from whooping-cough 30, and from diphtheria 13.

Correspondence.

"Audi alteram partem."

HEALTH STATISTICS OF THE MERCANTILE MARINE.

To the Editor of THE LANCET.

SIR.—Will you permit me to comment on Dr. E. T. Burke's letter, under this heading, in your last issue? If some of us hesitate about the Board of Trade's conscience—all of us are, unhesitatingly, with Dr. Burke on the side of the sea-farers. Everyone will agree with him that there should be in every port a V.D. treatment centre easily and quickly got at, and at any time on any day, for sea-farers. I submit this centre need not be actually in the docks. That the centre should be for the use, comfort, and aid of the sea-farer exclusively is surely unnecessary. Many years' experience of sea-farers who had sailed to the wilderness of Zin and pitched in Mount Hor convinces me that they are not so exclusive as all that. Moreover, there is that considerable body of men who alternate between shore, dock, and ship jobs; they could hardly be placed in an in-and-out category in relation to treatment at the V.D. centre. The centre should have in-patient accommodation for sea-farers. With very few exceptions the sea-farer on being paid off his ship prefers not to come into hospital for V.D. treatment while his money lasts. When he has no money left he will, sometimes, ask to come into hospital to complete treatment; but more often he signs on a ship again and continues treatment, more irregularly than regularly, from port to port. It is reasonable to believe that with greater facilities for treatment at home and foreign ports this would become less irregular. At foreign ports such facilities are increasing; many of my patients inform me of the advantage they had taken of them. Actually it must be rare for a crew to be signed on a British ship in a home port unless they have passed the doctor, and my experience is that in the Port of London the examining doctors have keen eyes for indications of V.D. Very many of my patients have failed to pass the doctor; some of them turn out not to have V.D. I believe Dr. Burke overestimates the docility of the sea-farer and the ingenuousness of those in control of ships. The first would not consent to the certification (though their confession to the hospital doctor is frank and ready) about exposure to infection and "prophylaxis." The latter would not sign on anyone, cleansed and injected, or not, about whom there was an agreed and confessed chance of developing V.D. on the voyage. Besides the possible liability for the contagion of others of the crew, there are the passengers' susceptibilities to consider; with any such certification scheme owners could hardly plead their masters' ignorance of the risk of developing V.D. by the certificate-carrying sea-farer, and V.D. is never so hateful as in its early stages and in someone else.

Notices giving information about V.D. treatment centres are posted in ships and in the London Docks; perhaps more might be done in this line. Ship-masters and surgeons are, in fact, informed of these centres. The Port of London draggles on for some fourteen miles of river. Transport between its ports is unspeakably slow and bad. Its V.D. problem is one for several centres. While hospitals in general have, in the past, spurned landsman and sea-farer suffering from non-respectable V.D. (V.D. in the communicable stage), in the Port of London the Seamen's Hospital Society has always succoured and treated the V.D. sea-farer—even taking him into hospital. On any day and at any time the Dreadnought Hospital at Greenwich and the Seamen's Hospital, Royal Albert Dock, have always treated, as in- and out-patients, the V.D. sea-farer of whatever race, nation, colour, or creed; and still do so. Lastly, the second of these hospitals fulfils

one of Dr. Burke's requirements in being situated in the docks—ships berth not a hundred yards away.

I am, Sir, yours faithfully,

H. M. HANSCHILL,
Pathologist and M.O. i/c V.D. Clinic, Seamen's
Hospital, R.A. Dock.
March 23rd, 1925.

To the Editor of THE LANCET.

SIR.—With reference to the letter from Dr. E. T. Burke that appeared in your issue of March 21st, it is well to point out that in London the care and treatment of sailors suffering from venereal disease is not neglected. Attached to the Seamen's Hospital Society are two venereal clinics, one at the Dreadnought, Greenwich, and the other at the Seamen's Hospital, Albert Dock. At the former there were treated last year 1189 new patients and of this number 80 per cent. were seamen. At the latter 778 were treated, 50 per cent. of these being seamen. At Greenwich no less than 25 per cent. of the sailors were afforded the benefit of in-patient treatment, and at the Albert Dock 15 per cent. were admitted to the wards.

While one realises the great advantage to be derived from placing a centre in every dock, where it is easily accessible to the incoming sailor, this would lead to a multiplication of clinics which would be practically impossible. Of the two clinics mentioned one lies immediately between the Albert and Victoria Docks, while the other is in close proximity to the Surrey Commercial Docks, and the Society is so well known that sailors gravitate to these centres, not only from every dock on the Thames, but from every outport in the Kingdom.

Should the patient be forced by circumstances to go to sea again before his cure is complete he is given a transfer book detailing the treatment he has already received and instructing him where to get further treatment in other ports.

It would be well to remember that this Society is a pioneer in the treatment of venereal disease, which was carried out efficiently before the Venereal Diseases Act was passed.

I am, Sir, yours faithfully,

P. J. MICHELLI.
Seamen's Hospital, Greenwich, S.E.,
March 24th, 1925.

THE MEDICAL WITNESS.

To the Editor of THE LANCET.

SIR.—In your issue of Nov. 22nd last Sir William Willcox is stated to have said during the discussion on the Medical Witness at the Hunterian Society "the expert witness should be in court during the whole of the proceedings. Indeed, it had been ruled that it was necessary for such a witness to hear the evidence." Will Sir William Willcox kindly give others and myself through your columns the reference to the ruling he quotes? I ask this because in a recent case of criminal abortion where I was called in, when the trial came on all the witnesses were told to retire. I at once asked the magistrate if such instruction applied to the medical witness also, and he promptly replied "Yes." Of course, here in Victoria things may be different, but the general principle should apply. Thanking Sir William Willcox in anticipation,

I am, Sir, yours faithfully,

Melbourne, Victoria, Jan. 27th, 1925. JAMES BOOTH.

** We have referred Dr. Booth's letter to Sir William Willcox and the following is his reply:—

"Regarding the point raised in Dr. Booth's letter, it has been the usual custom in this country for the expert witness for the Crown to remain in court during the whole of the proceedings. I am referring, of course, to cases in which the evidence of the expert may be required on any point which may arise during the hearing of the case. For example, in toxico-

logical cases it is necessary for the expert witness to hear the evidence relating to the symptoms from which the poisoned person suffered, since he may be required to express the opinion as to whether these symptoms are, or are not, consistent with poisoning by a particular substance.

"During an experience of 20 years it has been my custom, if giving expert evidence in a case, to be present in court during the whole of the proceedings. Indeed, I have often been asked by opposing counsel if I have been present since otherwise my evidence would have been objected to. It must be clearly understood, of course, that individual cases vary and that the presence of an expert witness in court is always subject to the discretion of the Judge. A legal authority has kindly quoted various rulings relating to this subject.

Some Legal Rulings.

"There is not in substantive law, that is, by Statute, any provision regulating the permitted presence or the ordered withdrawal of witnesses on either side from a court during a trial, but the practice appears to be as follows:—

"At any time during the course of a trial and on the application of either party, the Judge may order in his discretion witnesses in the case to leave the court, and it is not a matter of right in either party to obtain such an order. In criminal trials a prosecutor is entitled to remain in court only in his capacity as prosecutor, but if he is a witness also he may be ordered to retire. A solicitor in the case, though a witness, is usually permitted to remain for the purpose of instructing counsel, &c., and it is the usual practice for witnesses who are called to give expert evidence and not to speak to facts only to be allowed to remain even although other witnesses are excluded. If a witness does remain notwithstanding an order, his evidence is not rendered inadmissible, but is the subject of comment.

"As to expert witnesses, the question of whether they may be allowed to remain in court to hear the evidence is now a matter which is decided by the kind of questions which may be put to the expert witness and which assume that he has heard the evidence in the case. It will be recollected that the fifth question in *McNaghton's* case was 'whether the medical man conversant with the disease of insanity who never saw the prisoner previously to the trial, but who was present during the whole trial and the examination of all the witnesses be asked his opinion as to the state of the prisoner's mind at the time of the commission of the alleged crime,' and the answer of H.M. Judges was, 'We think the medical man under the circumstances supposed cannot in strictness be asked his opinion in the terms above stated, because each of those questions involve the determination of the truth of the facts deposed to which it is for the jury to decide, and the questions are not mere questions upon a matter of science in which case such evidence is admissible, but where the facts are admitted or not disputed, and the question becomes substantially one of science only, it may be convenient to allow the question to be put in that general form, although the same cannot be insisted on as a matter of right.'

"In a case of *R. v. Wright*, Russell and Ryan 456 (1821), about 20 years before *McNaghton*, a medical witness was allowed to discuss the facts of the case, the absence of motive, the appearance and behaviour of the prisoner, that he had drink, that he threw a boy into the water, that he did not recollect some of his actions at one time, but recollected them at others—and to express the opinion that the prisoner's mind was disordered. The report does not record whether this gentleman was in court and heard the evidence, but I gather that he was; he could hardly otherwise have obtained all the details which he discussed. The Judges on appeal were somewhat doubtful, but decided that the witness of medical skill might be asked whether such and such appearances or whether such and such actions were symptomatic of insanity. I think this case has been somewhat qualified by the above quotation from *McNaghton*.

"In *Frances*, 4th Cox 57 (1849), a doctor who had been in court throughout the trial was called and asked whether having heard the whole evidence, he was of opinion that the prisoner was of unsound mind at the time of the offence, and the answer above quoted in *McNaghton* was discussed, and it was laid down that the proper mode is to ask what are symptoms of insanity, or to take the particular facts in the case and assuming them to be true to ask whether they are symptomatic. The question here sought to be put really substituted the witness for the jury.

"In *R. v. Searle*, 1 Moody and Robinson 75 (1831), a physician who had heard the whole evidence was asked to give his opinion as to the insanity of the prisoner. The Judge doubted whether this could be done, but on referring

to *R. v. Wright* above quoted, he allowed him to be asked whether the facts and appearances proved showed symptoms of insanity.

"In 2 Russell on Crimes, eighth edition, p. 2142, a note by a great authority, the late Mr. C. S. Greaves, reads as follows:—'It is now the ordinary course to permit not only attorneys, but professional or scientific persons to remain in court, the rule being considered as not applying to witnesses of those descriptions.'

"In a comparatively recent case of *R. v. Mason*, 76 Justice of the Peace, 184 (1911), Mr. Pepper, who had not seen the body or the wound, but had heard the evidence given by the doctor who had seen the body, after reading the depositions, was asked, and allowed to answer after objection, his opinion as to whether the wound was self-inflicted or not, and *Frances's* case above quoted was cited in the Court of Criminal Appeal. Lord Alverstone said 'the point raised is of importance' and approved of the admission of Mr. Pepper's evidence as being the opinion of an expert witness on assumed facts.

"In Archbold, 26th edition, 451, it is stated that 'symptoms being proved, a physician may be called upon to give in evidence his opinion as to the disease of which the party died, although he had never seen the deceased. So upon an indictment for murder the deceased's wounds being described, a surgeon may be called upon to give in evidence his opinion whether the deceased died in consequence thereof, or from natural causes, or whether the wounds were self-inflicted.'

"In view of all these authorities, it seems to me that the propriety which is now established of asking a medical man or other expert his opinion, assuming the facts given in evidence are within his knowledge, involves the proposition that he may remain in court and listen to the evidence, because it is not merely upon such facts, for instance, as are disclosed in the depositions, but all facts elicited in examination or cross-examination which tend to form material on which his opinion is based, and this cannot be satisfactorily dealt with unless the expert hears the evidence. There may well be matters to which neither side attach importance, which the expert on hearing them, may deem of great importance. Consequently, I think that, always subject to the discretion of the Judge but recollecting the established practice, a medical man or other expert should remain in court, and the value of his assistance in a technical matter to the jury and the Court would be much depreciated if he were excluded therefrom."

ARTIFICIAL SUNLIGHT IN INFANTILE PARALYSIS.

To the Editor of THE LANCET.

SIR,—May I mention in your columns the result of recent researches into the treatment of infantile paralysis in which I have used general radiation of the body by artificial sunlight, and local treatment of the affected muscles by red rays?

The observations which led to my using general radiation by artificial sunlight were as follows. In 1920 I began the study of artificial sunlight treatment at St. Thomas's Hospital. I chose as one of my groups of cases children suffering from rickets. This work I did in coöperation with Dr. R. C. Jewesbury. We found that about a month's treatment with artificial sunlight was enough to secure a virtually normal X ray picture of bones which had shown at the beginning of treatment a marked deficiency in calcification. I found at the beginning of their treatment these children were fretful. They did not like to be touched; they cried at the least thing; did not like having their clothes put on; slept badly; did not put on weight and, in short, appeared to me to be suffering from symptoms of acute neurasthenia. These symptoms were the first to clear up under the light treatment. They were rapidly transformed into happy, contented and easily managed children. This change was the first to appear; it came even more quickly than the bony recovery, and it appeared to me that the change was due to the rapid improvement of nutrition in the nerve centres under the action of light. I followed up the broad hint furnished by this observation by treating a series of children suffering from infantile paralysis at the Heritage Craft Schools, Chailey, with artificial radiation obtained from a mercury-vapour lamp used in conjunction with a group of lamps consisting of carbon filament in vacuo with a suitable reflector.

With regard to local treatment of the muscle by red rays, at Leysin Dr. Augustus Rollier showed me the wonderful improvement in muscular development that took place under the sun's rays, and he told me he thought this must be due to the action of the red or infra-red rays. The infra-red rays are absorbed and diffused by water, consequently the water in the tissues prevents the heat rays from penetrating them deeply. The red, on the other hand, are not interrupted by water, and it is easy to see how they penetrate the tissues by merely holding the hand in the path of a sun-beam entering a shady room when the red rays can be seen to penetrate the fingers easily. In order to secure the intense radiation of the paralysed limbs with red rays, I passed the rays from the carbon-filament lamps through red screens, so screening off much of the heat without cutting down the red rays. I could thus use a red light of much greater intensity than is possible without the red screen. This treatment was used in addition to the ordinary electrical treatment.

The results obtained were far in advance of anything I have seen in the course of a long experience in the treatment of such cases. They show a recovery of faradic and voluntary response in muscles that were so much atrophied as to give no electrical response at the beginning of the treatment, and in some cases the initial attack had taken place many years before the treatment began. I am submitting a detailed communication.—I am, Sir, yours faithfully,

G. MURRAY LEVICK.

Harley-street, W., March 16th, 1925.

STOVARSOL IN THE TREATMENT OF SYPHILIS.

To the Editor of THE LANCET.

SIR,—In your issue of March 7th reference is made to acetyloxyaminophenylarsinic acid, known as "190," or stovarsol, and to the protection it affords against syphilis when taken by the mouth soon after exposure to infection. Experiments have amply demonstrated that stovarsol will prevent development of primary lesions if administered by the mouth sufficiently early; it has also considerable value in the treatment of the disease when manifested. It is an active remedy in yaws, and is being used with great success in the treatment of amœbiasis. The product is supplied in tablets, and we shall be happy to furnish full information to any member of the medical profession.—We, are, Sir, yours faithfully,

MAY AND BAKER, LTD.

Battersea, London, S.W., March 20th, 1925.

VESALIUS, RONDELET, AND RABELAIS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Feb. 28th, p. 447, there is a leading article upon a lecture by Prof. R. Cruchet. Therein it is stated that Vesalius studied for several years at Montpellier where he had as his master Rondelet. There is no authority given for this statement, which is at variance with generally accepted facts. After taking an Arts course in Louvain, Vesalius went to Paris to study medicine. He was then 18 or 19 years old and he remained at Paris for three years (1533–36). It is known that he spent some months thereafter in Louvain, Brussels, and Venice. He ultimately reached Padua, where his name first appears in the University records against the date Saturday, Dec. 1st, 1537. In Italy he remained teaching till 1543, when his famous *De Humani Corporis Fabrica* was published. There is no indication that he ever visited Montpellier at any time. Rondelet he may have known since both were numbered amongst the students of Gunterius of Andernach in 1535. Vesalius, however, nowhere mentions his name. In any event Vesalius could not have been his pupil since Rondelet did not become Professor in Montpellier till 1545.

There is just as little ground for placing Rabelais among the students of Rondelet. The creator of Pantagruel received the degree of Bachelor at Montpellier on Nov. 1st, 1530, he then being 47 years old. Rondelet had been studying in Paris for some years, but returned to his native town—Montpellier—in 1529 and forthwith received his licence. Armed with this he immediately started the practice of medicine in a small town of Provence. His attempt was, however, a failure and after turning to the teaching of grammar for a livelihood he again returned to Paris to improve his knowledge of medicine. It was then he became a pupil of Gunterius. Rondelet has been very commonly identified—probably upon the similarity of name—with Rondibilis, but it is scarcely necessary to add that the identification is purely conjectural.

I am, Sir, yours faithfully,

Edinburgh, March 16th, 1925. G. MATHESON CULLEN.

THE INFECTIVE FILTRABLE VIRUSES.

To the Editor of THE LANCET.

SIR,—The annotation headed as above in THE LANCET of March 21st gives information on what at the present time is the most important of all questions in biology and pathology. Though the most subtly-conceived and delicate experimentation and the most careful observation must be applied to the discovery of some details, a practical understanding of the kind of organisms that have filtrable stages is unlikely to be acquired if commonplace facts and obvious results of the simplest experiments are generally ignored.

The constant association of many specific filtrable viruses with specific cell-inclusions, as seen, for example, in mosaic disease of plants, molluscum contagiosum, variola, &c., is too often forgotten. In molluscum the cell-inclusions, called molluscum corpuscles, have been known for 70 years at least, and the presence of a filtrable virus in molluscum is well established. Placed in water in the simple way that I have described¹ the corpuscles constantly show activities, which prove them to be protists related to synchytrians. Their nature thus revealed, their histological relations prove them to be the cause of the disease. The filtered virus has also been proved to be the cause of the disease; therefore the molluscum corpuscle and the filtrable virus are but different phases of the same protist.

Any conclusions that may be reached in ignorance of the above-mentioned facts concerning molluscum should be very closely scrutinised.

I am, Sir, yours faithfully,

London, March 21st, 1925. J. JACKSON CLARKE.

THE GOULSTONIAN LECTURES.

To the Editor of THE LANCET.

SIR,—Through an error of mine in transcription Reference 50 in the first of my Goulstonian Lectures in THE LANCET last week reads as follows:—"Boldyreff, W.: *Quart. Jour. Exp. Path.*, 1914, viii., 1." It should, of course, have been "*Quart. Jour. Exp. Phys.*, 1914, viii., 1."

In seeking to do justice to the more recent work on human gastric function I am afraid it may also appear that I have paid too little attention to the experiments of this distinguished physiologist. Prof. Boldyreff was the first to show on animals that gastric acidity is regulated by duodenal reflux and to point out that so-called hyperacidity must generally be due to defective neutralisation. Apparently he regarded positive forces in the duodenum (and not the behaviour of the pylorus, as my text might seem to suggest) as the important factor controlling alkaline regurgitation. I am, Sir, yours faithfully,

Wimpole-street, W., March 21st, 1925. J. A. RYLE.

¹ Protists and Disease, 1922.

TREATMENT OF SEPTICÆMIA.

At a combined meeting of the Sections of Surgery, Medicine, and Pathology of the Royal Society of Medicine held on March 24th, with Dr. Robert Hutchison (President of the Section of Medicine) in the chair, Sir Thomas Horder opened a discussion on the treatment of septicæmia. He said that his views on this subject differed little from those he held ten years ago. The nature of the infecting organism naturally bore on the treatment, and the two common cocci involved were the *Streptococcus pyogenes vel hemolyticus* and the *Staphylococcus aureus*. He classed the methods of treatment into three main groups: (1) General or non-specific measures, (2) bacteriotherapy, (3) chemo-therapy.

General or Non-specific Measures.—This group comprises: (a) Rest, both of the individual and of the region of the primary focus, if this was ascertainable. (b) Fresh air, to the extent permitted by the patient. (c) Sunlight. (d) Diet, which should be free, fluid at the height of the infection but containing many calories. (e) Reassurance, including the general attitude towards the patient and his complaint. (f) Hydrotherapy, about which there was considerable difference of opinion. In America this was more extensively used than in this country. (g) Elimination, with attention to bowels, skin, and kidneys. (h) Sleep. (i) Anodynes, among which he recommended opium, suggesting that we were too loth to use this drug nowadays. (j) Treatment at the site of infection, drainage, elevation, which gave much relief, heat, in the form of continuous baths or fomentations, and antiseptics. He was opposed to the use of very strong antiseptics which might interfere with the vitality of the tissues. (k) Intravenous infusion in acute cases. (l) Transfusion of whole blood, of which he had not had much experience. (m) Drugs, which were useful, but must not be relied on alone. He put first arsenic, preferably in the form of sodium cacodylate, one grain in one c.cm. of a saturated solution of nucleic acid or sodium nucleinate, given twice daily intramuscularly throughout the whole course of the disease. The smell of the breath showed when the patient was saturated with it. After that came opium and then such other drugs as quinine, strychnine, digitalis, and the hypnotics.

Bacteriotherapy.—This took the form of immune sera, bacteriological antigens, or combined methods. Sir Thomas Horder was accustomed to give an initial dose of not less than 50 c.cm. of univalent antistreptococcal serum intravenously on the first day, repeating it on the second, perhaps on the third day. By that time an autogenous vaccine could usually be prepared, the sensitised type being the most advantageous form, given in doses of 100 million the first time, 250 million on the third day, and 500 million on the fifth or sixth day. In "immunogen" an attempt had been made to get certain products of auto-digestion of the micro-organism as well as the endotoxin, and this substance was worth trying.

Chemotherapy.—This took the form of chlorine or coal-tar derivatives, metals, or colloidal metals. These had proved disappointing. In the staphylococcal form of the disease the infection was more pyæmic, giving more time, but having the disadvantage that no serum could be prepared. The treatment of chronic septicæmic processes such as ulcerative endocarditis was as disappointing to-day as ten years ago; the best line to take was that of using all possible non-specific methods, especially sunlight.

Prophylaxis.

Mr. R. P. Rowlands regarded prophylaxis as extremely important. It could be accomplished by taking every precaution against infection during operations, by prompt excision of contaminated

wounds, prompt removal of local sources of systemic infection such as acute appendices, perforated ulcers, acute infective osteomyelitis of long bones and anthrax lesions, by the careful opening of boils and carbuncles, and by the universal use of rubber gloves at operations and autopsies. When the disease was once established the physician, bacteriologist, hæmologist, and surgeon should collaborate and should seek constantly to find, remove, or treat the source of infection, which might be occult, such as dental abscesses, tonsillar or gall-bladder infections, pus hidden deep in the buttock, loin, liver, calf muscles, or pelvis. Whole blood transfusion seemed more helpful than immuno-transfusion, being quicker; it combated the anæmia and raised the immunity. Sunshine, feeding-up, and careful nursing were valuable accessories.

Functional Activity of Leucocytes.

Dr. L. Colebrook spoke of the work done by himself and his colleagues at St. Mary's Hospital in the attempt to find out where it was that the mechanism of defence broke down in these cases. The answer seemed to be that there was a diminution in the functional activity of the leucocytes, which might be increased in actual numbers, but had their function reduced to one-half or one-tenth of the normal. This phenomenon was met with in all infections, even the common cold, but was at its maximum in streptococcal septicæmia. This might not be the whole story but was a very large factor, and its computation gave a better idea of prognosis than any other method, with the possible exception of an actual microbic count. The treatment suggested by these results was to neutralise the toxins and kill off as large a number of microbes as possible. The process of active immunisation was not hopeful; the leucocytes were so injured that no response could be obtained from them by a vaccine. The body seemed to make little or no response to septicæmic infection. Passive immunisation by antisera seemed rather hopeless also. There was but slender evidence to show that any antiserum destroyed the bacteria or neutralised toxins, and sometimes the patient was made worse and in any case was liable to serum-sickness and discomfort. The use of immuno-transfusion seemed to be in borderline cases, where it was doubtful whether there were actually micro-organisms in the blood. It was customary to give the donor 1000 million staphylococci and wait three or four hours before transferring the serum. On the whole, the results were disappointing; in grave cases the patient was not saved. A better method of immunising donors was still being sought; the process was valuable but should not be relied on alone to save cases. In chemotherapy the conditions demanded of a drug were: (1) That it should not further diminish the activity of the patients' leucocytes or destroy other essential tissues; and (2) that the patient's blood should be shown to be bactericidal to the infecting microbe after its administration and to remain so for a sufficient period; or (3) that the blood after administration should be capable of neutralising the toxin that was destroying the leucocytes. None of the drugs mentioned fulfilled these conditions, but in the neosalvarsan group was a collection of substances which were satisfactory in this respect. In all cases there was an increase of a few thousands for some hours; the drugs seemed nearly specific to the *Streptococcus hemolyticus*.

Sir Almroth Wright expressed the opinion that the clinical line of approach to medical problems should be replaced by a more scientific attitude. He had classified it as the "saltus empiricus"; clinicians saw only the remote results and paid no attention to immediate results. Nothing would ever come out of clinical observation. Immuno-transfusion was not to be classed as a failure; it was only a limited method.

Mr. Zachary Cope said that all the pathology of the blood and tissues was not yet known; a great deal of the problem of immunity was still a shibboleth of "We believe, we think, we hope and we trust." There was as yet no answer to the question as to why

certain microbes selected certain tissues for their activity and were relatively harmless in others. He asked what was the function of the cellular tissue in the body in resisting septicæmia and what was the function of the epithelium in withstanding bacteria on its surface. In his opinion the clinician must continue to use his judgment and do what he could until more accurate knowledge of the selective activity of the tissues of the body was obtainable.

Dr. Hutchison spoke of the relief he had obtained from the immersion of a septic finger in a bath and the free use of port as a general means of maintaining strength.

Mr. Herbert Tilley recorded a personal experience of septicæmia, due to a prick through a glove. In an early stage he had obtained remarkable temporary relief from an injection of serum. In later stages the greatest relief had been given by free incision, immersion of the limb in hot baths, elevation and the administration of chloral and bromides as hypnotics. Morphine made him feel ill all next day. In the matter of scientific medicine, he pointed out that practice sometimes preceded scientific explanations; soldiers knew better than to bivouac in mosquito-haunted swamps years before the cause of malaria was worked out, and the shepherd on the hills had found, in his meal of bread, cheese, salt, an onion, and a bottle of beer, the perfect diet since acclaimed by physiologists.

Obituary.

MARY DARBY STURGE, M.D. LOND.,

PHYSICIAN TO THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN.

WITH the recent death of Dr. Mary Sturge, a pioneer among women doctors in Birmingham, there passes one whose life was a record not only of devoted work in the service of medicine, but of continual and selfless striving in the wider field of social life for the betterment of humanity.

Miss Sturge was born in 1862 in Edgbaston, of Quaker parentage, her father being Wilson Sturge, former Mayor of Birmingham, who was a staunch adherent to the principles of the Society of Friends. She received her early general education at Edgbaston High School for Girls, and at the age of 18 she entered, with a few other women students, the Mason Science College of Birmingham University which had just opened. Six years later, in 1886, she passed the preliminary scientific examination of the London University, and entered the London School of Medicine for Women, her application to study at the medical school of Birmingham having been refused. In London Miss Sturge had a distinguished student career; she took honours in anatomy in the intermediate M.B. examination and honours in medicine in the final M.B., while she was awarded the Prideaux Scholarship for an original paper on clinical obstetrics. Her first appointment after graduation was as resident at the Clapham Maternity Hospital, and at the same time she acted as physician to the Dispensary for Women and Children. Between 1892 and 1895 she held successively the posts of resident at the North-Eastern Fever Hospital and as senior resident at the New (now Elizabeth Garrett Anderson) Hospital for Women. Having gained the M.D. Lond. in 1895, she took up general practice in Edgbaston, where the rest of her life was spent. From 1895 to 1905 she was attached to the Birmingham and Midland Hospital for Women as anaesthetist, and from 1905 till her resignation in 1924 she held the position of honorary physician on the hospital staff. Outside the work of her practice she was active in many things pertaining to medicine and to the general welfare of her fellows. In 1894 she delivered the inaugural address at the opening of the session at the London School of Medicine for Women, and during the years 1920 to 1922 she was the first pro-

vincial president of the Women's Medical Federation, an organisation which she had helped materially to build and in which she took the keenest interest. Her work in the cause of temperance, of which she was ever an enthusiastic advocate, was crowned by the publication in 1907 of "Alcohol and the Human Body," written with the collaboration of the late Sir Victor Horsley. Her great care for the well-being of children was further revealed in her constant insistence on the importance of sunlight and fresh air for healthy growth—at a time when neither of these were generally accepted as essentials for happiness. One of her recent enterprises was the founding of the Birmingham Taylor Memorial Home for Inoperable Cancer.

Miss Sturge was a fine physician and a great woman, with the soul and spirit of a pioneer, which won the respect of her colleagues and the love of her patients.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his recent successful appeal against conviction and to make good the deficiency in his professional income. Accordingly, the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged	379	3	0
Dr. G. H. Adam	..	..	5 0
Dr. A. L. Vaughan	..	..	5 0
Dr. Arthur J. McNair	..	..	3 0
Dr. F. C. Poynder	..	..	2 0
Dr. J. Stewart	..	..	2 0
Dr. W. H. Coupland	..	..	1 0
Dr. Hugh Lawson	..	..	1 0
Dr. H. W. Newton	..	..	1 0
Dr. T. J. T. Wilmot	..	..	1 0
Dr. F. C. Bottomley	..	..	1 0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C.2, and made payable to the "Bateman Fund Account."

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the subjects indicated:—

Surgery.—W. Bentley, Birmingham; N. E. Challenger, McGill; A. J. M. Davies and A. Kaplan, St. Mary's Hosp.; Y. N. Lal, Dundee; T. K. Natesan, London Hosp.; and F. T. Ridley, Birmingham.

Medicine.—A. H. Allam (Sect. II.), St. Mary's Hosp.; T. K. Natesan, London Hosp.; and F. T. Ridley, Birmingham.

Forensic Medicine.—E. H. Boodrie, St. Mary's Hosp.; M. R. Burke, St. George's Hosp.; B. Horwitz and T. McD. Kellough, Guy's Hosp.; A. Mishriky and C. M. Moody, St. Mary's Hosp.; C. C. Po, Guy's Hosp.; F. T. Ridley, Birmingham; and B. L. Steele, Univ. Coll. Hosp.

Midwifery.—I. H. Mackay, Sydney; K. V. Mead, St. Thomas's Hosp.; E. J. Newman, London Hosp.; F. T. Ridley, Birmingham; and R. J. Rutherford, Durham.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: A. H. Allam, W. Bentley, N. E. Challenger, A. J. M. Davies, Y. N. Lal, A. Mishriky, T. K. Natesan, C. C. Po, and F. T. Ridley.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council of the College held on March 12th licences to practise dentistry were conferred upon 82 candidates. The following are the names and schools of the successful candidates:—

P. Adelson, Royal Dental; H. R. Allen, Guy's; S. G. Allen, London; W. J. Badenhorst and W. P. Beresford, Guy's; R. F. Beveridge and H. C. Beyers, Royal Dental; A. Caldwell, Manchester; F. H. Chapple, Guy's; H. I. Clapperton, H. Clausen, and W. D. E. Clayton, Royal Dental; O. E. Clements, Univ. Coll.; E. J. Clothier, Guy's; A. M. Cohen, M. Cohn, and E. D. Collins, Royal Dental; L. Cowlishaw, Guy's; A. T. Craig, Univ. Coll.; J. S. Crapper, Guy's;

F. T. Cullen, Royal Dental; Marie J. V. R. de Plamas, London; D. S. Dixon and W. G. Duncombe, Royal Dental; J. W. Finemore, G. W. Gathergood, H. A. Gillett, G. E. Glazebrook, G. M. Glennie, N. Goldthorpe, and E. C. Grant, Guy's; S. Grantham-Hill, London; W. E. Herbert, Guy's; J. Hovsha, Royal Dental; H. Howard, Manchester; S. R. Howeroff and D. A. James, Guy's; T. P. Kapadia and C. H. Kennard, Royal Dental; J. C. Laight, Univ. Coll.; H. C. Lawrence, Guy's; C. H. McGivern, Royal Dental; H. C. L. Maister, Guy's; F. G. Mallett, Royal Dental; W. R. Mason, Birmingham; Adeline M. Matland, Royal Dental; G. Meadows, Bristol; V. H. L. Meyers, Royal Dental; A. D. Miller, Guy's; G. Miron, Univ. Coll.; C. I. T. Morgan, Bristol; L. A. Moules, S. N. Muir, and J. H. Mynhardt, Royal Dental; J. G. Nelson, Guy's; Olive Nicholls and S. H. Oomrigar, Royal Dental; R. H. N. Osmond, London; Winifred N. Pilcher, D. D. Pochin, and J. J. Reader, Royal Dental; E. B. Rees, Guy's; W. E. Revill and A. L. Robison, London; L. F. O. Seymour, Guy's; F. W. Sievers and C. H. Soutter, Royal Dental; L. A. Steel, Guy's; Ella M. Storey, Univ. Coll.; Amelia Tobias and H. J. Toerien, Royal Dental; F. H. B. Tofts and S. Thomson, Guy's; V. A. Vasey, Manchester; do W. Vorster, Guy's; W. G. Webster, Birmingham; J. F. Wege, Guy's; T. H. Wignall, Liverpool; E. C. Wilkerson, London; G. S. Williams, Univ. Coll.; and W. R. Williams, London.

Diplomas of M.R.C.S. were conferred upon the following, who have passed the requisite examinations and have now complied with the by-laws.

Victor Alexander Edge, Madras and London Hosp.; and Gladys Evelyn McCabe, Royal Free and St. Mary's Hosps.

UNIVERSITY OF LONDON.—A Keddey Fletcher-Warr studentship of the value of £200 a year for three years has been awarded to Douglas Creese Harrison, B.Sc. (King's College), for research in biochemistry.

UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

Part II.—Hilda Pratt.

Part I.—E. R. Gilmore, Bridget Lineham, and A. C. Newman.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Part I.—W. G. Thomson.

DIPLOMA IN VETERINARY STATE MEDICINE.

Parts I and II.—R. C. Locke and Reginald Lovell.

UNIVERSITY OF LIVERPOOL.—Honorary degrees will be conferred at a special congregation on June 5th on, amongst others, the following distinguished members of the medical profession:—LL.D.: Sir Dyce Duckworth, Sir Robert Jones, and Sir Henry Hadow (Vice-Chancellor of the University of Sheffield); D.Sc.: Principal Sir J. C. Irvine (Vice-Chancellor of the University of St. Andrews).

ROYAL NAVY MEDICAL CLUB.—The annual dinner will take place this year at the Trocadero Restaurant, Piccadilly Circus, W. 1, on Thursday, April 16th, at 7.30 for 8 P.M. Members who wish to be present are asked to inform the Hon. Secretary, Royal Navy Medical Club, 68, Victoria-street, London, S.W. 1, not later than seven clear days before that date.

BALNEOLOGICAL CONGRESS.—The Fortieth Congress of Balneology organised by the Balneologische Gesellschaft, Berlin, will be held from April 3rd to 8th in Karlsbad, Marienbad, and Franzensbad. Prof. Dietrich will preside. Full information may be obtained from the General Secretary, Dr. Hirsch, 16, Franzhofer-strasse, Charlottenburg, near Berlin, Germany.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—It is proposed to resume the discussion on Post-Graduate Study in London at the house of the Royal Society of Medicine on Wednesday, April 8th, at 6 P.M. Sir Arbuthnot Lane will again preside, and it is hoped that many members of the medical profession will attend and give their views.—Other lectures are announced in the Medical Diary.—During April three special courses will be held, each of two weeks' duration; an intensive course in Medicine, Surgery, and the specialties at the Hampstead General Hospital; during both weeks there will be a daily morning and afternoon session, including clinical demonstrations, ward clinics, and out-patient work.—A course in Diseases of Children at the Queen's Hospital, Hackney-road, E.; work will be carried on in the wards, out-patient and special departments.—The other course is on Proctology at St. Mark's Hospital for Diseases of the Rectum, at which will be given clinical lectures with operations and demonstrations of the methods pertaining to rectal diseases. Copies of the syllabus of the foregoing courses may be obtained on application to the Secretary to the Fellowship of Medicine at 1, Wimpole-street, London, W. 1. The following special courses will take place in May: Dermatology, Diseases of Infants, Nose, Throat, and Ear, and Psychological Medicine.

CREMATION SOCIETY OF ENGLAND.—The annual meeting of subscribers will be held in the Adam Hall, at 12, Stratford-place, London, W. 1, on Wednesday, April 8th, at 3 P.M.

AUGUSTUS AND ALICE WALLER MEMORIAL.—£2000 have been subscribed for the memorial to Dr. and Mrs. Waller. The money has been invested by the Council of the Royal Free Hospital School of Medicine for Women, London, and the interest will be used for scientific research at that school. For a Waller research room at St. Mary's Hospital so far £105 have been subscribed.

ROYAL DENTAL HOSPITAL.—The annual general meeting of governors of this institution was held on March 19th at the hospital, Leicester-square, London, W.C., when the Chairman, Sir Fisher Dilke, presided over a large body of supporters, and made a wise speech. It was trying, he said, to an audience to be supposed to be interested in such deep truths as that the number of patients who were treated for plastic fillings was 17 odd thousands, or that a dozen hæmoglobin tests were safely applied, and he proposed to refer his hearers for such information to the annual report. But he enlarged a little on the double task of the hospital in providing treatment for the teeth of the poor of London, and of educating its patients, and London generally, until they realised the vital need of healthy teeth as companions to a healthy body and mind; and he called particular attention to the opening of the greatly enlarged children's department and X ray room. For some time those responsible for the management of the hospital, he said, had felt that the children should be attended in a department of their own where special care could be given to them—this had been accomplished by a reorganisation of departments and to a certain extent by re-building. A considerable sum of money had been spent on this work, and he acknowledged a most generous contribution of over £600 through the action of Sir Oswald Stoll in placing the Alhambra Theatre at the disposal of the hospital for a concert. The X ray department had also been greatly enlarged, as it was becoming more and more indispensable as a means of diagnosing obscure dental troubles, from which so many of the patients suffered. "But the hospital has," he said, "outstanding a large amount of the mortgage on our building, and banker's orders paying even the most modest sums into our account annually are what we daily pray for, while welcoming the magnificent gift which all hospital committees dream of." He closed by asking the meeting to voice their sincere thanks for the help and encouragement received from the honorary staff.

MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of this Association was held at the Clothworkers' Hall, London, on March 18th, Sir Charles Wakefield, the President, presiding. The speakers included Sir Frederick Willis, chairman of the Board of Control, Dr. H. Wolseley-Lewis, medical superintendent of Maidstone Mental Hospital, and Mr. Lionel Faudel Phillips, hon. treasurer of Bridewell and Bethlem Royal Hospitals, and various members of the Council. There was a large attendance and much interest was evinced in the proceedings. Dr. Rayner, chairman of the Association, in moving the adoption of the report, referred to the very large increase in the number of cases dealt with in the previous year and the greater public support that was needed in order to enable the Association to meet the ever-growing demands on its resources. He announced with great pleasure among other donations the gift of £500 from Sir Charles Wakefield. Sir Maurice Craig, treasurer of the Association, drew attention to the fact that the expenditure last year exceeded the receipts by some £1100, and also to the fact that one-third of the total receipts last year were contributions from patients and their friends, in itself a wonderful tribute to the way in which the work is appreciated by those for whom it is intended. Other speakers were unanimous in their approval of the way in which the work was carried out. Sir Frederick Willis said that he sincerely hoped in time some means would be devised whereby the Association could be lightened of some of its financial worries while increasing the scope of its work to extend all over the country. Dr. Wolseley-Lewis pointed out that the extension of the work with regard to the arrangements for visiting the homes of patients before discharge and reporting to the medical superintendents, and keeping in touch after discharge was to his mind an enormous help to the medical superintendents and visiting committees, and enabled many patients to be discharged more quickly. He urged that more help should be raised in the hospitals by musical services, offertories, and collecting boxes. The meeting closed with a vote of thanks to Sir Charles Wakefield for presiding and for his generous gift, and to the Clothworkers for their hospitality in entertaining the large number present. Other donations included gifts of £10 from the Clothworkers' Company, from Mr. L. H. Bolton, and Mr. L. G. Foster.

ON the promotion of Sir A. Symonds, K.C.B., Second Secretary, to be Secretary to the Board of Education, the Minister of Health has approved the appointment of Mr. E. R. Forber, C.B., C.B.E., to be Deputy Secretary to the Ministry, and Mr. L. G. Brock, C.B., and Mr. I. G. Gibbon, C.B.E., to be Principal Assistant Secretaries.

A NEW KENSINGTON HOSPITAL.—The Kensington, Fulham, and Chelsea General Hospital is the only institution of its kind amid a population of half a million, and its 19 beds are obviously inadequate. It has, therefore, been decided to rebuild it from designs by Sir Aston Webb, on a 112-bed basis, at a cost of £100,000. The scheme has the financial support of King Edward's Fund.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—A course in parasitology will be held at the Tropical Division of the school from April 27th to June 25th. The fee for the course is £2 2s. Lectures will be given on entomology by Colonel A. Alcock, on helminthology by Prof. R. T. Leiper, and on protozoology by Dr. J. G. Thomson. The course is primarily intended for students taking the first part of the D.P.H., but there may be room for other students. Further information may be obtained from the Secretary of the School, at the temporary offices, Institute of Historical Research, Malet-street, London, W.C. 1.

MANCHESTER ROYAL INFIRMARY.—The post-graduate lectures and demonstrations on medical, surgical, and special subjects, given by the honorary staff, were resumed on March 3rd, and will be held each week (with the exception of Tuesday, April 14th) till May 26th. On Fridays clinical cases will be shown in the wards. These demonstrations will be continued (with the exceptions of April 10th and 17th) till Friday, May 22nd. All the lectures and demonstrations will commence at 4.15 P.M. There will be no fee.

LIVERPOOL: NEW OPERATING DEPARTMENT AT MILL ROAD INFIRMARY.—On Tuesday, March 24th, in the presence of a large assembly, a new operating department at Mill Road Infirmary was opened by Mr. John Ellis, chairman of the infirmary. The site chosen is on the ground floor in the north-east courtyard between two ward-blocks. The scheme suggested by Dr. R. T. Bailey, medical superintendent, and Mr. O. Herbert Williams, visiting surgeon, has been very ably planned by Mr. E. B. Bailey, M.S.A., F.S.I., the architect, and carried out under his direction. There are two entrance halls. From the one, which leads from the surgical wards, access is had to a dressing-sterilisation room with an adjoining store-room, a robing room for the surgeon and assistants, with a shower-bath and lavatory. Off the other hall is a robing room for nurses. These halls lead to a large octagonal court, lit by a dome in which are doors leading into a cystoscopy room, a laryngological operating-room, two anaesthetic rooms, two operating theatres, with an instrument sterilisation room between them. Each theatre is 25 ft. long by 16 ft. wide, and is lit by a north light. The guardians of the West Derby Union are to be congratulated on building this splendidly equipped operating department, which will be of great benefit to the sick of Liverpool. Messrs. Brown and Backhouse, of Liverpool, were the contractors for the work. On the same day the new X ray department and electro-therapeutic department were opened.

CHELSEA CLINICAL SOCIETY.—The fifth meeting of the present session of this society was held at St. George's Hospital on March 17th, Dr. Gordon Lane, the President, in the chair. Dr. Leonard Williams read an entertaining address on the diseases of old age. Constipation and errors in diet, in the way chiefly of excess, were, he said, in great part responsible for senile troubles. The dentist was the aide-de-camp of the cook, and dealing with the control exercised over the body functions by the ductless glands the adrenal was considered to be at fault in many cases of disease in the old man and woman. Mr. Kenneth Walker thought that in some cases ligation of the vas deferens was a useful operation, but in his opinion grafting in the testicle did a great deal of good. Mr. Ivor Back confirmed this view from the experience of about 30 per cent. of his cases, though in a great many the operation of putting a graft in the testicle had not fulfilled expectations. Mr. Back gave an interesting account of testicular grafting which he had performed in a valuable boar, the result being that the boar which had shown no desire for female society reversed his proclivities but apparently had no procreative power. Mr. Ralph Thompson gave some of his experiences of dissections of the ductless glands. The general opinion of the speakers was that when a graft was put into some organ, the result was certainly not immediately shown.

The next meeting will be held at St. George's Hospital on April 14th, when cases and specimens of clinical and pathological interest will be exhibited.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, MARCH 17TH.

Therapeutic Substances Bill.

THE House went into Committee on the Therapeutic Substances Bill.

The Marquess of SALISBURY (Lord Privy Seal) stated that the Government had considered the point raised by Viscount Haldane on the Second Reading in regard to permission being given to men of science to obtain therapeutic substances for use in research work without a licence. It was proposed to issue special licences to individuals or institutions enabling them to import at will parcels of these substances for research purposes. The information that A. B., being a scientific man of eminence, or C. D., being a scientific institution, had received such licences would be conveyed to the Customs authorities and would be quite sufficient to obtain the necessary permission to import.

The amendment was agreed to.

THURSDAY, MARCH 19TH.

The Therapeutic Substances Bill was read a third time and passed.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 18TH.

Naval Ratings Discharged Medically Unfit.

MR. HORE-BELISHA asked the First Lord of the Admiralty whether he was prepared to consider the suggestion that all ratings discharged from the Royal Navy medically unfit for further service, for reasons beyond their own control, be given a pension at the basic rate in respect of the length of their service, particularly in view of the fact that their careers had been ruined and that their wage-earning capacity had been depreciated.—MR. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: As the present scales and conditions of pension for disability were determined after very careful consideration, I regret that I am unable to adopt the hon. and gallant Member's suggestion.

Invalided Naval Ratings.

MR. GIBBINS asked the First Lord of the Admiralty the number of lower ratings who were invalided from the naval forces during the year 1924-25; and the amount of compensation paid in these cases.—MR. DAVIDSON replied: Approximately 1200 men were invalided from the Royal Navy during the period from April 1st, 1924, to Feb. 28th, 1925. Of these 294 qualified for pensions at an average rate of £37 per annum, 850 qualified for gratuities only, at the average rate of £10. The remainder had less than a year's service and were ineligible for the grant of compensation.

Isolation Hospital in Parts of Lindsey.

Captain CROOKSHANK asked the Minister of Health whether the cost of erecting an isolation hospital for the treatment of infectious diseases in the Parts of Lindsey, as proposed, would have to be recovered by means of a special county levy over the whole area served by such a hospital, and that the cost of maintenance and treatment of patients would have to be recovered in the same way; and whether he proposed to introduce legislation this session with a view to removing this hardship which arose under the existing Public Health Acts.—MR. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part, I am anxious to introduce legislation for the amendment of the Public Health Acts in this and other respects as soon as opportunity offers, but I cannot at present say whether this will be possible during the present session.

Health Conditions on British Ships.

Sir ROBERT HUTCHISON asked the Secretary of State for Foreign Affairs whether the British Government recognised the right of American consuls in the United Kingdom to withhold from British vessels clean bills of health on grounds other than those of the sanitary or health conditions of British ports or of the vessels or her crew; and whether an American consul was justified under any treaty or agreement with the United States of America in refusing to issue a bill of health from Glasgow to Manila on the ground that he disapproved of the nature of part of a cargo which was not illegal in either Britain or the Philippines.—Sir BURTON CHADWICK (Parliamentary Secretary to the Board of Trade) replied: There is no treaty or agreement between this country and the United States regulating the issue of bills of

health by the officers of the one country in ports of the other, and the issue of bills of health is governed by instructions given by the respective Governments. Neither Government is called upon to recognise the instructions given by the other.

National Health Insurance Payments.

Mr. SMEDLEY CROOKE asked the Minister of Health the amount spent each year since the passing of the National Health Insurance Act on medical service (doctors, medical supplies, medicine, &c.) and maternity benefit, respectively. —Mr. NEVILLE CHAMBERLAIN replied: The following statement gives the approximate amount spent in England and Wales in each year since the passing of the National Insurance Act, 1911, to the end of the year 1923 on the respective services specified in the question.

Year.	Payments of medical benefit.			Payments of maternity benefit.
	Medical service (doctors).*	Medical supplies (medicines, &c.).	Total.	
	£	£	£	£
1913	2,860,000	736,000	3,596,000	1,077,000
1914	4,140,000	1,051,000	5,191,000	1,206,000
1915	3,388,000	866,000	4,254,000	1,120,000
1916	3,699,000	956,000	4,655,000	1,079,000
1917	3,520,000	940,000	4,460,000	919,000
1918	4,115,000	1,041,000	5,156,000	882,000
1919	4,927,000	1,092,000	6,019,000	1,042,000
1920	7,413,000	1,543,000	8,956,000	1,695,000
1921	7,926,000	1,468,000	9,394,000	1,747,000
1922	6,961,000	1,488,000	8,449,000	1,606,000
1923	6,681,000	1,509,000	8,190,000	1,526,000

* Including payments to doctors in respect of the domiciliary treatment of persons suffering from tuberculosis.

Mr. SMEDLEY CROOKE asked the Minister of Health the number of sick and accident cases relieved each year since the passing of the National Health Insurance Act; the number of women relieved each year; the number of men relieved each year; the total number of weeks of relief; and the total number of insured persons each year. —Mr. NEVILLE CHAMBERLAIN replied: In the year 1923 there were approximately 13,317,900 insured persons in England and Wales, of whom 8,992,100 were men and 4,325,800 were women; and in that year the total payments of sickness and disablement benefits amounted to a sum of £11,533,400, of which £7,677,500 was paid to men and £3,855,900 was paid to women. A table giving for England the total number of insured persons, the receipts and expenditure on benefits for each of the last ten years is given on pp. 166 and 167 of the Fifth Annual Report of the Ministry of Health, Cmd. 2218 (1924). It is not possible to give the number of cases assisted in a year or the total number of weeks of sickness as no occasion has arisen for requiring approved societies to keep such statistics, and the necessary data are, therefore, not available.

Dismissal of Plymouth Medical Officer.

Mr. HORE-BELISHA asked the Minister of Health whether his department had received from the Plymouth Town Council a report of the proceedings culminating in the dismissal of Dr. Bushnell; whether he had approved this dismissal; and, if so, whether he would give the doctor an opportunity of having the charges against him specified in order that he might refute them. —Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the negative. As regards the second part, my right hon. friend's approval is not required to the determination by the Town Council of their contract with Dr. Bushnell, and the last part of the question, therefore, does not arise.

THURSDAY, MARCH 19TH.

Appeals against Final Pension Awards.

Lieut.-Colonel ACLAND-TROYTE asked the Minister of Pensions whether he would consider the possibility of allowing men who were granted a final award for a disability assessed as under 20 per cent. to appeal within 12 months of the termination of the pension award instead of within 12 months of the grant of the award; and whether he would make this right retrospective in all cases of disability below 20 per cent. in which appeals had not already been lodged. —Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: Having regard to the provisions of Section 4 of the War Pension Act, 1921, the suggestion made in this question could not be carried out without legislation. In any event, however, my right hon. friend could not, in fairness to the general body of officers and men to whom final awards have been made, give an extended period of appeal to one class alone. My right hon.

friend would point out that the right of appeal is freely exercised in the class of case referred to, since, up to the present date, appeal has been made by slightly more than one out of every four cases in which a final award of this class has been notified.

Sick Benefit Regulations.

Mr. REID asked the Minister of Health whether, in the forthcoming comprehensive insurance scheme, he would consider the desirability of including a provision whereby those persons who, under the present regulations, were not entitled to claim any sick benefit, after a period of residence abroad exceeding one year, until the intervening contributions had been made up, or a further 104 contributions paid, might have imputed to them the benefit of those contributions made to the time of their leaving this country. —Mr. NEVILLE CHAMBERLAIN replied: Under the existing health insurance scheme an insured person who goes abroad for more than a year is treated, on his resuming employment in this country, in the same way as any other person entering insurance, and accordingly becomes entitled to sickness benefit, at a reduced rate after payment of 26 and full sickness benefit after payment of 104 weekly contributions following his return. I see great difficulties in the way of the adoption of the hon. Member's suggestion, but I am sending it to the Royal Commission on National Health Insurance for their consideration.

Industrial Smoke and Public Health.

Mr. ROBERT YOUNG asked the Minister of Health whether he was aware that about 70 per cent. of air pollution was the result of smoke from industrial chimneys; whether his department had taken any steps to investigate the problem of smoke prevention by the use of smoke-filtering apparatus and with what result; and whether he would inquire what had been done by way of experiment by the corporations of our larger cities. —Captain REID asked the Minister of Health whether, in view of the fact that 66 per cent. of the air pollution was due to smoke from industrial chimneys and that such air pollution was known to be injurious to health, any legislation was contemplated which would make the use of smoke-filters in factories compulsory. —Mr. NEVILLE CHAMBERLAIN replied: For the country generally, the proportions of industrial smoke stated by the right hon. Members appear to be much too high. I hope to introduce a Bill on the subject next session. I have no special information about smoke-filters, but if the hon. Members have any device in mind, I shall be pleased to receive particulars from them.

Housing Schemes under 1923 and 1924 Acts.

Captain T. J. O'CONNOR asked the Minister of Health the number of public authorities who, during the 12 months ended Feb. 28th, 1925, adopted the 1923 Housing Act and the 1924 Housing Act, respectively; and the number of houses for which permission had been given by the Minister to public authorities under each Act during this period. —Mr. NEVILLE CHAMBERLAIN replied: On Feb. 25th, 1925, the total number of authorities who had received approval to housing schemes under the Housing Act, 1923, was 1411 and these schemes provided for 184,202 houses. Proposals covering 73,056 houses were approved under the Act of 1923 in the year ended Feb. 25th, 1925, and 334 local authorities first adopted schemes under the Act in that period. Approval was given within the same period under the Housing (Financial Provisions) Act, 1924, to schemes of 311 local authorities covering 31,900 houses.

FRIDAY, MARCH 20TH.

Public Health Bill.

Mr. WOMERSLEY, in moving the Second Reading of the Public Health Bill, said he had served for a long time on a local authority and he knew the benefit that would be derived by local councils if this measure became law. The primary object of the Bill was to collect into one Act and make available for the whole country provisions which Parliament had already inserted in a great number of local Acts which had been privately promoted. It consolidated and brought up to date all the Acts connected with the public health. The Bill dealt with questions of principle which had already been decided by the House, and if there were any amendments to it he suggested they might be dealt with on the Committee stage. The measure was supported by municipal authorities throughout the country and had been wanted for a considerable time.

Mr. TAYLOR seconded.

Lieut.-Colonel FREMANTLE said he was glad to support the Bill from the point of view of his special experience as a county medical officer of health. It was largely a jumble of measures which had proved useful in one or other of the localities where they had been tried. There were two or three points which would have to be considered in Committee. Clause 59 defined "a dangerous infectious disease"

as a disease named in Section (6) of the Act of 1889. Unfortunately a great many unpleasant and dangerous diseases had been discovered since 1889. Under Sub-section (2) of Clause 59 the Minister of Health might by Order declare any other infectious disease to be a dangerous infectious disease for one particular area or generally or temporarily or permanently, and this would apply to diseases not named in the Act of 1889, as, for example, cerebro-spinal meningitis; it would also include tuberculosis and other diseases—in fact, anything which the Minister thought necessary. That allowed a very large amount of latitude and adaptability in the application of the Act. Since the great Act was passed by Disraeli in 1875 there had been a constant succession of Public Health Acts, and it was almost impossible for anyone who had not made a professional study of public health law and administration to know his way through the different charters of the last 50 years. He hoped that they would have a promise from the Government of a consolidating Public Health Bill within the next year or two, and that the House would agree to give this Bill a second reading unanimously.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said that so far as his Department was concerned they welcomed this Bill and would be glad to see it secure a second reading. Naturally they would desire to examine the measure again in Committee, but subject to that the Government would be glad to afford it what facilities might ultimately be found necessary so that it might speedily reach the statute book. The Government were very anxious to bring forward a consolidating Bill. But they could not do so at present and this Bill was a necessary preliminary to any consolidating Bill. Directly this measure was passed the Government proposed to introduce another measure amending the Public Health Acts which experience had shown to be necessary. A Bill for this purpose was well advanced and would have been introduced this session, but the Association of Municipal Corporations was anxious that the Bill which the House was discussing that afternoon should be promoted as soon as possible. Two separate Public Health Bills could not be dealt with in the same session, and the Government therefore decided to defer the introduction of their Bill until the session of 1926.

The Bill was read a second time unanimously.

MONDAY, MARCH 23RD.

Indian Medical Service.

Major-General Sir RICHARD LUCE asked the Under Secretary of State for India the present strength of officers in the Indian Medical Service; how many of these were of European birth; and how many recruits, European and Indian, respectively, had been obtained for permanent service during the past 12 months and how many for short service.—Earl WINTERTON replied: The figures at the present time, as nearly as I can ascertain them, are: permanent officers 532 British, 142 Indians; temporary officers 148 Indians. In the last 12 months 14 British officers have been appointed to permanent commissions with the option of retiring with gratuities after five years' service. I am not aware how many Indians have been appointed in India to temporary commissions during that period. A number of Indians not exceeding ten have recently been or are about to be appointed to permanent commissions.

Local Authorities and Slum Properties.

Viscountess ASTOR asked the Minister of Health in how many cases objections to notices served by local authorities upon the owners of insanitary property, with a view to houses being put into order, had been raised on appeal to his Department; and how many of these appeals had been rejected.—Sir KINGSLEY WOOD replied: During the year ended Dec. 31st, 1923 (the last year for which figures are available), notices requiring repairs, &c., under the Housing Acts were served in respect of 25,277 houses. During this year 37 appeals were received by the Department, 5 appeals were formally dismissed, 3 allowed, and 4 allowed in part. The remainder were not proceeded with.

Test of New Remedy for Foot-and-Mouth Disease.

Sir JAMES REMNANT asked the Minister of Agriculture where it was proposed to build the isolated experimental station at which the official test of Dr. John Shaw's remedy for and prevention of foot-and-mouth disease was to be made; if the building had been started; from whom the doses with which the test was to be made were being obtained; and whether he had decided that Dr. John Shaw should be present and carry out the test when it was made.—Mr. WOOD replied: It is not proposed to build a new experimental station for the purpose of testing Dr. Shaw's remedy. The premises at Pirbright formerly used by the Ministry as a cattle-testing station, which are being adapted for use by the scientific committee on foot-and-mouth disease,

will be utilised for the purpose. No doses of the remedy have yet been obtained, but I presume that Dr. Shaw will be prepared to supply them when required. It is not legally possible for Dr. Shaw personally to carry out the tests without a licence granted by the Home Secretary under the Cruelty to Animals Act, 1876, which I am advised he does not hold, but I propose to invite him to concur in the suggested scheme of experiments, and to be present during their conduct by the responsible officers of the Ministry's Veterinary Staff.

TUESDAY, MARCH 24TH.

R.A.M.C. Officers' Pensions.

Maj.-Gen. Sir RICHARD LUCE asked the Secretary of State for War if he was aware that an officer in the Royal Army Medical Corps had recently retired, after 20 years' service, with a pension of £328 per annum, and that this sum was £37 below the sum he understood he would receive, after 20 years' service, when he joined the corps; and if he would take steps to secure that no officer who joined the corps before the Warrant of 1919 came into force would in future be retired on a lower pension than he would have received under conditions existing when he joined the corps.—Sir L. WORTHINGTON-EVANS replied: The fact referred to by the hon. and gallant Member is due to the joint effect, on this individual case, of the rule that service on the West Coast counts double towards the 20 years required for voluntary retirement and of the introduction in 1919 of a rank element into the calculation of retired pay. I am, however, looking further into the position.

Sir RICHARD LUCE also asked the Secretary of State for War whether he was aware that a major, Royal Army Medical Corps, retiring after 20 years' service, only received an increase by the 1919 Warrant of £31 to his previous pension of £365 and that, by the reduction of 5½ per cent. on the increased pension of £396, he had had the increase reduced not by 27½ per cent. but by nearly 67 per cent.; and if he would take steps to secure that these officers did not in future have their pensions reduced by a larger amount than 27½ per cent. of the increase granted in 1919.—Sir L. WORTHINGTON-EVANS replied: My hon. and gallant friend's question is, I think, based on a misapprehension. The revision due to the fall in the cost of living, which was made from July 1st last, applied to the 1919 rate of retired pay itself and not to the difference between the rates under the 1914 and 1919 Warrants. A reduction of 5½ per cent. was therefore applied correctly to the 1919 Warrant rate of £396 per annum in the instance quoted.

Physical Defects in Army Recruits.

Mr. GILLET asked the Secretary of State for War what number of the 49,245 men who were rejected last year as recruits to the Army were refused on the ground of defective eyesight and what number on account of defective teeth.—Sir L. WORTHINGTON-EVANS replied: The information required is only available in the case of the 20,742 men who were rejected by medical officers on primary medical examination and after attestation. Of these, 1743 were rejected for defective vision and 2062 for defective teeth.

WORTHING HOSPITAL.—The governors of Worthing Hospital, at the annual meeting on Feb. 27th, gave consent to plans for the rebuilding of the administrative department, provision for the accommodation of the domestic staff, and the reorganisation of the heating and hot-water systems, the total sum involved being £8000. Authority was given the committee to pay such balance out of capital as might be necessary to carry out the work. Mr. H. R. P. Wyatt, J.P., the President, announced the gift of £500 from a generous friend towards the building fund, and the same generous friend had promised another like sum if the residents would do their share.

THE LATE DR. FRÉDÉRIC MORIN.—Dr. Frédéric Morin, President of the Station Climatérique de Leysin, died recently at Leysin, Switzerland, in his seventy-third year. Dr. Morin was born at Yverdon, and studied medicine in Lausanne and Berne, qualifying in 1877. He practised first at Colombier on the Lake of Neuchâtel. In 1890 he became, with Dr. Louis Secretan, the chief promoter of the Société de la Station Climatérique de Leysin, a body founded with the object of creating at Leysin a resort for the cure of tuberculosis. Later he became medical adviser of the Sanatorium des Enfants and of the Sanatorium Populaire at Leysin. Further, he was one of the founders of the International Union against Tuberculosis, of which he was later elected President. At several meetings of this Union he contributed valuable papers on the sun treatment of tuberculous diseases. Dr. Morin presided over the congress of the Union, which was held at Lausanne last year.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, April 2nd.—4.30 P.M. *Papers to be read:*
Prof. H. E. Armstrong: Studies on Enzyme Action, XXIII. The Oxidase Effect and the Phenomena of Oxidation in General. Carbonic Oxide. N. K. Adam and G. Jessop: An Explanation of the so-called Interaction Phenomenon between Solutions and the Molecular Significance of Negative Surface Tension. (Communicated by Sir William Hardy, Sec. R.S.)—*Papers to be read in title only:* Jane Sands, M.D.: Investigation of Oxidation in the Blood of Earthworms. (Communicated by J. Barcroft.) R. Snow: Conduction of Excitation in the Leaf of Mimosa Spegazzinii. (Communicated by Dr. A. H. Church.) Dorothy Adams: Investigations on the Crystalline Lens. (Communicated by the Glassworkers' Cataract Committee.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. MEETINGS OF SECTIONS.

Tuesday, March 31st.

MEETING OF THE SOCIETY: at 5.30 P.M.

Special Discussion on
Endocrine Therapy.

Opening Speakers:

Dr. W. Langdon Brown, Prof. Swale Vincent, Mr. Leslie Pugh, Dr. H. Gardiner-Hill, Mr. Kenneth Walker.

Other Speakers:

Dr. Leonard Williams, Dr. H. Crichton Miller, Mr. J. E. R. McDonagh, Dr. M. B. Ray, &c.

(The Meeting, if necessary, can be adjourned at 7 P.M., and resumed at 8.30 P.M.)

Wednesday, April 1st.

SURGERY: at 8.30 P.M.

Paper: (illustrated by diagrams, microscope slides, and cinema films) on

Some Results of the Experimental Anastomosis of Certain Nerves with Neighbouring Nerves, by Sir Charles Ballance, Mr. Lionel Colledge, and Mr. Lionel Bailey.

LARYNGOLOGY } Members of these Sections are specially
MEDICINE } invited to attend this meeting.
NEUROLOGY }

Friday, April 3rd.

LARYNGOLOGY: at 4.30 P.M. (No cases will be shown.)

Discussion on
Paroxysmal Rhinorrhoea.

To be opened by

Dr. J. Freeman and Dr. A. Brown Kelly; followed by Dr. James Adam.

Paper:

Dr. Margaret C. Tod: The Results of Operations on the Nose and Throat in Cases of Asthma.

OBSTETRICS AND GYNÆCOLOGY:

No Meeting of the Section will be held in April.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 30th.—9 P.M., Sir Bernard Spilsbury: Wounds and other Injuries in their Medico-Legal Aspect. Last Lettsomian Lecture.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, April 3rd.—8.45 P.M. (at the Miller General Hospital, Greenwich, S.E.), Mr. E. Stanley Rowbotham: Anæsthetics for Operations in the Region of the Mouth and Nose.

MANCHESTER MEDICAL SOCIETY.

WEDNESDAY, April 1st.—4.30 P.M., Discussion on Encephalitis Lethargica. To be opened by Dr. Donald E. Core, Mr. W. St. Clair McClure, Dr. B. J. Ryrie, and Mr. J. Henry Dible.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 31st.—5 P.M., Dr. Hector Cameron: On Some Forms of Vomiting in Infancy. (Second Lumleian Lecture.)

THURSDAY.—5 P.M. (Last Lumleian Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 30th, to SATURDAY, April 4th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street, W. Lectures arranged by the Fellowship of Medicine and open to all members of the medical profession.

Monday, March 30th, at 5.30 P.M., Mr. Ernest Clarke: Myopia—Its Diagnosis and Treatment. Wednesday, April 1st, at 5.30 P.M., Dr. Robert Knox: Demonstration on X Rays in the Diagnosis of Lesions on the Right Upper Quadrant of the Abdomen.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Lecture-demonstrations in Diseases of the Eye. Daily from 2.30 P.M.—ROYAL NORTHERN HOSPITAL, Holloway-road, N. Intensive Course (second week).

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

TUESDAY, March 31st.—4.30 P.M., Mr. J. Howell Evans: Nature's Reminders of the Humble Origin of Man. (Lantern Lecture.)

FRIDAY, April 3rd.—4.30 P.M., Mr. W. Ibbotson: Nasal Obstruction, Its Causes and Remedies.

Daily: In- and Out-patient Cliniques, Operations, Cliniques in Special Departments, &c.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, April 2nd.—4 P.M., Mr. Fairbank: Fractures.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, April 3rd.—4 P.M., Mr. Armour Brown: Suppuration of the Middle Ear.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, March 31st.—4.15 P.M., Dr. W. Dyson: Bullous Eruptions of the Skin.

FRIDAY, April 3rd.—4.15 P.M., Dr. A. Ramsbottom: Medical Cases. Mr. C. Roberts: Surgical Cases.

Appointments.

ELLIOTT, T., M.B., Ch.B. Leeds, has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Misterton District of the County of Nottingham.

GORDON, J., M.B., Ch.B., D.P.H., Lecturer in Bacteriology at the University of Leeds.

HALL, PERCY, M.R.C.S., L.R.C.P. Lond., Hon. Actino-therapist to the Mount Vernon Hospital.

MACDONALD, J. R., M.B., Ch.B. Edin., Medical Officer to the Durham Board of Guardians.

TURNER, ADAM A., M.B., Ch.B. Aberd., D.P.H., Medical Officer of Health, Finchley.

Essex County Council: FRY, L. S., M.B., B.Ch. Camb., D.P.H., and LORRAINE, N. S. R., M.D. Edin., D.P.H., Assistant County Medical Officers of Health.

Vacancies.

For further information refer to the advertisement columns.

Benenden, Kent, National Sanatorium.—Res. Asst. M.O. £300. Birmingham, Ministry of Pensions, Highbury Group of Hospitals.—Sen. M.O. £500.

Bradford City.—Asst. Sch. M.O. £600.

Brighton, Royal Sussex County Hospital.—Hon. P.

Bristol Royal Infirmary.—Third Hon. Asst. Anaesthetist.

British Guiana.—Asst. M.O.H. £500.

British Hospital for Mental Disorders and Nervous Diseases, 72, Camden-road, N.W.—Hon. Phys.

Cardiff City.—Two Asst M.O.'s. Each £600.

Cardiff, Prince of Wales' Hospital for Cripples and Limbless.—Res. H.S.

Derby County Borough Isolation Hospital and Sanatorium.—Res. M.O. £550.

Derbyshire Royal Infirmary.—H.S. £200.

Devesbury County Borough.—M.O.H. £900.

Durham County and Sunderland and Eye Infirmary, Stockton-road, Sunderland.—H.S. £450.

Hammersmith Parish.—Dist. M.O. and Public Vaccinator. £150. Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50.

Hospital for Diseases of the Throat, Golden-square, W.—Hon. Surg. Reg.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each at rate of £50.

Hull and Goole Port Sanitary Authority.—Asst. M.O.H. £750.

Johannesburg, University of the Witwatersrand.—Sen. Lecturer in Dental Anatomy, Physiology, and Histology. £450.

Liverpool County Borough, Local Education Authority.—Three Jun. Asst. School M.O.'s. £600.

Liverpool Eye and Ear Infirmary.—H.S. £100.

Manchester and District Radium Institute.—Asst. Radiologist. £500.

Manchester Royal Infirmary.—Asst. Res. Surg. O. at rate of £200. Ministry of Health, Whitehall, S.W.—M.O.'s. £800.

Newcastle-upon-Tyne City Hospital for Infectious Diseases.—Res. Med. Asst. £350.

Newcastle-upon-Tyne, City and County of.—Tub. M.O. £750.

Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. P. to Elect. Dept.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Prince of Wales's General Hospital, Tottenham, N.—H.S., Spec. H.S., H.P. Each at rate of £150. Jun. H.S. and Jun. H.P. Each at £110. Hon. Surg. Reg. and Hon. Med. Reg. Each £200. Also Hon. Asst. S. to Ear, Nose, and Throat Dept.

Putney Hospital, Lower Common, Putney, S.W.—R.M.O. £150.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstet. S.
 Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.
 Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. at rate of £250.
 Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
 Royal Chest Hospital, City-road, E.C.—Phys.
 Royal Dental Hospital of London, Leicester-square, W.C.—Hon. Asst. Dent. S.
 Sheffield Royal Infirmary.—H.S. £80.
 Sheffield, University Royal Hospital.—Asst. Pathologist and Demonstrator of Pathology.
 Shrewsbury, Royal Salop Infirmary.—H.S. £250. H.P. at rate of £160.
 South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Asst. for Ophth. Dept. and Clin. Asst. for Surg. Dept.
 West African Medical Staff.—Medical Officers.

Births, Marriages, and Deaths.

BIRTHS.

JACOB.—On March 22nd, at Bentley, Grays, Essex, the wife of Dr. L. G. Jacob, of a daughter.
 SMART.—On March 19th, at Netherhayes, Seaton, Devon, the wife of A. H. J. Smart, M.B., M.R.C.S., of a son

MARRIAGES.

ANTHONY—COURT.—On March 14th, at Marylebone, Wilfred Mark Anthony, M.B., B.S. Lond., to Dorothy Court, M.B., Ch.B. Edin., youngest daughter of the late Dr. and Mrs. Court, formerly of Bolton.

DEATHS.

HUES.—On March 16th, at Gloucester, Frank Hues, M.R.C.S., Dial House, Handsworth, Birmingham, aged 60.
 LONGHURST.—On March 20th, at the Homestead, Chandlers Ford, Hampshire, Arthur E. T. Longhurst, M.D., aged 94.
 MAKEIG-JONES.—On March 18th, suddenly, at Conisboro, Seaton, Devon, William Makeig-Jones, M.D., J.P., aged 72 years.
 MALDEN.—On March 19th, at Clarendon-place, Leamington Spa, Frank James Malden, M.D., aged 63 years.
 MCGREGOR-ROBERTSON.—On March 17th, suddenly, Joseph McGregor-Robertson, M.A., M.B., C.M., of Buckingham-terrace, Glasgow, W.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

LANCASHIRE'S PANEL PRESCRIPTIONS.—The returns of the Lancashire County Insurance Committee show that the number of prescriptions has risen from 1,787,756 in 1922, to 2,026,460 in 1923 and to 2,438,273 in 1924. The corresponding numbers on the panel were 601,096, 617,577, and 629,907. The cost per prescription in the same order was 9d., 8-65d., and 8-06d. The total cost of medicines supplied to insured persons has risen from £67,070 in 1922 and £73,104 in 1923 to £89,983 last year. The average cost per insured person was 26-77d. in 1922, 28-41d. in 1923, and 34-28d. in 1924. The Southport Insurance Committee report that the total cost of medicines has risen from £2083 in 1922 and £2171 in 1923 to £2545 last year. The number of prescriptions in these years were 57,406, 61,585, and 69,691.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee of the Fund 42 cases were considered and £642 11s. voted to 40 applicants. The following is a summary of the new cases relieved :—

Widow, aged 51, of M.D. Glasg., who practised in Glasgow and died in May of last year. Applicant is left with three sons, ages 19, 18, 13. The eldest is a dental apprentice, the second one a junior clerk at 15s. a week, and the youngest is at school. Applicant's only income is a share of a trust, £32; the estimated profit from one boarder 5s. a week and other charities have granted her £38. Rent and rates come to £126 per annum and the house is rented to May, 1925. Applicant is endeavouring to find a smaller one. Voted £20.

Daughter, aged 59, of M.D. Edin. who held a Government appointment in China and died in 1867. For the last 30 years she has maintained herself by painting Christmas cards, but suffering from neuritis impaired her capacity for earning. Last few years has been subject to hemiplegia which has left applicant partially disabled. Only income an annuity of £50. Rent £27 per annum. Voted £20.

Daughter, aged 28, of M.B. Edin. who practised in Perthshire. Applicant has been trained as a milliner, and her aunt found that her surroundings were unsuitable and removed her. The aunt is now endeavouring to get her to a cousin in Montreal who has a millinery business and has managed to raise the money with the exception of £20. Voted £20.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

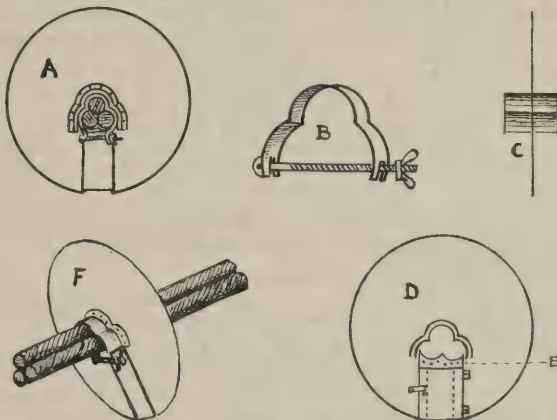
Notes, Comments, and Abstracts.

RAT-GUARDS FOR SHIPS' HAWSERS.

By CHARLES F. WHITE, M.B., CH.B. MANCH.,
 D.P.H., D.T.M. LIVERP.,

ASSISTANT MEDICAL OFFICER OF HEALTH, PORT OF LIVERPOOL.

IN view of the world-wide distribution of plague the problem of how to prevent the passage of rats between ships and the shore is of great importance in every seaport. No absolutely efficient and at the same time practicable method has yet been devised. Most countries require rat-guards to be fixed on all mooring-ropes, and certainly rats do use ropes as easily as we use the highway. I have seen rats run down an ordinary 8-in. rope at an angle of 45° with perfect confidence and safety. It is therefore necessary to guard ropes, but it is reasonable to suppose that rats will use the easiest means of travelling from ship to shore or shore to ship. Consequently it is futile to put rat-guards on the mooring-ropes of a ship with low free-board lying close against a quay, for naturally the rats will then go over the ship's side. This may be prevented by breasting the ship off four to six feet from the quay. But breasting off adds very considerably to the cost of loading and unloading cargo because of the longer lift necessary. Indeed, in the case of small ships it may mean a double lift. Such a tax on trade is not justified as a routine procedure. Where there is grave risk of the importation of plague infection, all efficient preventive measures are justified, because the interest of the individual ship must be subordinated to the interest of the public health and of other shipping. If plague preventive measures are to be applied,



A. Front view of rat-guard showing three ropes clamped by steel spring. Outside the spring is the collar and below the door, shut and providing no foothold for rats. B. Steel spring for three-rope guard with screw clamp. C. Side view of guard showing projection of collar on each side. D. Reverse side of disc showing hinges and fastening of door. E. Sheet rubber fitting on top of door. F. Guard fixed on mooring-ropes.

not only must the vessel be breasted off from the quay, great care being taken in placing the dummy barges so that rats cannot jump on to them from the bulwarks or through hawse pipe, &c., but also efficient guards must be placed on all mooring-ropes, even wires, and the gangways must be carefully watched or hoisted not only during the night, but at any time when conditions are quiet enough to tempt the rats abroad. Further, ropes hanging down to fenders or swinging loose may provide a means for rats to go to and from ships. The agility of the rat, particularly the black rat, must be seen to be believed. Lastly, undoubtedly rats go to and from ships in cargo, and when plague is suspected, either thorough fumigation must be carried out before the cargo is discharged, or every package that could conceivably harbour rats must be searched on the quay immediately it is landed.

Effective plague prevention is necessarily an elaborate and expensive proceeding, and cannot be applied as a routine to all ships. Some risk must be taken, but it should be reduced to the minimum that is practicable without laying an intolerable burden on trade. In attaining this minimum, rat-guards are undoubtedly valuable, but it is submitted that a general order that all ships should affix them to their ropes is unnecessary and may, in the case of small ships close to the quay, be ridiculous. Rat-guards should be ordered at the discretion of the officers of the Port

Sanitary Authority, but when they are ordered, an efficient type, properly applied and maintained in position, should be insisted on, because many ships' officers appear to think that any piece of tin applied to a rope will pass as a rat-guard.

After various experiments, I have no doubt that the plain sheet metal rimless disc 3 ft. in diameter, when properly fixed and retained at right angles to the rope, presents an almost insuperable obstacle to rats which they will not tackle at all unless hard pressed. I have seen them gain the edge of the disc when driven, but they have always fallen into the dock in attempting to reach the rope on the opposite side.

Hitherto the 3 ft. metal guard has been made in two half sections pivoted near one edge. In application the two halves are separated and the guard is dropped over the rope, the sections then being closed round the rope and held below by a clip. The central collar is then bound close to the rope. The division of the guard down the centre greatly weakens it, with the result that it will not withstand wind or any rough usage, the parts becoming bent in different directions and eventually separating altogether. They are often kept in use long after they are quite ineffective.

A modification of this type of rat-guard has been invented by Messrs. Bird and Sutcliffe in co-operation with the officers of the Liverpool Port Sanitary Authority. The drawings will give a good idea of the essential points in construction. The guard consists of a disc of galvanised sheet iron 1/16 in. thick and 3 ft. in diameter. The edge is left raw—i.e., not wired or turned over. In the lower half is cut a door hinged and so fastened when shut that no foothold is afforded to rats. The door slit leads to the central hole through which the rope passes. Round the central hole is placed a strong collar projecting about 4 in. on each side, and riveted to the disc. In the collar is a strong steel spring clip which can be tightened by the winged nut on the bolt (Fig. B). In application the door is opened and the guard put over the rope so that the latter passes up into the central hole, where a little force is necessary to overcome the spring of the clip. The guard will now hold quite firmly, but the bolt and screw closing the opening of the clip gives additional security. The door is then closed and fastened, the upper edge having a piece of thick sheet rubber attached so as to close completely the central hole whatever the size of rope in use. In the drawings a type of guard suitable for three ropes is shown, such being frequently necessary for large ships. Types are also made for two ropes, one rope or two or three wires, and any guard will fit ropes over a range of about 3 in. difference in diameter, so that any ship may easily be supplied with a set of guards suitable to her requirements.

The advantages of this guard are:—

(1) *Ease of Application.*—The guard is easily and rapidly applied to one, two, or three ropes and needs no binding in position.

(2) *Maintenance of Position.*—Under trying conditions of wind and alternate tightening and slackening of ropes the guard has maintained its position vertical to the rope for a week's test without any readjustment whatever.

(3) *Rigidity.*—Except for the door-opening, the guard is one continuous piece of sheet metal, and is therefore very much stronger than the older type. The riveting of the collar to the disc adds greatly to the stability of the guard, while the steel spring resists the bursting strain when two or three ropes alternately slacken and tighten with the movement of the ship.

The guard costs a few shillings more than the usual pattern, but this should be amply repaid in longer life and much greater efficiency. It is certainly the most satisfactory and practicable rat-guard yet produced.

I am indebted to Mr. J. H. M. Smedley, Chief Sanitary Inspector, Liverpool Port Sanitary Authority, for making the drawings. The guards are manufactured by Fred. Moore and Co., 46-48, Park-lane, Liverpool.

CARE OF THE DESTITUTE IN THE IRISH FREE STATE.

THE Minister of Local Government and Public Health in the Irish Free State has set up a commission to inquire into the relief of the destitute sick and poor, including the insane poor. Under this general reference, particular attention is to be paid to the examination of the existing laws and administration relating thereto. Investigations will be made into the laws dealing with assistance to the sick and poor in their own homes, in order that wasteful expenditure on healthy persons who are incorrigibly idle may be avoided, and a survey will be made of present machinery for affording relief to the following destitute classes: (a) Widows and their children; (b) children without parents; (c) unmarried mothers and their children; (d) deserted children. The existing provision in public institutions for

the care and treatment of mentally defective persons will be examined and the commission will advise as to whether more efficient methods consistent with reasonable expenditure can be introduced, especially as regards the care and training of mentally defective children. Finally, with regard to the cost of relief of the destitute poor generally, the commission will inquire as to whether any change of law is desirable towards securing more equitable dependence on the local rates for persons who, having been normally resident in one poor-relief district, have become a charge upon the rates of another district.

The terms of reference of this commission are wide; they cover not only the Poor-law system (excluding medical treatment) but also the whole asylum system, and provide the opportunity for valuable reforms. It is to be regretted, therefore, that place has been found on the commission for one medical man only, nor is there any member possessed of special knowledge of the care of the insane and mentally deficient.

MEDICAL BOOKS.

WE have received from Messrs. W. and G. Foyle, Ltd., of 121-125, Charing Cross-road, London, W.C. 2, a new edition, dated March, 1925, of their catalogue of new and second-hand books dealing with medicine, surgery, nursing, and pharmacy. This catalogue covers an exceptionally wide range of medical books, and the prices asked for many second-hand copies will appeal to all doctors who feel that the necessary outlay on a medical library is nowadays a serious item of expense.

CALVES' FOOT JELLY.

CALVES' foot jelly is a very useful adjunct to sick-room diet, and the name of Messrs. Fortnum and Mason's, Ltd., 25, Kingsway House, W.C. 2, and 182, Piccadilly, W. 1, who have sent us samples of this invalid delicacy, is a guarantee of careful preparation. In order that the jelly may be of the highest efficiency, it is freshly made every day, and though in cold weather it will keep for 14 days, it is intended for immediate use. The jelly, flavoured with champagne, brandy, or lemon, is put up in screw-stoppered glass jars, the contents weighing six ounces. No preservatives are used in the preparation of the jelly.

ELIZABETH GARRETT ANDERSON HOSPITAL.

If there is one thing about which we were clear, in a world where change of view is often necessary, it was that the cross-word puzzle should not find its way into these columns. Those responsible for the management of the Elizabeth Garrett Anderson Hospital, however, have forced our hands to this extent, that we feel bound to announce that a cross-word competition is in existence in connexion with the Extension Appeal Fund of the hospital. Communications on the subject should be made to Lady Plender, the hon. treasurer, at 144, Euston-road, London, N.W. 1, and should be accompanied by 1s. or more for the list of clues of the E.G.A.H. Cross-word Puzzle.

INCORPORATED SOCIETY OF CHIROPODISTS.

THE annual convention of the society was held at the London Foot Hospital, 98, Charlotte-street, London, W., on March 20th and 21st, where a series of lectures and demonstrations was concluded by a dinner at Restaurant Frascati. Proposing the toast of the Society, Mr. Norman C. Lake said it was no good denying that at present there was a certain regrettable lack of unison between the chiropodist and the medical man, but the former could do much to bring about greater co-ordination by taking full advantage of the facilities offered by the society for gaining a sound knowledge of the rudimentary principles underlying medicine and surgery. The fault, however, was not all on one side. The medical profession were also to blame. They required educating up to the value of chiropody. During the course of his hospital practice in particular he saw large numbers of cases of various foot deformities, and those which were not sufficiently severe to demand surgical treatment, but which he was afraid the medical practitioner was generally too busy to devote proper attention to, he referred, with highly satisfactory results, to the clinic at 98, Charlotte-street. Thus many of the poorer class who had hitherto worked under great difficulty owing to foot troubles had been enabled to carry out their duties in greater comfort. That was a very valuable service which ought to be more widely known and appreciated. Dr. J. H. H. McLeod, Dr. G. Slot, Mr. T. H. Openshaw, and Dr. E. P. Cumberbatch were amongst those present, and in the course of their speeches testified to the necessity for greater use being made of qualified chiropodists not only in private practice, but in hospitals and public clinics.

In a recent advertisement of Messrs. H. K. Lewis and Co.'s publications, the price of "Lateral Curvature of the Spine," by R. W. Lovett, was inserted as 2s. 6d. net. The correct price is 12s. 6d. net.

Special Supplement
TO
THE LANCET
ON THE
SALE OF PATENT MEDICINES

I.

THE REPORT OF THE SELECT COMMITTEE OF THE
HOUSE OF COMMONS ON PATENT MEDICINES, 1914

II.

THE PROPRIETARY MEDICINES BILL, 1920

SYNOPSIS

I.

REPORT OF THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON PATENT MEDICINES

THE LAW IN FOREIGN COUNTRIES 3	EXAMPLES OF FRAUDULENT CLAIMS 12
Germany. — Austria. — Hungary. — France. — Italy. — United States.	INVENTED NAMES OF DRUGS 13
THE LAW IN BRITISH DOMINIONS 4	CHANGES IN NAME OR COMPOSITION OF REMEDIES 13
Australia (see also p. 16).—Canada.	CURE OF SYMPTOMS 13
THE LAW IN THE UNITED KINGDOM 4	CURES FOR FITS 13
Acts of Parliament.—Departments of State.—Statutory Bodies.	THE TRADE IN ABORTIFACIENTS 13
LEGAL AND OFFICIAL ANOMALIES AND CURIOSITIES 6	CURES FOR CONSUMPTION 14
PROSECUTIONS FOR FRAUD 6	FICTITIOUS NAMES 15
INADEQUACY OF EXISTING LAW 7	PRACTICES OF SECRET REMEDY VENDORS .. 15
STATISTICS OF THE TRADE IN PROPRIETARY REMEDIES 7	THE MEDICAL PROFESSION AND SECRET REMEDIES 15
THE PRESS AND SECRET REMEDIES 8	THE PATENT MEDICINE STAMP AS AN ADVERTISEMENT 15
ANALYSIS OF SECRET REMEDIES 8	FRAUDULENT APPLIANCES 15
DIFFERENT CLASSES OF PROPRIETARY REMEDIES 9	EXHIBITION OF FORMULA 16
Non-secret Remedies.—Secret Remedies.	SUGGESTED AMENDMENTS OF EXISTING LAW 17
MEDICATED WINES 10	FINDINGS 17
EXAMPLES OF SECRET REMEDIES 10	RECOMMENDATIONS 18
Mother Siegel's Syrup.—Daisy Powders.—Fenning's Fever Curer.—Antipon.—Vitadatio.—Veno's Lightning Cough Cure.—Mer-syren.—Phosferine.—Steedman's Soothing Powders.—Matrozone. — Burgess's Lion Ointment.—No-Germo.	

II.

TEXT OF THE PROPRIETARY MEDICINES BILL

CONTROL OF MANUFACTURE AND SALE OF PROPRIETARY MEDICINES AND APPLIANCES.. 19	REMOVAL FROM REGISTER OF MEDICINES AND APPLIANCES 21
PROHIBITION OF SALE, ETC., OF REMEDIES FOR CERTAIN DISEASES 20	APPEAL AGAINST REMOVAL FROM REGISTER .. 21
OFFENCES IN CONNEXION WITH ADVERTISEMENTS 20	PENALTIES 21
REGISTER OF MEDICINES AND APPLIANCES .. 20	SAVING FOR SALES ON MEDICAL PRESCRIPTIONS AND SALES OF EXISTING STOCKS 21
REGULATIONS 20	INTERPRETATION 21
	SHORT TITLE AND EXTENT 22
	SCHEDULE 22
PROPRIETARY MEDICINES BILL: SECOND READING IN THE HOUSE OF LORDS 22	

THE SALE OF PATENT MEDICINES

IN 1914, a Select Committee of the House of Commons was appointed to consider and inquire into the question of the sale of patent and proprietary medicines and medical preparations and appliances, and advertisements relating thereto, and to report what amendments, if any, in the law are necessary or desirable. The Committee consisted of the following: Mr. Charles Bathurst, Mr. Cawley, Dr. Chapple, Sir Henry Dalziel, Mr. Hayden, Mr. Ingleby, Mr. Glyn-Jones, Mr. Haydn Jones, Mr. Lawson, Mr. Lynch, Sir Philip Magnus, Mr. Newton, Sir Henry Norman, Mr. O'Grady, and Mr. Hill-Wood, with Sir Henry Norman as chairman, and they were empowered to send for persons, papers, and records, and to order analyses. The following is the Report agreed upon by the Select Committee of the House of Commons and issued to the press on August 26th, 1914.

I.

REPORT OF THE SELECT COMMITTEE ON PATENT MEDICINES

1. Your Committee, during the three sessions of Parliament over which their labours have extended, have held 33 public sittings, and have examined 42 witnesses, of whom more than 14,000 questions have been asked.

2. Of these witnesses nine represented Government Departments, either of this country or Australia, 11 were medical men, five were analysts, four were wholesale or manufacturing druggists, and nine were manufacturers or proprietors of proprietary medicinal preparations. Fourteen analyses have been made for us.

3. In the evidence given before your Committee, the following public authorities or associations have been represented: The Customs and Excise, the Privy Council Office, the Home Office, the Local Government Board, the Director of Public Prosecutions, the Government Laboratory, the Commonwealth of Australia, the General Medical Council, the Royal Society of Medicine, the Royal College of Physicians, Edinburgh, the British Medical Association, the Pharmaceutical Society, the White Cross League, the Proprietary Articles Section of the London Chamber of Commerce, the Association of Wholesale Druggists, and the Association of Medical Herbalists.

Your Committee have also received resolutions from representative bodies, and a large number of communications from private individuals.

4. Your Committee have received from the Foreign Office, the Colonial Office, and from other sources, information as to the existing state of the Law and its administration, in relation to the subject matter of their inquiry, in the principal foreign countries, and in the Dominions. The greater part of this information will be found in the Appendices, but we think that it may be useful, before considering the sale and advertisement of secret remedies in this country, to present the following summary of the information supplied to us of existing laws in foreign countries and British Dominions.

THE LAW IN FOREIGN COUNTRIES.

5. (1) *Germany*.—In Germany a medicine itself cannot be patented, but only the process used in its production; "pharmaceutical specialities," however, can be protected by registered trade-marks. The

retail trade in a number of "pharmaceutical specialities" is governed in the several Federal States by regulations based upon decisions of the Bundesrat of 1903 and 1907.

Under the regulations a number of preparations are grouped by name in two Schedules A and B, and these may only be sold in pharmacies. Those in Schedule A require a medical prescription as a condition of their sale if they contain drugs of powerful effect, or if the pharmacist is ignorant of their composition. For those in Schedule B, a prescription is in every case necessary. None of these preparations may be publicly advertised or recommended, nor may recommendations or testimonials be included in the package or covering with which they are sold.

These regulations are supplementary to the general regulations governing the conditions under which drugs of powerful effect may be sold, whether proprietary preparations or not.

(2) *Austria*.—In Austria the effect of the law appears to be that no proprietary medicinal preparation may be retailed, the composition of which is unknown, and which has not been officially authorised for sale.

(3) *Hungary*.—In Hungary no secret remedy or pharmaceutical speciality may be sold without the sanction of the Government Department concerned; known and approved remedies may not be sold under changed names; prices must be fixed according to the wholesale prices of drugs; and the recommendation issued with the remedy must also be officially approved.

(4) *France*.—In France the sale of secret remedies, whether of French or foreign origin, is prohibited by law, though it would appear to be legal to sell known and approved remedies under other names, provided the remedy is not advertised in such a way as to give the impression that it is a new discovery. A decree of 1810 provides machinery by which inventors of new remedies or compounds may obtain official recognition of and remuneration for their discoveries.

(5) *Italy*.—In Italy all patent medicines must be submitted, with their prescription, to the Ministry of the Interior, and the prescription must accompany all packets, &c., offered for sale. False or grossly exaggerated statements, whether of contents or effects, are punishable by fine. Your Committee, however, are informed that the law is not rigidly

enforced, and that an approximate statement of the contents of a preparation is considered sufficient.

(6) *The United States.*—In the United States the sale of medical preparations is regulated by the Food and Drugs Acts. There appear to be no separate State laws dealing with the subject. Proceedings were taken under the Act of 1906 in several cases against vendors of fraudulent nostrums for which extravagant claims were made, their drugs were declared "misbranded," and the vendors were fined. A decision of the Supreme Court, however, in 1911 confined the term "misbranding" to false statements regarding the contents of a medicine, and in consequence an amending Act was passed in 1912, Section III. of which provided that that part of Section 8 of the Food and Drugs Act of 1906, defining what shall be misbranding in the case of drugs, should be amended by adding the following paragraphs: "That the term 'misbranded' as used herein shall apply to all drugs or articles of food or articles which enter into the composition of food the package or label of which shall bear any statement, design or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State territory or country in which it is manufactured or produced. That for the purposes of this Act an article shall also be deemed to be misbranded—in the case of drugs:—*First*: If it be an imitation of or offered for sale under the name of another article. *Second*: If the contents of the package as originally put up shall have been removed in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate or acetanilide, or any derivative or preparation of any such substances contained therein. *Third*: If its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article or of any of the ingredients or substances contained therein, which is false and fraudulent."

THE LAW IN BRITISH DOMINIONS.

6. (1) *Australia.*—Your Committee have heard much valuable evidence regarding the law and its administration in Australia from Dr. W. Perrin Norris, who until recently was Director of Quarantine under the Commonwealth Government, and is now Chief Medical Officer for the Commonwealth in London, and from Mr. H. E. Neal, of the High Commissioner's Office.

Under this administration strict supervision is exercised upon all printed matter, labels, &c., accompanying medicines imported into the Commonwealth; extravagant or otherwise objectionable statements are required to be modified or excised; and if necessary the goods are not allowed to be imported until such modifications have been made. In a few cases medicines or medical appliances have been refused admission absolutely. Your Committee are informed that this is carried out without any considerable difficulty, and they have in the course of their inquiry noticed numerous cases in which there are substantial differences between the labels, &c., accompanying goods sold in this country, and the same goods as sold in Australia. (See Par. 52.) It is to be noted, however, that the action of the Commonwealth authorities is confined to dealing with the goods at the port of entry, and the control of the conditions of retail sale, or internal manufacture, is in the hands of the respective State Governments; but it would appear that the State laws tend to approximate to those of the Commonwealth, and in some cases even to go beyond them. Thus, in Western Australia, under recent statutory regulations, the formula

of every proprietary medicine is required to be stated on the label, or alternatively, deposited with the Department of Public Health. In New South Wales, by the Pure Food Act of 1908, a drug is declared to be falsely described when it "bears a statement design or device regarding such drug or the ingredients or substance contained therein, which is false or misleading in any particular." Under the regulations, moreover, if any one or more of some 42 scheduled drugs or poisons be contained in a preparation, the name of the drug, and the proportion of it that is present, must be stated on the label. In Tasmania, under the Food and Drugs Act, 1910, the health officer may examine and report upon drugs and appliances advertised, and may compare the results with any advertisement; the reports may be published in the Gazette and newspapers; and the Governor may prohibit the advertising or sale of any drug or appliance which is held to be injurious to health or "which by reason of its inactivity or inefficiency is useless for the advertised purpose of cure."

(2) *Canada.*—In Canada legislation is on different lines, every importer, manufacturer or agent being required to procure annually a numbered certificate of registration, and the label being required to bear the number and name under which the medicine is registered; moreover, if any of certain specified drugs are present in a greater proportion than is officially authorised, the names of such drugs must be conspicuously printed on the labels and wrappers.

7. The sale of remedies of which the composition is secret is thus restricted in varying degrees by law in the principal foreign countries, and in the British Dominions. This was confirmed to us in evidence by a number of proprietors of secret remedies, who giving various reasons for their action, informed us, that as a matter of fact they export to foreign countries little or none of their products. Of the law in the United States and Australia we shall have occasion to speak later. We pass now to the law and its administration in the United Kingdom.

THE LAW IN THE UNITED KINGDOM.

8. We have found much difficulty in arriving at a clear appreciation of the law and its administration. In support of this statement it may suffice to refer to the evidence of the witness from the Home Office, who admitted that there was no department of the Government which from its own experience, or from the knowledge officially obtained by it, could give us information or advice regarding the general scope of our inquiry. The law is contained in fragmentary form in parts of a number of overlapping statutes dating from 1804; when administered at all it is administered by a number of Departments of State of whose differing functions there is neither definition nor consistent practice; and owing to the rare occasions on which cases under the Statute Law have been brought before the courts, there is no body of precedents to afford private or official guidance.

9. Fiscal duties in respect of medicines were originally imposed in 1783. The present law requiring a licence to sell, or imposing a duty upon medicine sold, dates from three Acts of 1802, 1804, and 1812. In 1864 the duty on the licence was made a duty of Excise, and in 1875 a uniform duty of 5s. was imposed for the licence. There are two principal exemptions from duty, namely:—

(1) Pure drugs, that is, drugs vended entire, without any mixture or composition with any other drug, by any qualified person, or person holding a licence; and (2) well-known and admitted remedies. (As a matter of fact, the Courts have only decided this exemption in one case—namely, ammoniated tincture of quinine.) There is no duty upon these remedies in Ireland, if manufactured there.

The scale of duties, unchanged since 1804, is as follows:—

Medicines of the price or value of 1s. or under, 1½d.

Medicines of the price or value exceeding 1s., but not exceeding 2s. 6d., 3d.

Medicines of the price or value exceeding 2s. 6d., but not exceeding 4s. 6d., 6d.

Medicines of the price or value exceeding 4s., but not exceeding 10s., 1s.

Medicines of the price or value of 10s.–20s., 2s.

Medicines of the price or value of 20s.–30s., 3s.

There were originally two higher classes of duty, under 50s. and above 50s., but these have ceased to be demanded and the labels are no longer printed.

10. The sale and advertisement of patent and proprietary medicines, apart from fiscal provisions and from the Common Law, may fall under several Acts of Parliament, the administration of four Departments of State, and the activities of two statutory bodies.

(a) Acts of Parliament.

(1) *The Stamp Acts*.—The duties upon medicines are Medicine Stamp Duties under the Stamp Acts.

(2) *The Pharmacy Acts, 1868 and 1869, and The Poisons and Pharmacy Act, 1908*.—A poison is any drug named in the schedules to the latter Act. Nothing else, in the view of the law, is a poison. Any medicine containing a poison must bear the word "Poison," or if containing a poisonous substance mentioned in Section 5 of the former Act, the word "Poisonous." Medicinal preparations may also come within the terms of the Arsenic Act, 1851.

(3) *The Merchandise Marks Act, 1887*.—Under this Act it is (shortly) an offence to apply a false trade description to goods, or to sell goods so falsely described, unless the person prosecuted proves that he acted innocently in the matter.

(4) *The Sale of Food and Drugs Acts, 1875 and 1899*.—Under Section 27 of the former Act it is an offence wilfully to give with an article sold a label falsely describing such article. But under Section 6 of the same Act an offence shall not be deemed to be committed "where the drug or food is a proprietary medicine or is the subject of a patent in force." The appointment and duties of public analysts, and the procuring and analysing of samples of drugs by local authorities are prescribed by these Acts.

(5) *The Indecent Advertisements Act*.—Under this Act it is an offence to affix or inscribe on any house or building an advertisement relating to disease connected with sexual intercourse.

(6) *The Larceny Act*.—Under Section 88 it is an offence to obtain money by false pretences from any person with an intent to defraud.

(b) Departments of State.

(1) *The Privy Council Office*.—The Privy Council exercises a certain amount of supervisory and regulative influence through their charter or otherwise upon the qualifications and conduct of doctors, dentists, chemists, veterinary surgeons, and midwives. An Order in Council, following upon a recommendation of the Pharmaceutical Society, is necessary to add a drug to the schedules of poisons.

(2) *The Home Office*.—The Home Secretary answers questions in the House of Commons, on behalf of the Lord President of the Council, on the general subject of proprietary medicines, and he has power to direct the Director of Public Prosecutions to take proceedings. Complaints of fraud would properly be made to the Home Office, as the general supervising authority over the police.

(3) *The Local Government Board*.—This department controls the administration of the Sale of Food and Drugs Acts by the 234 local authorities of England and Wales.

(4) *The Patent Office*.—The Comptroller-General informed us that 312 patents granted to 1912 for medicine and medicinal preparations are in force. There are very few patents of the remedies to which our inquiry was specially directed, as a patent cannot be secured without (a) proof of usefulness and novelty, and (b) disclosure of formula.

(c) Statutory Bodies.

(1) *The General Medical Council*.—This body is charged by the Medical Act, 1858, with publishing from time to time the "British Pharmacopoeia," an authoritative standard and guide to the uniformity and purity of drugs employed by medical men. The last edition was published fifteen years ago. A new edition is at last in the press.

(2) *The Pharmaceutical Society*.—This body, created by Royal Charter in 1843, is charged by the Pharmacy Acts with a measure of control over the sale of proprietary articles containing scheduled poisons. It has no powers in relation to other proprietary articles. It moves the Privy Council to add to the schedule of poisons.

11. The foregoing summary, if left without comment, might be thought to indicate an adequate body of law and administrative authority to deal with the subject of our inquiry. This is far from being the case. So far as the prevention of fraud is concerned, the before-mentioned statutes or powers are of little value. To show this in detail in each instance would be to overload our Report with details. We confine ourselves, therefore, to a brief indication of the facts or the authority upon which we base the above opinion.

12. There is no Department of State officially concerned with the sale and advertisement of these articles. The witness from the Home Office said to us: "This is one of many subjects which no Department of State claims as its own." He further said: "The Home Secretary, as regards patent and proprietary medicines as such, has no powers or duties." And he added: "Proceedings for fraud against proprietors or vendors of proprietary medicines on the ground that they cannot cure the diseases they mention are practically unknown." As regards the Privy Council in this connexion, it is merely a clerical vehicle for passing on any question to some other department, possessing itself neither knowledge nor adequate staff to deal with it. And even its function of securing Order in Council is exercised with such laxity that whereas the Pharmaceutical Society passed resolutions in 1882, 1886, 1893 (moved by the Local Government Board), and 1899, requesting that various poisons, including carbolic acid, which was responsible for 200 fatalities a year, should be added to the schedule of poisons, it was not until 1900 that this recommendation was carried out in part. It thus took the Privy Council 18 years to add carbolic acid to the schedule of poisons. The President of the Pharmaceutical Society not unnaturally expressed to us the opinion that "a change in the law, or, at any rate, a great change of procedure, is urgently necessary."

13. The Merchandise Marks Acts give no specific authority to local authorities to prosecute for a false trade description, and no private individual has yet seen fit to do so in respect of a proprietary medicine. Moreover, an action would only lie in the case of a medicine not being what it was alleged to be; for instance, a drug not quinine described as being quinine. Further, it does not apply to fraudulent advertisements, except in so far as such advertisements accompany the goods.

14. In the Sale of Food and Drugs Act, Section 6, subsection (2) specifically exempts proprietary and

patent medicines from its operations. Even if this exemption were abolished this section of the Act would still be practically useless, as a purchaser asking for X's pills and getting X's pills would be getting an article "of the nature, substance, and quality of the article demanded."

15. The Indecent Advertisements Act does not include advertisements in newspapers.

LEGAL AND OFFICIAL ANOMALIES AND CURIOSITIES.

16. The anomalies and curiosities of the law and official practice are numerous and remarkable. For example, under the Stamp Act foreign medicines are liable to duty merely because they are foreign, but since 1885, when Mr. Childers was Chancellor of the Exchequer, the Commissioners of Inland Revenue have disregarded the difference between British and foreign preparations as a concession, according to one witness, to those who contended that the duty violated the doctrines of free trade. Again, any number of different names may be secured as trade-marks for the same drug. Thus "soamin" is "atoxyl," and the drug acetyl-salicylic acid is sold as "Aspirin," "Saletin," "Salacatin," "Xaxa," &c., and a chemist receiving a prescription with "Xaxa," for instance, on it, cannot substitute acetyl-salicylic acid, though he may know the two substances to be identical, without rendering himself liable to an action for damage by the proprietor of "Xaxa." Acetanilide is sold as "Antikamnia" (the drug sold in America under this name was formerly acetanilide, but in consequence of a change in the law it is now phenacetin in America, but is still acetanilide in this country), "Ammonol," "Antitoxine," and "Phenalgin"; "phenolphthalein" simple or compound, is sold as "Aperione," "Laxans," "Laxatin," "Laxatol," "Laxatoline," "Laxiconfect," "Laxoin," "Laxophen," "Paraphthalein," "Phenolax," "Prolicin," "Purgen," "Purgo," "Purgolade," "Purgella," and "Purgylum"; formamine or urotropine (hexamethylene-tetramine, or commercial varieties of it) is sold under the proprietary names of "Aminofarm," "Cystamin," "Metramine," "Urisol," "Uritone," "Xametrin," "Vesalvine," &c. Again, the retailer of "Wincarnis" must hold an off wine licence (costing at least £2 10s.), but the Commissioners of Inland Revenue decided that the addition of one gr. of quinine hydrochloride to the fluid oz. makes it a medicated wine, and the retailer need only hold a patent medicine licence (costing 5s.). Thus the proprietors of a medicated wine are naturally induced to add precisely that amount of quinine which the Commissioners decide will enable it to be sold by retailers holding the less expensive licence. Again, a manufacturer of dutiable preparations can export them to himself in a foreign country without paying British duty; if he exports them to another person he must pay duty. But he can transfer them to himself in Ireland and export them from there to any person without paying duty upon them. Again, in all cases where the name of an ailment is mentioned in connexion with a medicine, the Commissioners have since 1902 required duty to be paid; where no ailment, but only the organ of the body which is the seat of the ailment is mentioned, the medicine is not dutiable. Thus "cough mixture" is dutiable, "chest mixture" is not; "liver tonic" is dutiable, "liver mixture" is not; "corn paint" is dutiable, "toe paint" is not; "headache powder" is dutiable, "head powder" is not. Millions of powders for headache now escape duty under this decision, the name having been changed from the former to the latter. An alleged cure for asthma only fails to escape duty because no organ of the body can be named as specially the seat of that ailment. Asthma cigarettes, however, are not regarded as a preparation "to be used or applied externally or internally, as a medicine or medicament." Therefore, they pay no duty. But smelling salts are dutiable. Again, if the original maker of a well-known medicine

in which no proprietary rights are claimed affixes a label recommending its efficacy, he must pay stamp duty. But a retail chemist may purchase it from him and affix such a label without paying duty. Again, there is no duty upon waters containing carbonic acid gas, or solid preparations for impregnating water with this gas. The Court ruled, therefore, that powders like "Eno's Fruit Salt," "Kutnow's Powder," "Pyretic Saline," &c., are not dutiable, though proprietary medicines recommended for ailments, on the ground that when mixed with water they effervesce by the generation of carbonic acid. Again, an advertisement, not in itself indecent, relating to complaints arising from sexual intercourse, becomes indecent in law if affixed or inscribed anywhere, but not if published in a newspaper, put in a letter-box, or thrown down an area; and such advertisements are frequently exhibited in shop windows.

The above examples illustrate the remark made to us by the solicitor to the Chemists' Defence Association that the existing state of the law constitutes "a financial and legal chaos," and the view expressed by the Solicitor to the Customs and Excise, who said, "We have long felt that the whole of this law is very much out of date." From the traders' point of view it is very difficult to know what articles are dutiable and what are not, and the Commissioners themselves confess that they do not enforce the Act strictly. Finally, to compare British with foreign law in one instance, we may refer to the case of the American Macaura. He is stated by one witness to have gained £60,000 by his recent campaign in England of advertising, exhibiting, and selling an alleged vibratory cure for many ailments, whereas for the same procedure in Paris he has just been sentenced to three years' imprisonment and a fine of £120.

PROSECUTIONS FOR FRAUD.

17. Successful prosecutions for fraud in connexion with the sale of secret remedies have been so few as to be negligible. In the first place, as we were informed by the Assistant-Director of Public Prosecutions, at present there is no person whose duty it is to see whether patent medicine manufacturers are making fraudulent claims. And when a prosecution is undertaken, it usually breaks down for one of two reasons: (1) It is impossible to prove guilty knowledge—that is, "wilful" misstatement, often because the medicine is usually sold by persons ignorant of their composition. (2) The defendant is able to produce witnesses who state that the medicine has been beneficial to them. A drug or appliance, for example, is advertised to cure deafness. It may be a drug or treatment which is commonly used by the medical profession to benefit specific or simple cases. The vendor can thus produce a few cases which have derived benefit, whereas in thousands of other cases it is a sheer fraud. (3) In grave cases, like drugs sold to procure abortion, the prosecution could hardly produce a witness to say, "I bought this drug believing it would enable me to commit a crime; I found it would not, and I am defrauded." We have privately brought to the notice of the Director of Public Prosecutions several cases obviously of the most fraudulent or offensive description, and have requested him to prosecute. In each case, with every desire to do so, he has after careful consideration explained to us the legal grounds on which, in his opinion, it would be impossible to secure a verdict.

18. One example of an unsuccessful prosecution of a retail vendor may usefully be given. In 1907 the Liverpool Corporation made a praiseworthy attempt to punish fraud in the case of a preparation, the materials of which, according to the medical officer of health, cost about a penny and which was sold for 2s. 9d. The retail vendors were prosecuted on the ground that the statement on the label that the preparation "contains the active ingredients and digestive qualities of the gastric juice in a highly

concentrated and permanent form," was false and fraudulent. An analyst's certificate was produced, showing the contents to be water, with traces of phosphoric acid, hydrochloric acid, nitric acid, and calcium phosphate, flavoured with chloroform and a vegetable bitter, and coloured with cochineal. The only part of this resembling the gastric juice was the minute quantity of hydrochloric acid. But it was impossible to prove guilty knowledge on the part of the vendors, the case against them was withdrawn, and they were allowed five guineas costs. It is not surprising that the medical officer of health of the City of Liverpool should add, in supplying us with the above facts, "Further analyses have been made of patent medicines, but no legal proceedings have been taken." It should be pointed out that the prosecution was not taken against the manufacturers of the remedy.

THE INADEQUACY OF EXISTING LAW.

19. In opposition to any change in the law affecting the sale or advertisement of secret remedies, it was contended to us on behalf of the Proprietary Articles Section of the London Chamber of Commerce that false statements or false pretences in respect of such remedies are already adequately dealt with either by Common Law or by certain existing Acts; and that adequate powers of prosecution are already vested in certain officials and Departments of State. After most careful and prolonged consideration, in public and in private, we are convinced that this is not the case.

20. By strict interpretation of existing statutes, of the precedents of Common Law, or of the authority of officials and departments, considerable powers of prevention and prosecution may exist nominally. But we are satisfied that the difficulties of bringing these powers into successful operation are so numerous and great that for all practical purposes the sale and advertisement of secret remedies (unless they contain scheduled poisons) is unrestricted by law in this country.

21. In the final support of this view we would quote the two most weighty official opinions available to us. Mr. Guy Stephenson, Assistant Director of Public Prosecutions, assured us that "the difficulty of successfully prosecuting for any false statement with regard to the powers of a medicine, is almost insuperable." He then gave evidence as follows:—

Chairman: That is to say, the law is practically non-existent, speaking generally?

Witness: If you like to put it in that way.

Chairman: Or, in other words, the vendors of patent and proprietary medicines can practically do what they like, so long as they keep outside the bounds of gross and obvious impropriety?

Witness: It would seem so—yes.

And Mr. MacFadden, M.B., of the Local Government Board, gave the following evidence:—

Chairman: In fact, we may take it then, as a general summary of your view, that the existing laws are not operative as regards this class of articles, and that they must almost necessarily be inoperative?

Witness: That is so.

22. The situation, therefore, as regards the sale and advertisement of patent and proprietary medicines and articles may be summarised in one sentence as follows. For all practical purposes British law is powerless to prevent any person from procuring any drug, or making any mixture, whether potent or without any therapeutical activity whatever (so long as it does not contain a scheduled poison), advertising it in any decent terms as a cure for any disease or ailment, recommending it by bogus testimonials and the invented opinions and facsimile signatures of fictitious physicians, and selling it under any name he chooses, on the payment of a small stamp duty, for any price he can persuade a credulous public to pay.

STATISTICS OF THE TRADE IN PROPRIETARY REMEDIES.

23. We pass now to an examination of the trade in proprietary remedies as it exists in this country, and in the first place, to its fiscal and financial side. The yield of the duties was, to March 31st, 1914, in respect of 43,156 licences, £10,791, and in respect of duties upon medicines apart from licences, for 1912, £327,856; for 1913, £328,318; for 1914, £360,376, thus showing an increase of £31,958 during the past 12 months, the greatest advance in one year for many years. Of the whole revenue all but a very small sum was paid in England. The number of medicine stamps issued in the year ending March 31st, 1908, was 41,757,575, of which 33 millions were for 1½d., 7½ millions for 3d., and one million for 6d. For the year ending March 31st, 1914, it was 44,427,166, of which 34 millions were for 1½d., nearly 9 millions for 3d., and a little over one million for 6d. The increase is thus rather over 2½ millions in six years. The Customs and Excise informed us that it was impossible to tell from these figures what the total sales amounted to, and therefore whether the consumption is increasing or not. But on the assumption that all the 1½d. stamps were put upon medicines retailed at 1s. 1½d. (which is not entirely the case), the sales of these would reach about £1,930,000, and that all the 3d. stamps were put upon medicines retailed at 2s. 9d., the sales of these would be about £1,275,000, or nearly £3,200,000 for these two classes of preparations alone. The President of the Pharmaceutical Society of Great Britain, speaking with 36 years' continuous experience as a retail chemist, informed us that the sale of proprietary remedies has very largely increased during the past ten years.

24. We would draw attention, however, to the probability that the sales of secret remedies will tend to decrease from the operation of the National Insurance Act. Now that the millions of insured persons can obtain medical advice, prescriptions, and drugs free of cost, they will naturally be less likely to attempt self-medication in order to save doctors' fees.

25. There is no record at the Custom House of the importation of these preparations. It is therefore impossible to discover from our own records the respective proportion of home-made and imported remedies, but without doubt a large quantity comes from the United States. Prof. Cushny stated that this has increased of late owing to greater restrictions upon their sale there. As he put it, "We are getting the benefit of the legislation of the United States. We are getting a lot of quack remedies which were formerly confined to the United States." These enter free of all import duty except upon their content of materials in themselves dutiable. One witness quoted an official American statement to the effect that about 15,000,000 packages of proprietary remedies were exported from the United States to this country in 1911, of a total value of about £400,000.

26. While the trade in certain classes of secret remedies is carried on, often as mail-order business only, with trifling capital, in other cases the amount of capital invested in manufacturing is very large. The annual turnover of the proprietor of "Beecham's Pills," selling over a million pills a day, Sundays included, is about £360,000 a year. The proprietors of "Seigel's Syrup," who have sold 100 million bottles in 40 years, pay upwards of £40,000 a year in wages alone.

27. In most cases the principal expenditure in connexion with secret remedies is in advertising. The proprietors of "Wincarnis," for example, spend thus £50,000 a year, employing between 30 and 40 persons in their advertising bureau. "Elmer Shirley," a witness informed us, spent at one time £1000 a week. The proprietors of "Daisy" powder, a comparatively small business, spend £3000 a year. The late A. L. Pointing, a well-known swindler, is believed to have

spent £20,000 a year in advertising an "alcohol cure" called "Antidipso"—at his death he left £80,000. The Proprietary Articles Section of the London Chamber of Commerce estimates that £2,000,000 is spent annually in this country in advertisements of proprietary medicines.

THE PRESS AND SECRET REMEDIES.

28. It may be convenient to speak at this point of the relation of the newspaper and periodical press to secret remedies. As so large a sum as £2,000,000 or more is spent annually in advertisements of these remedies in one form or another of advertising, the trade is naturally of great importance to newspaper proprietors. In the case of most newspapers these advertisements constitute one of the most considerable sources of income, while a number of small provincial newspapers could probably hardly exist at all without secret remedy advertisements. All periodicals exercise some censorship over these advertisements. With a few, mostly weekly sporting low-class prints, fear of prosecution alone dictates a certain caution. Other papers draw a line of varying strictness. One newspaper only, the "Spectator," we were informed, wholly excludes these advertisements, but a few daily papers also practically close their columns to them. The respectable press, speaking generally, refuses all advertisements having any suggestion of impropriety. Some papers of the so-called "religious press," we are told, show a wider hospitality to secret remedy advertisements, and many of an objectionable character have been found in its columns. It is also lamentably true that the cheap so-called "home" weeklies, intended for the reading of girls and young women, contain advertisements of a grossly improper nature. Many improper advertisements from weeklies, sporting prints, "religious" and "home" papers, were exhibited to us—including 19 advertisements of drugs obviously intended to be used as abortifacients in one provincial Sunday paper—but none of this character from high-class dailies or weeklies. We are convinced that the proprietors of the better class of newspapers and secret remedies alike would welcome a drastic suppression of suggestive or improper advertisements. The foregoing observations do not refer to the advertisements of swindlers like Macaura, the "eye quacks," the "deaf quacks," the cancer-curers, the consumption-curers, the electric belt makers, the curers of rupture without operation, or "fakirs" generally. As regards these classes, most newspaper proprietors do not regard it as incumbent upon them to test the good faith of secret remedy advertisers any more than of advertisers of other goods, though a few of the leading papers exercise a very severe censorship upon advertisements of this kind also. We must point out further, in this connexion, that the large sums received for the advertisement of secret remedies lead newspapers, either from discretion or under compulsion, to exclude from their columns criticism or discussion of secret remedies. When the British Medical Association, for example, issued their volume, entitled "Secret Remedies," containing analyses, costs, &c., of a large number of proprietary medicines, not only was the volume not noticed editorially by most papers, but even an advertisement of it was declined by many journals, some of them of the highest class. A trial in Edinburgh in the course of which the judge described the business of the proprietors of "Bile Beans" as "based on unblushing falsehood for the purpose of defrauding the public," was, we were informed, with few exceptions not reported in the Press, and the remedy still has a considerable sale. The extent to which criticism of secret medicines is excluded from the Press may probably be judged by anyone who will take the trouble to see how much attention is bestowed by the newspapers upon your Committee's Report.

29. With regard to the advertisements in the Medical Press, we consider that adequate censorship

has not in all cases been exercised, as, indeed, was admitted by Dr. Cox, the representative of the British Medical Association, and instances to this effect will be found in the evidence we received.

THE ANALYSIS OF SECRET REMEDIES.

30. Mention of the volumes called "Secret Remedies" leads us to speak of the analysis of proprietary and secret remedies. It is vital to many proposals to deal by law with secret remedies on the ground of either their injurious or their inactive nature, that their composition should be determinable by analysis. Eminent analysts appeared before us in support of the cases for and against these remedies, but as might have been anticipated their views differed widely, and they did not fail to draw our attention to each other's unsatisfactory methods and erroneous results. We received, however, valuable independent guidance from the Government Chemist, Dr. Dobbie, and his first-class analyst, Mr. C. Simmonds.

31. It is asserted by expert analysts representing the proprietary medicine trade that no known methods of analysis will enable the composition of many secret remedies to be accurately determined. Consequently, it was claimed, the analyses published in "Secret Remedies" are incorrect in many cases. In one or two instances the makers informed us in confidence of ingredients which the British Medical Association analyst or the Government Chemist had failed to identify. Where there is an undiscovered ingredient the maker claimed special virtues for it—which he would possibly not do, as one witness suggested, if it were named. To this aspect of analysis, obviously of the greatest importance, we gave prolonged and most careful attention, and basing our view upon consideration of much technical evidence, we have reached the following conclusions.

A large proportion of drugs consists of inorganic substances, or compounds of inorganic with organic substances. Practically all of these are recognisable, and so far as concerns the inorganic substances themselves, determinable—that is, not only the substance recognised but also its quantity determined—by competent analysis. A further group consists of manufactured compounds, and these are practically all recognisable by analysis, even in somewhat complex mixtures. There remains a group of vegetable extracts, of which dandelion and gentian are familiar examples. But even simple vegetable extracts are really highly complex bodies, and the exact composition of these is still unknown to chemistry. Unless one of these, therefore, possesses a marked smell or taste, or if, possessing such, its smell or taste is masked by the greater smell or taste of some other similar substance, it cannot in many cases be specifically identified. The difficulty of identification, moreover, increases rapidly in proportion to the number of such extracts in a mixture, and when a large number, say eight or ten, are mixed together, even separate detection is impossible, and accurate determination out of the question. What is relied upon, however, in vegetable extracts for medicinal effect is often an alkaloid or mineral constituent, and these can be accurately discovered and determined. Further, subgroups of this group possess in common an active principle which can be recognised and which serves to identify the substances of the particular subgroup. For example, emodin is said to be the active principle of rhubarb and half a dozen other vegetable extracts.

32. One important practical result of the foregoing is that any maker of a secret remedy, by mixing together, whether with or without scientific or therapeutical knowledge, a number of vegetable extracts, can truthfully state that the composition of his remedy cannot be discovered by analysis. A mixture of tinctures, infusions, decoctions, or extracts of such familiar yet complex bodies as treacle, honey,

aloes, cinnamon, liquorice, linseed, coltsfoot, cubebs, pepper, horehound, ginger, gentian, dandelion, rhubarb, saffron, &c., may defy all chemical, microscopic, spectroscopic, olfactory, or physiological analysis. While a mixture, therefore, may have a therapeutical value, it may also be made to defy the analytical exposure of a fraudulent claim of therapeutical value. There are thus distinct limits to analysis, but in practice these limits are narrower than would appear, for in a large majority of cases the essential nature of the principal constituents of any medicine can be detected with almost perfect certainty and determined with reasonable accuracy, given skill, time, and a sufficient quantity of material.

ORGANISATION OF THE TRADE IN PROPRIETARY REMEDIES.

33. The trade in patent and proprietary medicines is represented in Great Britain by the Proprietary Articles Section of the London Chamber of Commerce, which contains over 300 manufacturers or vendors of such articles. Membership of the Section is open to any person in the trade, proposed and seconded by members. No control of any kind is exercised by the Section over the nature of the remedies sold or the claims made for them. This body presented to us the case for proprietary medicines, producing as witnesses two expert analysts and a number of makers and proprietors of secret remedies.

THE DIFFERENT CLASSES OF PROPRIETARY REMEDIES.

34. Patent and proprietary medicines differ very widely in character. At one end of the scale is the valuable scientific preparation; at the other end is the mere vulgar swindle. Any useful consideration of them must therefore be preceded by some classification into distinct categories, as these may call for widely differing treatment in the public interest, corresponding to their differences of character. For the purpose of this Report we adopt the following classification, which is largely supported by the evidence of expert witnesses of high standing. In the first place we divide these remedies into two chief classes: (A) Non-secret and (B) Secret. That is, those of which the formula is published, and those of which the formula is not published.

Class A.—Non-Secret Remedies.

Group 1. *Proprietary preparations.*—This group consists of genuine drugs, originally produced synthetically, or extracted from crude compounds, by skilled chemists and tested by therapeutists, and manufactured (though under many names) in pharmacological laboratories. Familiar examples are aspirin, adrenaline, and urotropine. The processes of manufacture are patented, or the names are registered trade-marks.

Group 2. *Remedies owing their value to skilful combination.*—Examples of this group are various emulsions of cod-liver oil or petroleum, and mixtures of bismuth with pepsine. They contain no new drugs, but are only new combinations, depending for their palatable or assimilable qualities upon the skill with which they are compounded.

Group 3. *Non-secret drugs with secret excipients.*—These are known drugs with formula disclosed, mixed for purposes of convenient or elegant manufacture with minute quantities of medically inert substances, the nature of which is a trade secret. The most familiar example of this group is the large quantity of medicine sold in "tabloids," this trade name being the property of one firm.

It will be evident that unless some of the above drugs are such as should not be sold at all; unless it should

be thought desirable to forbid unfounded claims of efficacy in curing disease; or unless any restriction of the multiplication of trade names be recommended, there is nothing in the above Class calling for interference in the public interest. The second Class occupies a different position.

Class B.—Secret Remedies.

In consequence of the great variety of remedies of this class, it is difficult to give an adequate classification of them without entering into excessive detail. For practical purposes, however, they may be divided into three general groups.

Group 1. *Simple household remedies.*—This group consists of a number of household remedies, often originally manufactured from a doctor's family prescription, and undoubtedly beneficial for uncomplicated ailments. They have in most cases been sold for many years, and as their retail price is out of all proportion to their cost, large fortunes have often been amassed by their proprietors. Except for the fact that often the advertisements of them recommend their use for cases they cannot benefit, thus causing the purchaser to run the risk of serious injury by delay in securing proper medical treatment, there is little or nothing to criticise in their sale. We cannot, of course, give examples of these, as our remarks would at once be used for advertising purposes.

Group 2. *Dangerous remedies, and drugs for improper purposes.*—This is a small class of drugs which should not be sold at all, of which acetanilide is possibly an example; which should not be sold except on a doctor's prescription; or which should not be sold for the purpose for which they are offered—as, for example, an unsuitable drug as a general medicine for young children.

Group 3. *Fraudulent remedies.*—This is a large class, having an extensive sale, often at high prices, consisting of abortifacients, of alleged cures for cancer, consumption, diabetes, paralysis, locomotor ataxy, Bright's disease, lupus, fits, epilepsy, rupture (without operation or appliance), deafness, disease of the eye, syphilis, &c., together with electric belts, apparatus for supplying oxygen to the system (other than by inspiration), "ionised" waters and the like. The discovery of radium will probably add a number of remedies to this group. There should be little difficulty in identifying remedies of this class, and their treatment in the public interest need involve no doubt or hesitation. They are, and are known by their makers to be, cruel frauds; and the sale and advertisement of them should be prohibited under drastic penalties.

Group 4. *Remedies making grossly exaggerated claims.*—This is a final large class. Genuine simple remedies making exaggerated claims are included in Group 1, as the exaggeration in their case is usually of the nature of the "trade puff." Those we have in view in this group are remedies depending for their sale largely or wholly upon the extravagant promises they hold out to the purchaser. This, under the name of "misbranding," is now prohibited by law in the United States, and many cases came before us in which the advertisements of proprietary remedies in this country were refused admission into Australia. This group presents obviously great difficulties in drawing the line between claims which are merely "puffs" and claims which are fraudulent, but we regard it as beyond question that the public is defrauded on a large scale by promises which cannot possibly be fulfilled. As an example of the profits made by the sale of this class of remedies, George Taylor Fulford, the proprietor of "Dr. Williams' Pink Pills for Pale People," left a fortune of £1,111,000.

MEDICATED WINES.

35. In addition to the various classes of patent and proprietary remedies, our attention has also been forcibly called to the advertisement and sale of medicated wines, and weighty opinions have been quoted to us regarding their mischievous effects. The trade in these wines is a very extensive one. Messrs. Coleman & Co., the proprietors of "Wincarnis," have a capital of £250,000, employ between four and five hundred persons, and, as before stated, spend £50,000 a year in advertising. Mr. Henry James Hall, trading as Stephen Smith & Co., the proprietors of "Hall's Wine," has a capital of £175,000. The alcoholic content of these wines is very high. For purposes of comparison, the alcoholic strength of familiar wines may be taken to be as follows:—

	Per cent.		Per cent.
Claret	9	Sherry	18
Hock	10	Port	20
Champagne	10-15		

The alcoholic strength of well-known brands of medicated wines was stated to us as follows:—

	Per cent.		Per cent.
Bovril Wine	20	Spier's and Pond's Wine	17
Lemco Wine	17	Savar's Wine	23
*Wincarnis	19.6	Coleman's Coca Wine	16
Bendle's Wine	20	Hall's Wine	17.8
Glendinning's Wine	20.8	Vin Mariani	16
Ambrecht's Coca Wine	15	St. Raphael Tonic Wine	16

* The proprietor stated this percentage to be about 17 per cent. of absolute alcohol.

A number of other preparations contain a high percentage of alcohol, without bearing any suggestion whatever that they are alcoholic. For example:—

	Per cent.		Per cent.
Carnrick's Liquid Peptonoids	20	Carnaby	17
Panopeptone	20	Junora	11.9
Armour's Nutritive Elixir of Peptone	15	Vibrona	19
		Lydia E. Pinkham's Vegetable Compound	20

Thus, though we cannot take responsibility for the foregoing figures, it would appear that many of these wines and preparations are as alcoholic as the strongest wine, and most of the rest are about twice as intoxicating as ordinary claret. One wineglassful of a 20 per cent. wine or preparation contains three and a half teaspoonfuls of absolute alcohol; one wineglassful of "Wincarnis" three teaspoonfuls. The recommended dose of "Wincarnis" equals one wineglassful of whisky per day.

Some medicated wines claim to be nutritive because meat extract enters into their composition. The quantity of meat extract, however, is trifling, and in any case it is not nutritive. "Wincarnis," for instance, is declared to "give a strength that is lasting, because in each wineglassful there is a standard amount of nutriment," and is described as "the world's greatest tonic, restorative, blood-maker, and nerve food." Its proportion of meat extract is 1.2 per cent., or about one-twentieth of the nitrogenous (flesh-forming) constituents of lean beef-steak. An analysis made by the public analyst of the city of Bradford says: "It is so deficient in albumenoid nitrogen and phosphorus, essential constituents of nerves and flesh, that in these respects it is but very little superior to port wine itself." "Lemco Wine," again, contains only 0.6 per cent. of meat extract, but 12 per cent. of sugar. Alcohol, moreover, cannot contain meat extract in solution, and presumably any medical man desiring to administer meat extract would prefer to do so without mixing it with alcohol.

There can be no doubt that many persons acquire the "drink habit" by taking these wines and preparations, either knowing that they are alcoholic, since they can be purchased and consumed without giving rise to the charge of "drinking," or in ignorance that they are highly intoxicating liquors. The further charge is made that their drug content may lead to the "drug habit." "Hall's Coca Wine" is now called simply "Hall's Wine." It contains one grain of the

extractive principle of the coca leaf (which is mainly cocaine) in 26 fluid ounces, a sufficient amount, as stated by the proprietor, to cause sleep if two wineglassfuls are taken. It is recommended for children in these words: "For colds, coughs, and bronchial affections: children, a dessertspoonful three times daily." One "nutritive tonic wine" (Bugeaud's) is advertised as containing "cinchona (quinine) and cocoa." It contains no cocoa. The word is probably a misprint—perhaps accidental—for "coca." In some cases the proprietors of these wines offer to pay for the wine licence of retailers. A well-known firm of chemists, commenting upon this, wrote: "On our expressing surprise that they could do this, we were told that of course they would expect our orders for ordinary unmedicated wines, the demand for which always followed, in their experience, where the medicated kinds were introduced." It is stated that doctors' testimonials are secured by the offer of a free 2s. 6d. bottle for any poor person to whom the doctor may like to send it, on his returning a signed coupon. Thus Coleman and Company claim to have 6000 signatures of medical men in favour of "Wincarnis." The President of the British Medical Association gives this further explanation: "The profession has been educated up to a better standard about the giving of testimonials, but it was culpably lax some years ago."

EXAMPLES OF SECRET REMEDIES.

36. In order to show the character of a large class of secret remedies, and at the same time to exhibit the general justification of some of our recommendations, we think it desirable to give in detail a number of facts we have elicited in examination of witnesses. The following examples are taken almost at hazard, but they are types of innumerable old and new preparations advertised widely throughout the country, and they are constantly being added to. We would draw special attention to the fact that three of the remedies mentioned below (a, b, and i) are the property of witnesses not selected by ourselves, but put forward by the Proprietary Articles Section of the London Chamber of Commerce as representative of the trade in secret remedies.

(a) "Mother Seigel's Syrup."—This is one of the most familiar and widely sold secret remedies. The proprietors are A. J. White, Ltd. (Mr. White was an American, who died in 1899), of 35, Farringdon-road, London. When the present limited company was formed in 1897 with a capital of £1,000,000, the vendor's profit was £900,000. The capital has since been written down to £300,000. It employs 250 to 350 persons and pays from £30,000 to £40,000 per annum in wages, and a hundred million bottles are said to have been sold. It cannot be sold, unless smuggled, in Germany (where it is prohibited by name except on a doctor's prescription), France, Austria, or Italy.

For many years this preparation bore the statement that "an old woman, Mother Seigel, on her last legs with dyspepsia, was given up by her relatives and was allowed to wander in the lanes round her native village in Germany, and that one day she chewed a leaf of a herb only found in those parts, and found immediate relief." Your Committee arrived at the conclusion that every detail of this statement was an invention. There never was a Mother Seigel or this wonderful herb, and the entire story appears to be a fabrication.

This remedy is advertised as "a cure for impurities of the blood," "a cure for dyspepsia and liver complaints," and "a cure for anæmia," and it is described as "a highly concentrated, purely vegetable compound." The statement that it is "purely" vegetable was, we were told by the proprietors, "apparently put in by the advertisement writer without proper consideration." It is incorrect, as the preparation contains hydrochloric acid and borax. It is made up in batches of 200 gallons, and consists, the proprietors state, of a mixture of eleven vegetable substances,

and therefore, as previously explained, it cannot be exactly analysed.

We considered "Mother Seigel's Syrup" at great length, regarding it as in many respects a typical secret remedy. To the representative of the proprietors we put no fewer than 1607 questions, and we received much technical evidence concerning its contents from three analysts, and from the Government Chemist and his assistant. The analysis given in "Secret Remedies" was disputed by and on behalf of the proprietors, and was defended by the analyst put forward by the British Medical Association. We think it well, therefore, to give in full the following analysis made for us by the Government Chemist, as this also illustrates our remarks above upon the limits of analysis of preparations containing a number of vegetable extracts.

"The analysis of the sample gave the following results:—

	Per cent. by weight.
Water and volatile acid	57.5
Mineral matters (ash)	5.1
Reducing sugars (calculated as invert sugar) ..	16.2
Cane sugar	11.0
Organic solids other than sugar	10.2
	100.0

"1. *Organic Ingredients.*—The proportion of sugars in the sample represents about 40 per cent. of treacle. In addition to the sugars, the organic ingredients were found to include:—

Essential oil, having an odour of saffras ..	A small quantity.
Starch	do. do.
Acetic acid	0.66 per cent.
Capsicum, equivalent to about 1 per cent. of tincture of capsicum, B.P.	
Aloes	About 1 per cent.
Other vegetable extractive substances (after deducting 1.4 per cent. of extractives due to treacle)	7.8 per cent.

"We have not found it practicable to separate characteristic constituents, or to obtain characteristic reactions, which would serve to identify definitely any organic ingredients of the mixture other than those mentioned above.

"2. *Mineral Ingredients.*—These consisted of bora with small quantities of chlorides, sulphates and phosphates, such as occur in the ashes of vegetable substances.

Total boric acid ..	2.12 per cent. (equivalent to 3.26 per cent. of crystallised borax).
Total chlorides ..	1.51 per cent. (calculated as hydrogen chloride).

"3. *Acids.*—The volatile acid consisted mainly of acetic acid, with a little boric acid. The total free acid of the sample in terms of hydrochloric acid is 1.12 per cent., equivalent to 10.6 per cent. of the Pharmacopœia 'diluted hydrochloric acid.'

"The proportion of free acid, other than acetic acid, would correspond with 0.72 per cent. of hydrochloric acid, equivalent to 6.8 per cent. of the 'diluted hydrochloric acid' of the Pharmacopœia. Very little of this hydrochloric acid, however, would be actually present in the 'free' condition.

C. SIMMONDS.

JAMES J. DOBBIE.

"Government Laboratory, 21st December, 1912."

This official analysis and that of the analyst for the proprietors practically agree in the percentage of treacle (40 per cent. and 42 per cent.) and of vegetable extractive substances (7.8 per cent. and 8.42 per cent.). From the foregoing the fact emerges that 100,000,000 bottles of an American mixture, originally recommended by an elaborate falsehood, and containing—apart from about 10 per cent. of vegetable extracts, including aloes and capsicum, of whose names, therapeutic virtues, and money values we are ignorant—50 per cent. of water and 40 per cent. of treacle, have been sold at the retail price of 2s. 6d. for three fluid ounces.

(b) "*Daisy*" Powders.—These are the property of "Daisy, Limited, Leeds," a company with a capital of £15,000, employing about 40 persons. As at first sold, this medicine, which was originated in this form in 1893 by an unqualified retail druggist, was known as "Daisy Headache Powder," and contained 5 grains of acetanilide. The Board of Inland Revenue decided that this—which was exempt from stamp duty as a "pure drug"—could only be sold by pharmacists or persons holding a Patent Medicine licence, and many of the retailers of the powders were in too small a way of business to pay 5s. annually for this, even although the proprietors offered to pay half the cost. Therefore a second identical powder was put on the market, bearing the words "Head Powder," and "Daisy, Limited, Leeds," the label designed to lead the public to think it the same as the original powder. But the Board, after a long correspondence (which was shown to us), insisted that the packets bearing different names must contain different substances. Therefore a "Daisy Headache Powder" still contains 5 grains of acetanilide, but a "Head Powder" of "Daisy, Limited, Leeds," contains 8 grains of phenacetin.

The assets of this Company consist chiefly of the goodwill in the trade name "Daisy" (they informed us that they had also registered the word "Buttercup"), and their business consists in buying acetanilide and phenacetin by the ton, these costing respectively 9d. and 2s. 11d. a pound, and supplying them in 5 and 8 grain packets to retail at a penny apiece. When asked by our medical colleague whether headache might not be a warning symptom of serious diseases, and that therefore merely to remove the symptom might be a dangerous step, the proprietor replied: "I say headache is a pain in the head, and I say that a 'Daisy' powder will remove the ache." The official dose is 1 to 3 grains, and the Codex adds: "Doses of 5 to 10 grains are sometimes ordered, but may cause alarming symptoms." Prof. Dixon, M.D., F.R.S., one of the highest authorities upon pharmacology, informed us that acetanilide is a dangerous drug, and he went so far as to say that it "ought never to be given under any circumstances."

(c) "*Fenning's Fever Curer.*"—This is advertised in the following terms: "The celebrated Remedy for the Prevention and Cure of Typhus, or Low Fever, Cholera, Diphtheria, Scarlet Fever, Fluxes, Yellow Fever, Influenza, Black Fever, Dysentery, Windy Spasms, Sore Throats, Gripping Pains, Low Spirits, Diarrhoea, Small Pox, &c. Sore throats cured with one dose. Scarlet or Typhus Fever prevented or cured. Bowel complaints cured with one dose. Typhus or Low Fever cured with two doses. Diphtheria cured with three doses. Scarlet Fever cured with three doses. Cholera cured with five doses. Influenza cured with six doses." The Government Chemist informed us that this consisted of a dilute solution of nitric acid, flavoured with peppermint. It is sold at 1s. 1½d. for about 8 fluid ounces. The estimated cost of the ingredients is ½d.

(d) "*Antipon.*"—"One of the most valuable discoveries in modern therapeutics, solving once and for all the vexed question of the radical cure of obesity without harmful after-effects." A solution of citric acid in water, which we were informed would be without medical effect upon corpulency.

(e) "*Vitadatio.*"—"Will cure the most severe cases of cancerous growths, tuberculosis, consumption, heart trouble, and tumours." We sent this to the Government Chemist. It is apparently a decoction of bitter herbs, containing only 1.48 per cent. of total solids, and no alkaloids or resins.

(f) "*Veno's Lightning Cough Cure.*"—"If it fails, no other medicine will ever succeed." According to the statement of the analyst of the British Medical Association, this contains about 8 per cent. of glycerine, with small quantities of alcohol, chloroform, and resin.

(g) "*Mer-syren*."—"Composed of the active principles of certain rare plants which flourish in the valleys situated on the southern slopes of the Himalaya, between the immense gorge separating Nepal from Bhutan on the East and Almorah on the North-West." Recommended by "Dr. Pearson, late principal Medical Officer, North Bhangulpore, India." No place named Bhangulpore is mentioned in the Imperial Gazetteer of India. A cure for "dropsy, insanity, small-pox, angina pectoris, diphtheria, erysipelas," &c. No substance but potato starch could be detected by analysis.

(h) "*Phosferine*."—"The greatest of all tonics." A weak solution of quinine in phosphoric acid. Prof. Dixon informed us that this contains no phosphorus which can have a therapeutical effect, and that any other acid to make a solution of quinine would do equally well.

(i) "*Steedman's Soothing Powders*."—These contain, according to the Government Chemist's report, 27.1 per cent. of calomel. The directions for use for children say: "One may be taken for three or four nights successively at any time when the child complains of being poorly." The powders vary in weight, and a child may thus get one grain of calomel for several nights in succession. The toxicologist put forward as a witness by the proprietors admitted that "that is a somewhat tall order." In connexion with this remedy we learned that the pamphlet entitled "*Hints to Mothers*," accompanying it, and professing to be "by an M.D. London" recommending these powders on every page, was revised by a reputable London doctor, at the request of an advertising agent; that the references to these powders were subsequently inserted without the doctor's knowledge; and that "M.D. London" only meant a doctor living in London, and not, as would naturally be inferred, an M.D. of the University of London. It was not clear to us whether the proprietors and the publishers of this booklet were both responsible for the misstatement.

(j) "*Matrozone*."—Made in a northern seaport, and said to have a large sale in the North of England. The package contains two bottles, each holding one fluid ounce, and sells for 5s. 6d. The accompanying booklet says: "This treatment is the result of the patient investigation of a Minister of Religion. . . . When a young man pursuing his studies with a view to qualifying for the Medical Profession he was profoundly impressed by the death of a young wife," &c. Its claim is as follows:—"Matrozone Promotes Natural, Rapid, and Easy Confinement. Ensures Healthy, Beautiful, and Bright Children." One bottle contained 68.9 per cent. and the other 60.3 per cent. of alcohol, with total solid matter too small to be weighed, such as might come from diluting the alcohol with tap-water, with no trace of any alkaloid.

(k) "*Burgess's Lion Ointment*."—Advertised to cure tuberculous tumours, piles, fistulas, rheumatism, gout, sciatica, &c. "They are vegetable preparations." The chief ingredient is lead oleate (diachylon plaster), and no vegetable extracts or active principles are present.

(l) "Dearborn, Limited," a company founded almost without capital, with one director and two shareholders, employs six persons—a secretary, a typist, two bookkeepers, and two packers. Its business consists in inventing fancy names for preparations (see Par. 38), buying these from well-known manufacturers, labelled with these invented names, and selling them as remedies for short hair, freckles, liver spots, &c., by means of correspondence passing between fictitious persons and real or fictitious correspondents, inserted as, but not marked as, advertisements in popular magazines. Sometimes these are followed by an avowed advertisement, to suggest that what precedes is not an advertisement.

(m) "*No-Germo*."—This was put upon the market, with full-page advertisements in the press, three

months ago. It was announced in the following terms: "The wonderful remedy invented by Gertrude, Lady Decies has achieved a well-deserved popularity by its success in curing the most stubborn Colds, Hay Fever and Influenza, Nettle-rash, Eczema, and other Skin diseases. It acts as a soporific in cases of Insomnia; it affords great relief in Asthma: it is a prompt and certain cure for Stings of Wasps, Mosquitoes, and other insects. It is very easy to use and perfectly safe." We requested the Government Chemist to furnish us with an analysis of this, but he felt unable to do so, as its composition had been divulged to him in confidence by the manufacturers in connexion with action by the Customs and Excise. He therefore nominated, with the sanction of the Treasury, Mr. E. J. Bevan, F.I.C., County Analyst of Middlesex, and the latter has furnished us with the following report:—

"*No-Germo*" consists of an alcoholic solution containing camphor, ammonia and oil of cinnamon.

"It is conceivable, but unlikely, that there may be traces of other bodies, but I have not been able to discover them. The liquid is slightly yellow, more so than could be accounted for by the amount of oil of cinnamon present, but the difference in colour is most probably due to the prolonged action of the ammonia on the oil of cinnamon.

"Possibly the ammonia is present in the form of sal-volatile, but I am unable to say definitely.

"Beside the sample sent officially, I have examined, in more or less detail, eight other samples that I purchased at various chemists' shops. There is a very large variation in the composition. For example, the alcoholic strength varies from 51.1 per cent. to 64.8 per cent., and there are similar variations in the oil of cinnamon, the camphor and the ammonia.

"The average composition is set out below:—

Alcohol	..	..	..	..	58.3 per cent.
Oil of cinnamon	..	..	..	..	0.5 "
Camphor	..	..	..	..	1.03 "
Ammonia	..	..	..	..	0.33 "

"The approximate cost of one bottle, selling at 2s. 3d., is 3.64 pence, say 3½d."

Of the remedies discussed in this paragraph no person connected with those lettered c, d, e, f, g, h, j, k, and m took advantage of our general invitation to give evidence before us. We have, therefore, had no opportunity of hearing what they had to say in justification of their methods, or in criticism of the statements made to us by other witnesses in reference to the articles sold by them. Persons interested in the remedies lettered a, b, and i appeared before us, and it is only fair to state that they strongly contested the accuracy of the analyses furnished to us of the constituents of their remedies. In dealing with this latter group at some length we have no intention of suggesting that these are exceptionally bad cases. The fact these persons gave evidence creates a presumption that they were better able to face examination of their business and their goods than many others manufacturing secret remedies.

EXAMPLES OF FRAUDULENT CLAIMS.

37. The following are a few examples, which could be multiplied almost indefinitely, of fraudulent claims:—

"The best remedy for consumption." (*Congreve's Elixir*.)

"Cures Bright's disease." (*Munyon's Kidney Cure*, consisting of sugar only.)

"It never fails to cure cancerous ulcers, syphilis, piles, rheumatism, gout, dropsy." (*Clarke's Blood Mixture*.)

"Bright's disease, stone in the bladder, dropsy, eczema, scrofula . . . can be speedily cured." (*Warner's Safe Cure*.)

"The absolute specific for all, or some, of their phases" of "syphilis and every form of venereal disease." (*Wallace's Specific*.)

"Applied freely will cure lumbago or sciatica in one night." (*Levasco*.)

"Cured not only rheumatism, but anæmia, eczema, sciatica, St. Vitus's dance, spinal weakness, &c." (*Pink Pills for Pale People*. These contain ferrous sulphate, and are one of the many variations of Blaud's pill—the *pilula ferri* of the British Pharmacopœia.)

"The remarkable curative influence exercised in cases of Bright's disease." (*Beecham's Pills*. This statement was made for many years, but was dropped a few years ago.)

"It will be sufficient to offer a few general remarks, and to indicate the method of cure [of syphilis], which is, beyond all, the question of supreme importance. Let it never be forgotten that even a slight delay in dealing with diseases of this type may be terribly fruitful of future trouble. In the first place, the advice of a properly qualified medical man is necessary, whatever the character of the disease, or whether it be hereditary or acquired. But the process of eradicating the poison from the system will be materially assisted by the aid of a perfectly safe, but reliable, searching, cleansing, purgative medicine; and nothing better for that purpose can be used than Beecham's Pills. They should be taken immediately and continued for a considerable time after the cure is apparently complete." (*Beecham's Pills*. A part of this statement was characterised to us by Dr. W. Perrin Norris, formerly Director of Quarantine and practically Director of Public Health for the Australian Commonwealth, as "from our standpoint, one of the more serious, if not criminal, pieces of printed matter I have ever seen.")

INVENTED NAMES OF DRUGS.

38. A new and ingenious method of defrauding the public by the sale of secret remedies has recently been devised. This consists of inserting a "reader" advertisement—without the suffix "Advt." whenever the newspaper or magazine will consent to omit this—recommending for an ailment or a physical blemish a simple prescription containing one drug or preparation bearing a fancy name, "which any chemist will supply." This is an ordinary drug put up as a proprietary remedy under a fancy name, and sold, of course, at a fancy price. Sometimes these advertisements take the form of "Answers to Correspondents," or are given under the authority of a fictitious person, "Madame Lucie Robert," for instance. Examples of such fancy names are "pure colourless kalamax," "salith leaves," "stallax," "pheminol," "pergol," "pure bisurated magnesia," "boranium," "karox," "pilentia soap," "jettaline," "allacite of orange blossom," "tennaline," "carmarole," &c. These names are all invented words and should properly be printed with a capital initial letter, the proprietors having the exclusive right to their use as trade names. They are, however, printed in these disguised advertisements without capitals, to deceive the public into the belief that they are not proprietary articles, but are familiar drugs purchasable in small quantities at ordinary prices, whereas, in fact, they are only sold in a considerable quantity at a fancy price.

CHANGES IN NAME OR COMPOSITION OF REMEDIES.

39. It is not uncommon for the composition of a secret remedy to be altered without any change in the name. "Anti-kamnia," as we have said, was acetanilide in America, and is now phenacetin, and "Daisy" powders were similarly changed. "Powell's Balsam of Aniseed" was repeatedly proved in courts of law to contain morphine. It now contains none. The same is true of "Mrs. Winslow's Soothing Syrup." The formula of "Pond's Arthritic" was said to be altered by the addition of potassium

bromide and salicylic acid. The powders in one packet of "Steedman's Powders" varied in weight from 1.9 to 4.5 grains. Sir Joseph Beecham informed us that "Beecham's Cough Pills" at one time contained morphia, as that was considered to be a necessary medicinal ingredient; that when the law compelled the word "Poison" to be put on the wrapper of preparations containing morphia, the morphia was taken out of the pills; then so small a quantity was put in again that it was "comparatively innocuous or perfectly innocuous," and therefore did not need to be labelled "Poison." That is, a potent drug was put in this remedy, taken out, and put in again, without regard to its medicinal effect, but solely because of the legal conditions under which it could or could not be sold.

CURE OF SYMPTOMS.

40. We have had occasion to remark upon the possible evil effects of causing the disappearance of a symptom, which may be nature's danger-signal, without effecting in any way the disease which causes it. In this connexion we may also point out that remedies offered for the same ailment—a cough, for instance—may affect it for good or for evil according to its nature and cause. The secret remedy naturally takes no account of this. For example, "Owbridge's Lung Tonic" is an expectorant mixture, a mixture to increase coughing, its principal ingredient being ipecacuanha. Whereas "Keating's Cough Lozenges," or "Beecham's Cough Pills," are the opposite kind of remedy, containing opium or morphia, the object being to stop the cough. A man whose chest is full of fluid needs to have his cough facilitated. A man with a varicose vein on his uvula needs to have his useless and exhausting cough stopped. Proprietary medicines make no attempt to distinguish between these two common types. Secret remedies, too, are constantly recommended for different ailments having a superficial resemblance, but medically considered, totally diverse. For example, "Beecham's Cough Pills" are recommended as "a safe and simple remedy" for both asthma and bronchial affections—asthma being a nervous disease, while bronchial affections are inflammation of mucous membranes. These examples, which could be multiplied, illustrate the danger of this kind of ignorant self-medication, upon which medical witnesses laid much emphasis.

"CURES" FOR FITS.

41. Advertisements by private persons offering cures for fits are familiar. With the help of the Chief Constable of Cheshire and the Government Chemist we investigated one of these. The advertisement read: "Fits.—Clergyman offers prescription for 1s. 1d.; never fails.—J. S., Grasmere House, Winsford, Cheshire." Three different sets of initials were used at different times. Application brought a prescription for "koronium bromide," and a recommendation to procure it from "the actual manufacturers, Messrs. Whitby & Co., Chemical Manufacturers, Winsford, Cheshire." This was sold at 4s. 6d. for 4 ounces. We procured some, and—"koronium bromide" being, of course, an invented name—the Government Chemist informed us that it was the well-known drug strontium bromide, often prescribed for epilepsy, and purchasable at rates varying from 2s. to 3s. 8d. a pound. Police inquiries then showed that the advertiser was Harold Cuthbert Whitby, trading in a lock-up shop at Winsford, as "Whitby & Co., Chemists, Opticians and Wine Merchants."

THE TRADE IN ABORTIFACIENTS.

42. The trade in abortifacients presents one of the most deplorable aspects of the secret remedy trade. Innumerable remedies for "female irregularities" are advertised. A few of these are poisonous and have

caused death, whilst most of them are wholly inactive for the purpose for which they are sold. Indeed, it cannot be too widely realised that no drug is known which can force the womb to expel its contents, and that nothing can endanger the life of an unborn child except by endangering in an equal degree the life of the mother. But a substance of the latter class is unfortunately widely sold and used in certain parts of the country as an abortifacient. This is "diachylon plaster," the *emplastrum plumbi* of the Pharmacopœia, a preparation of lead oleate, containing 28.9 per cent. of oxide of lead, supposed to be a mild astringent for application to inflamed surfaces. One medical witness expressed to us the opinion that for all practical purposes it is perfectly useless. But it is undoubtedly widely taken as a supposed abortifacient in the form of pills like "Mrs. Seegrave's Pills," or merely a bit of the plaster rolled up and swallowed.

Many deaths from the use of this substance for this purpose were reported to us. It can, of course, only produce abortion by producing lead poisoning, from which insanity, blindness, paralysis and death have resulted. The Pharmaceutical Society have for years vainly urged its inclusion in the Schedule of Poisons. The question of the total prohibition of its sale should be considered by the competent authorities.

Blackmail is a natural result of the sale of abortifacients. In 1898 two brothers named Chrimes were sentenced to penal servitude for demanding, under threats of exposure, two guineas from women who had purchased their drugs. The police intercepted in a short time no fewer than 600 letters, each containing two guineas.

Even simple aperient pills from reputable makers are recommended in language suggesting that they are efficacious for this particular purpose. In the instructions headed "Advice to Females" accompanying "Beecham's Pills," women suffering from "any unusual delay" are recommended to take five pills a day. The proprietor admitted in evidence that the most common cause of such delay is pregnancy.

"CURES" FOR CONSUMPTION.

43. Amongst fraudulent secret remedies the alleged cures for tuberculosis are perhaps the worst of all. Sufferers from this disease are, as is well known, peculiarly credulous of promises of help, and the "consumption quack" takes skilful and unscrupulous advantage of their pathetic hopes. Many secret remedies for consumption have been put upon the market, usually at high prices. For example, an American firm known as the Derk P. Yonkerman Company advertised for some years a remedy called "Tuberculozyne," Yonkerman himself being a Michigan veterinary surgeon. A month's treatment by this remedy cost £2 10s. The advertisement offered a book entitled "Consumption and How it Can be Quickly Cured," of which the following paragraph is typical:—

"After researches lasting for nearly twenty years, the persistent efforts of Dr. Derk P. Yonkerman have been crowned with success, for his Tuberculozyne treatment has already been proved in hundreds of cases to be a specific of almost miraculous curative power. Its healing virtues have been demonstrated in not only the early stages of consumption, but in far advanced and seemingly hopeless cases as well."

The inventor announced that he had "discovered certain salts of copper of remarkable therapeutic value. The consumption germs cannot live in the presence of copper, and as the Tuberculozyne treatment introduces copper into the blood the consumption germs cannot live." The remedy was contained in two bottles. Analysis showed one bottle to contain 18 parts of glycerine, with water and brown sugar, and the other 3.4 parts of potassium bromide, 12 parts of glycerine and a trace of capsicum, the whole

coloured by cochineal. The preparation probably originally contained sulphate of copper when it was prepared in America, but we were informed that such was the chemical knowledge of Yonkerman that he sent his mixture to England in iron drums, the whole of the copper being deposited upon the iron during transport. The importation of "Tuberculozyne" into the Australian Commonwealth is prohibited. We would draw attention to the fact that this remedy is one of a peculiarly bad class, which are not advertised in the press or sold through the respectable retail trade, but constitute what is known as "mail order business."

Another well-known "consumption curer" is a man named C. H. Stevens, who has been denounced in *Truth* for nearly ten years, and against whom an action was brought by a widow in the Basingstoke County Court on July 27th, 1910, to enforce payment of a "guarantee bond" containing an undertaking that money paid for the remedy would be refunded if no cure were effected. The Judge found for the widow, refused leave to appeal, and described the transaction as "an intentional and well-considered fraud."

Our attention was called to Stevens by a letter addressed to the Chairman stating that the writer had seen in a newspaper a report of our proceedings, that he was suffering from tuberculosis and was taking a patent medicine from a London firm who guaranteed a cure, of the name of C. H. Stevens, of Wimbledon, regarding which he asked the opinion and advice of your Committee. After some correspondence this gentleman consented in the public interest to give evidence before us, but on the condition that his name should not be published. He appears, therefore, in the Report of our Proceedings of July 16th, 1912, under the name of Mr. A. His correspondence with Stevens, which he placed in our hands, was, as might be expected, a series of complaints that he was getting no better but rather worse, with assurances from Stevens that persistence in the use of the remedy would certainly effect a cure. At last Mr. A requested the return of the five guineas paid, in accordance with Stevens's guarantee, and finally, under the threat of legal proceedings and after Mr. A had appeared before us, Stevens returned the money. We submitted two bottles of the remedy supplied by Stevens to the Government Chemist, who gave us the following analysis:—

	Sample first bottle. Per cent.	Sample last bottle. Per cent.
Proof spirit	19.5	19.5
Solid matter	2.8	3.4
Mineral substance (ash) ..	0.2	0.2
Glycerol (approximately)	10.7	17.8

"No alkaloids or resins were found. The solid matter corresponds with the colouring and extractive substances of an ordinary wine. The samples are therefore essentially mixtures of wine and glycerol." (Glycerol is glycerine.)

It is instructive as illustrating the credulity of the public, that Mr. A, although an intelligent man, believed that Stevens's lithographed letters were written by Stevens's own hand with reference to his particular case, and that in spite of our efforts to enlighten him, he was obviously still impressed when he left us by Stevens's "challenge" to the Brompton Hospital for Consumptives. This was a request from Stevens to the authorities of the hospital to inoculate him with the worst form of tuberculosis, on the condition that when he cured himself by his own remedies the hospital should adopt his treatment for the cure of consumption. An eminent specialist, Dr. Hector Mackenzie, was good enough to examine and advise Mr. A at our request, without professional charge, and he informed us that in his opinion excavation of the lungs had taken place or extended during the time that Mr. A was taking Stevens's remedies. Stevens was inserting full-page advertisements of his consumption cure in London daily papers last year. We may add that Stevens has

recently brought an action for libel against the British Medical Association for statements made regarding his remedy in "Secret Remedies." The defendants pleaded justification, and the jury found for the defendants.

FICTITIOUS NAMES.

44. It is a common practice of vendors of secret remedies to recommend them by the name of a fictitious person. We have already mentioned "Mother Seigel" and "Madame Lucie Robert." Another example is "Mrs. Johnson's Gripe Relief," with which Mrs. Johnson had nothing to do. Another is "Roulet injection" for gonorrhœa, guaranteed by the facsimile signature of "Dr. Roulet," an imaginary person. Other fictitious names that have come to our notice are "Mademoiselle Florence Gauthier," "Mademoiselle Marcelle Rouvier," "Mildred St. Aubyn," "Mademoiselle Agnes Deprés," "Mademoiselle Marguerite Fournier," and "Dr. Duclaud."

PRACTICES OF SECRET REMEDY VENDORS.

45. The most disreputable class of proprietors of secret remedies trade under many aliases. As soon as one name becomes notorious, or when they have exhausted the credulity of the public for one remedy, they assume another name. Thus Crippen, the murderer, "aural surgeon to the Drouet Institute," was also M. Frankel. Elmer Shirley, who is still advertising extensively, has been Keith Harvey, Edward Meyer, the "Sanalak Institute," Marr, and Erasmus Coleman. An American named Skinner was successively Scott, Symond's London Stores, Professor Dana, Professor Pollock, and Horatio Carter. Nelson Lloyd, an Englishman who sold a "fat cure," was in reality an advertising agent named Derry. Two Americans, Virgil P. Neale and Thomas Adkin, were the Cartilage Company, advertising to increase height; as Harriet Meta they sold a "wrinkle eradicator"; as Kathryn B. Firmin, of the Roman Solvene Laboratory, they undertook to remove superfluous hair; and as Everett Wood they offered to make hair grow on bald heads.

46. The wiles of some vendors of secret remedies almost pass belief. Evidence was given to us in private to the effect that an agent of a "kidney cure" went from door to door in the artisan quarters of a northern town, stating that many people were in the first stages of kidney disease without suspecting the fact, but that a sure test was to take a pill which he left with them. If the urine became blue, he explained, that was a proof of kidney disease, which could certainly be cured by taking So-and-So's remedy. The pill contained a blue aniline dye, which of course produced immediately the result mentioned. The widespread alarm caused by this abominable trick may easily be imagined. We were informed that there exist to-day agencies, one in Leeds, which advertises frequently, and one or two in America, selling lists of names of sufferers from various diseases at so much per thousand. That is, a person about to put on the market a "consumption cure" or a "rupture cure," or a "cancer cure," can buy a list of a thousand persons suffering from tuberculosis or rupture or cancer, these lists being the names of people who have at some time answered advertisements regarding these diseases, and whose names and addresses thus possess a money value.

THE MEDICAL PROFESSION AND SECRET REMEDIES.

47. So far as we have been able to discover, no scientific chemist and no qualified medical man, with rare exceptions, is connected with or employed in the manufacture of secret remedies such as those we have placed in class B. And we have failed to find that any new drug, or new discovery of a method of compounding known drugs, has been placed at the service

of the public as one of that class of secret remedies. We have learned, however, to our great surprise, that persons of influential social position and small means will sell the use of their names to advertise secret remedies; that large sums of money are expended in canvassing medical men; that many medical men give testimonials (with the use of their medical qualifications but without the use of their names) to proprietary and secret remedies—and allow themselves to be made, as a medical man declared in a public address, "the catspaw and fool of the fraternity of the secret remedy"; and that there are medical men who prescribe to their patients remedies of this class of whose composition they are themselves largely ignorant. We had evidence in two cases of medical men acting as directors of companies manufacturing secret remedies.

THE PATENT MEDICINE STAMP AS AN ADVERTISEMENT.

48. We find that the Patent Medicine Stamp is not infrequently used as an advertisement. For example: "Therapion appears on Government Stamp, affixed to every package by His Majesty's Hon. Commissioners, and without which it is a forgery." And at the head of the booklet sent out by the proprietors of this remedy appears the words: "Protected by His Majesty's Hon. Commissioners," with the Royal Arms. Again: "To prevent spurious imitation of this excellent medicine. On the 24th of May, 1839, Her Majesty's Honourable Commissioners of Stamps ordered the name of 'John Steedman, Chemist,' to be engraved on the Government Stamp affixed to each packet, without which none after that date can be genuine." This was altered three years ago. Again: "To prevent fraud, His Majesty's Commissioners of Inland Revenue have ordered the words 'Lincoln and Midland Counties Drug Company, Lincoln, England,' to be printed in white letters on a red ground on the Government Stamp which is affixed over the cork of each bottle, and to imitate which is a felony. Please note that these words are engraved in the stamp, and the words 'Clarke's World-Famed Blood Mixture' are blown in the bottle." Again: "Caution. The public are requested to notice that the words 'Beecham's Pills, St. Helens,' are engraved on the Government Stamp affixed to every box of pills." Again: "Mrs. Johnson having disposed of the recipe and property in the American Soothing Syrup to Messrs. Barclay and Sons, begs to refer the Public to the Government Stamp with their name thereon as a security to purchasers." The object of these statements is obviously to cause the purchaser to think that the stamp implies some kind of guarantee of value of the remedy, although in recent years the stamp has borne the words: "This stamp implies no Government guarantee." The Inland Revenue authorities print the vendor's name on the stamp for a consideration of £8.

FRAUDULENT APPLIANCES.

49. Much fraud is also successfully practised by the advertisement and sale of appliances as alleged cures for many ailments. Electric belts and pads are a familiar form of these. Macaura's "Vibrator" was a clumsy method, at an exorbitant price, of applying mechanical massage, by which a little good might be done in a few cases and much harm in many cases. Artificial ear-drums of indiarubber, occasionally used by aurists, are sold by manufacturers at 1s. and 2s., but by quacks at from one to two guineas the pair, and often cause positive and serious injury. Appliances alleged to supply oxygen (otherwise than by inspiration), such as the "Oxydonor" and "Oxygenator," are of course deliberate swindles, for the makers cannot be supposed to be as ignorant of chemistry and therapy as their victims.

50. Lest it may be thought that the foregoing examples and remarks place even the worst class of

secret remedies in too unfavourable a light, we desire to call attention to a single answer of one witness regarding this trade in general. This was the chief witness put forward by the Proprietary Section of the London Chamber of Commerce on behalf of the trade, Mr. John Charles Umney, managing director of Messrs. Wright, Layman, and Umney, Ltd., an important firm of medicine proprietors and manufacturers of proprietary articles. In addition to this position, his personal qualifications include Pharmaceutical Chemist by examination, Fellow of the Chemical Society, Fellow of the Society of Public Analysts, Adviser in Pharmacy to the Local Government Board of Ireland, Technical Referee on Essential Oils to the Imperial Institute, Past President of the Wholesale Druggists' Association, first President of the Proprietary Articles Section of the London Chamber of Commerce, &c. And the question and answer were as follows:—

Chairman: Do you think, in view of your own position and attainments, and your business in these things, to which I have alluded, as to which you are put forward as a witness on behalf of the whole trade, that so far as a large part of the patent medicine trade is concerned you are a fair representative of it?

Witness: I hope I am not.

51. It will probably now be learned without surprise that witnesses of unquestionable authority have assured us that grave evils, urgently requiring remedy, arise from the present sale and advertisement of secret remedies. We may quote the following as examples. As regards diseases arising from sexual intercourse, Dr. Reginald Edward Cross, M.R.C.S., L.R.C.P.: "A very grave and widespread evil, urgently demanding legislative action." As regards aural diseases, Mr. P. Macleod Yearsley, F.R.C.S.: "A widespread and grave evil, which I most decidedly believe requires legislative treatment." Regarding dangerous drugs, Professor A. R. Cushny, M.D., F.R.S., Professor of Pharmacology at University College: "There is urgent need of new legislation." As regards diseases of the skin, Dr. Arthur Whitfield, M.D., F.R.C.P., Physician to the Skin Department, and Professor of Dermatology in King's College Hospital: "The harm done is appalling. . . . There is an urgent demand for legislation." As regards the sale of proprietary and secret remedies in general, Professor Walter Ernest Dixon, M.D., B.Sc., F.R.S.: "The existing law is greatly in need of amendment in the public interest." And on the general question a witness of a wholly different character, Mr. G. Sidney Paternoster, assistant editor of *Truth*, who gave us interesting and valuable evidence from the experience of that journal in pursuing for many years the vendors of fraudulent secret remedies: "There is an enormous evil, which calls for alteration of the law to meet it. . . . There is absolutely no question about it, the public is defrauded of millions in the course of a year, and purely by false statements."

REQUIREMENTS OF AUSTRALIAN LAW.

52. We have already spoken (*see* Par. 6 (1) of the law of the Commonwealth of Australia, as it affects the importation of proprietary and secret remedies. Some striking instances of the requirements of this law came before us in evidence, of which the following will be sufficiently illustrative.

The omission of this statement was required from the circular accompanying "Steedman's Soothing Powders":—

"Thus the commencement of hydrocephalus, tabes mesenterica, rickets, and other morbid affections may not infrequently be traced to the period of teething."

The same firm was required to print in capital letters on the label:—

"One powder only and no more."

And they were also required to state on the label:—

"The contents of this package include 27 per cent. of calomel."

In the circular accompanying "Beecham's Pills," when reference is made to kidney troubles, for the statement:—

"Beecham's Pills will probably be the only medicine required to achieve the desired result,"

the following was required to be substituted:—

"and no other aperient medicine is likely to be required than Beecham's Pills."

And the same proprietor was required to omit the statement regarding "Beecham's Cough Pills." "The cough pills do not contain any injurious ingredient," and the whole of the passage sent out with "Beecham's Pills" regarding "Secret Maladies."

On the label of "Woodward's Gripe Water" this statement occurs:—

"Celebrated Gripe Water, or Infants' Preservative" for the disorders of children—viz., convulsions, gripes, acidity, flatulency, whooping-cough, and the distressing complaints incidental to children cutting their teeth, allaying the pain, giving instant relief, and rendering this crisis perfectly mild and free from danger."

This was required to be reduced to the following:—

"For the relief of the simple and familiar ailments of infants and young children, especially during the period of teething."

The following sentences and names are examples of what under the Commonwealth law are regarded as "false trade descriptions," and are therefore prohibited:—

"Will cure any case of scrofula."

"Will prevent the return of cancer."

"An unparalleled remedy."

"It never fails."

"Surpasses anything ever discovered."

"The safest remedy in diphtheria."

"For all kinds of fevers."

"Cures any old disease lurking about the system."

"There is nothing in the world so good for you as

"Lightning Cough Cure."

"Skin Food."

Synthetic preparations bearing names indicating or suggesting a natural origin or base must have the word "artificial" added. For example, "Balm of Figs," "Fruit Pills," and "Sugar of Milk Pilules."

Fanciful names, like "August Flower," "Dutch Drops," "Orange Blossom," "Asiatic Drops," are not accepted unless supplemented by a description of the nature of the preparation or the maladies it is intended to cure.

Certain drugs, if present in a medicine, must be mentioned on the label and the quantity specified. These are such as the bromides, iodides, chloral, cantharides, phenacetin, &c.

The importation of articles and remedies may be totally prohibited. Among these have been the "Oxygenator," the "Oxydonor," and "Tuberculozyne."

Finally, "trailer" advertisements—that is, printed matter enclosed with one remedy and recommending another; advertisements recommending the regular use of a remedy, as for instance, "One of our pills taken twice a week will maintain you in regular functional activity"; and invitations to correspond, are forbidden.

The foregoing examples will suffice to show how the Commonwealth authorities carry out their aim—namely, the "application of common sense and common medical knowledge, with a view to the protection of the necessarily more or less ignorant public."

"EXHIBITION OF FORMULA."

53. It has been strongly urged upon us, chiefly by witnesses representing the medical profession, that every remedy sold should by law be compelled to bear a label stating its exact composition. This is what

is meant by "exhibition of formula," and witnesses advocating it came to us convinced that this simple change in the law would secure adequate protection of the public against injury and fraud. We have given long and careful consideration to this proposal, and we find ourselves unable to recommend it. In the first place, it would beyond question inflict a grave hardship, sometimes amounting to ruin, upon proprietors of secret remedies, or the loss of their investments upon shareholders in limited companies. Any long-established remedy in the lawful advertising and sale of which very large sums have been spent would immediately be faced upon the market by a score of preparations advertised as made from the same formula and sold at a much lower price. An example was given to us of a remedy the proprietary rights of which were immediately destroyed by a disclosure of its formula. The above would not, we are aware, be a conclusive argument against this proposal if its adoption would really protect the public against danger and fraud. We are convinced, however, that such would not be the case. Any benefit resulting from exhibition of formula must obviously depend for its efficacy upon the intelligence and education of the intending purchaser. It could not in any other way afford protection to the purchaser or restrict the operations of the vendor, though incidentally it would enable a retail chemist to offer the same drug or mixture, made up by himself, at a lower price. But to a large majority of purchasers a statement of composition or contents on the label would afford no information whatever. The disclosure that a remedy contains or consists of "acetyl-salicylic acid," or "hexamethylene-tetramine," or "phenolphthalein," or "taka-diastase," or "emplastrum plumbi," or even "acetanilide" or "potassium iodide," would be meaningless to most people; indeed, the simplest substances might acquire distinction from being described in technical chemical language—soap, for instance, a large ingredient of the most popular aperient pills, posing as "sodium oleate and stearate." And if it be rejoined that the popular name should be required to be given, the answer is obvious that many of the most important drugs, such as most of those mentioned above, have no popular name. Further, an accurate statement of contents might be in itself misleading. For example, if "Phosferine" were stated to contain phosphoric acid, almost every purchaser would believe that he was getting assimilable phosphorus. The question also naturally arises whether the purchaser of a penny powder or a 1s. 1½d. bottle should protect himself against injury or fraud, or whether the State should not protect him, as it does against other injuries and frauds. For these reasons exhibition of formula (except in the case of alcohol, poisons, and certain dangerous drugs) does not appear to us to be a proper, practical, or effective measure.

SUGGESTED AMENDMENTS OF EXISTING LAW.

54. It has further been suggested to us, and counsel's opinion in support of the suggestion has been laid before us, that existing laws might be so amended as to afford all necessary protection to the public. For example, the advertisement of goods might, by an amendment of the Merchandise Marks Act, be deemed to be the application of a trade description to such goods. A false advertisement would then become an offence under this Act. Again, in the Sale of Foods and Drugs Act the specific omission of patent and proprietary remedies might be deleted, thus making, under Section 20, the label a warranty, and therefore the wilful use of a false label an offence. These amendments would be of some value, but the question of what is a "warranty" is a difficult one in law, and has been subject to numerous decisions of the Courts. In the worst cases, too, a man might have finished his advertising campaign, "cleaned up" his profits, and left the country before the warranty could be enforced. Further, the suggested amendment of the Sale of

Foods and Drugs Act would be useless without exhibition of formula, and we have already given reasons for regarding that proposal as inadmissible. We are therefore of opinion that amendment of existing laws, involving complicated legislation by reference, would not afford adequate and available protection. If a change in the law is required, it must be new legislation *ad hoc*. We remitted this important question for further examination to Mr. Guy Stephenson, Assistant Director of Public Prosecutions, whose evidence upon this and cognate legal matters has been of the greatest value to us. In the above conclusion we concur with the view he expressed to us after careful reconsideration. The Indecent Advertisements Act, however, urgently requires amendment, and a satisfactory amending Bill was introduced into the House of Lords by Lord Brayne and read a second time on July 12th, 1910.

FINDINGS.

55. After careful consideration of the evidence laid before them your Committee find :—

- (1) That there is a large and increasing sale in this country of patent and proprietary remedies and appliances and of medicated wines.
- (2) That these remedies are of a widely differing character, comprising (a) genuine scientific preparations; (b) unobjectionable remedies for simple ailments; and (c) many secret remedies making grossly exaggerated claims of efficacy; causing injury by leading sick persons to delay in securing medical treatment; containing in disguise large proportions of alcohol; sold for improper purposes; professing to cure diseases incurable by medication; or essentially and deliberately fraudulent.
- (3) That this last-mentioned class (c) of remedies contains none which spring from therapeutical or medical knowledge, but that they are put upon the market by ignorant persons, and in many cases by cunning swindlers who exploit for their own profit the apparently invincible credulity of the public.
- (4) That this constitutes a grave and widespread public evil.
- (5) That in British Dominions and foreign countries severe legal restrictions exist, and that there is a tendency still further to strengthen the law against these articles.
- (6) That no Department of State and no public officer is charged with the duty of controlling the sale and advertisement of proprietary remedies in this country; that the Home Office and the Local Government Board are virtually powerless in this respect; that the Privy Council Office, though supposed to be specially concerned with the sale of drugs, has no initiative in the matter, and in fact, it fulfils no useful function in this connexion.
- (7) That the existing law is chaotic and has proved inoperative, and that successful prosecution for fraud in the advertisement and sale of secret remedies is fraught with the greatest difficulty, though the Public Prosecutor has perhaps not sufficiently tested the powers of the existing law in respect to such cases.
- (8) That consequently the traffic in secret remedies, except as regards scheduled poisons and the grosser forms of impropriety, is practically uncontrolled in this country.
- (9) That this is an intolerable state of things, and that new legislation to deal with it, rather than merely the amendment of existing laws, is urgently needed in the public interest.
- (10) That grave injury is caused to the public by the existing large sale of medicated wines.
- (11) And that while, for reasons already given, it is not desirable to require the exhibition of formula of every secret remedy, nevertheless it is improper that under the protection of the law enormous quantities of alleged remedies should be sold the composition of which is unknown to any person except the manufacturers of them; and that therefore the formulæ of all secret remedies should be required to be commu-

nicated to a competent officer appointed under the authority of a Minister of State, but that such formulæ should not be divulged to any other person except as hereinafter recommended.

RECOMMENDATIONS.

56. Your Committee therefore recommend :—

(1) That the administration of the law governing the advertisement and sale of patent, secret and proprietary medicines and appliances be coördinated and combined under the authority of one Department of State.

(2) That this administration be part of the functions of the Ministry of Public Health when such a Department is created, and that in the meanwhile it be undertaken by the Local Government Board.

(3) That a competent officer be appointed to this Department, with the duty of advising the Minister at the head of the Department concerned regarding the enforcement of the law in respect of these remedies.

(4) and (5) That there be established at the Department concerned a register of manufacturers, proprietors and importers of patent, secret and proprietary remedies, and that every such person be required to apply for a certificate of registration and to furnish (a) the principal address of the responsible manufacturer or representative in this country, and (b) a list of the medicine or medicines proposed to be made or imported.

(6) That an exact and complete statement of the ingredients and the proportions of the same of every patent, secret and proprietary remedy; of the contents other than wine, and the alcoholic strength of every medicated wine, and a full statement of the therapeutic claims, made or to be made, and a specimen of every appliance for the cure of ailments other than recognised surgical appliances, be furnished to this Department, such information not to be disclosed except as hereinafter recommended, the Department to control such statement, at their discretion, by analyses made confidentially by the Government Chemist.

(7) That a special Court or Commission be constituted with power to permit or to prohibit in the public interest, or on the ground of non-compliance with the law, the sale and advertisement of any patent, secret or proprietary remedy, or appliance, and that the Commission appointed for the purpose be a judicial authority such as a Metropolitan Police Magistrate sitting with two assessors, one appointed by the Department, and the other by some such body as the London Chamber of Commerce.

(8) That the President of the Local Government Board (or Minister of Health) have power to institute the necessary proceedings to enforce compliance with the law, the sale and advertisement of any patent, secret or proprietary remedy, or appliance.

(9) That a registration number be assigned to every remedy permitted to be sold, and that every bottle or package of it be required to bear the imprint "R.N. . . ." (with the number), and that no other words referring to the registration be permitted.

(10) That in the case of a remedy the sale of which is prohibited, the proprietor or manufacturer be entitled to appeal to the High Court against the prohibition.

(11) That the Department be empowered to require the name and proportion of any poisonous or potent drug forming an ingredient of any remedy to be exhibited upon the label.

(12) That inspectors be placed at the disposal of the Department to examine advertisements and observe the sale of proprietary remedies and appliances.

(13) That an annual fee be payable in respect of every registration number issued.

57. Your Committee make the following recommendations regarding the amendment of existing laws :—

(1) That the Stamp Acts be consolidated and amended to remove the numerous existing anomalies and unreasonable exceptions. In this connexion,

pure drugs vended entire under a fancy name should no longer be exempt from duty; the distinction between the name of an ailment, and the name of an organ the seat of that ailment, should be abandoned; and the exemption of medicines generating carbonic acid gas should be omitted (*see* Par. 16). Further, any reference in advertising matter to the Government stamp should be prohibited, and no name of a proprietor or firm should be printed upon the stamp.

(2) That the Indecent Advertisements Act be amended on the lines of Lord Bray's Bill.

58. Your Committee further recommend the following legislative enactments :—

(1) That every medicated wine, and every proprietary remedy containing more alcohol than that required for pharmacological purposes, be required to state upon the label the proportion of alcohol contained in it.

(2) That the advertisement and sale (except the sale by a doctor's order) of medicines purporting to cure the following diseases be prohibited :—

Cancer.	Diabetes.	Locomotor ataxy.
Consumption.	Paralysis.	Bright's disease.
Lupus.	Fits.	Rupture (without operation or appliance).
Deafness.	Epilepsy.	

(3) That all advertisements of remedies for diseases arising from sexual intercourse or referring to sexual weakness be prohibited.

(4) That all advertisements likely to suggest that a medicine is an abortifacient be prohibited.

(5) That it be a breach of the law to change the composition of a remedy without informing the Department of the proposed change.

(6) That fancy names for recognised drugs be subject to regulation.

(7) That the period of validity of a name used as a trade mark for a drug be limited, as in the case of patents and copyrights.

(8) That it be a breach of the law to give a false trade description of any remedy, and that the following be a definition of a false trade description :—"A statement, design or device regarding any article or preparation, or the drugs or ingredients or substances contained therein, or the curative or therapeutic effect thereof, which is false or misleading in any particular." And that the onus of proof that he had reasonable ground for belief in the truth of any statement by him regarding a remedy, be placed upon the manufacturer or proprietor of such remedy.

(9) That it be a breach of the law—

(a) To enclose with one remedy printed matter recommending another remedy.

(b) To invite sufferers from any ailment to correspond with the vendor of a remedy.

(c) To make use of the name of a fictitious person in connexion with a remedy. (But it should be within the power of the Department to permit the exemption of an old-established remedy from this provision.)

(d) To make use of fictitious testimonials.

(e) To publish a recommendation of a secret remedy by a medical practitioner unless his or her full name, qualifications and address be given.

(f) To promise to return money paid if a cure is not effected.

The Report concluded by registering the belief of the Committee that departmental and legislative action in accordance with such outlines would not inflict injustice upon any patent or proprietary medicine or appliance; that it would, alike by its operative and its deterrent effect, afford the public efficient and urgently needed protection against injury and fraud; and that no measures of a smaller scope will secure this result.

The Committee expressed appreciation of the ability and tact of Mr. F. C. Bramwell, whose duties as clerk in connexion with a long inquiry were onerous and delicate.

II.

THE PROPRIETARY MEDICINES BILL

The recommendations of the Select Committee of the House of Commons in 1920 took shape in the Proprietary Medicines Bill, the text of which, as amended in Committee of the House of Lords, is reprinted verbatim here. Amendments were to have been moved on the Report stage, which, however, was not reached.

PROPRIETARY MEDICINES BILL (10 & 11 GEO. V.) AS AMENDED IN COMMITTEE
OF THE HOUSE OF LORDS.

Memorandum.

1. The object of this Bill is to give effect to the recommendations of the Select Committee of the House of Commons on Patent Medicines, who reported in August, 1914: see Paper 414 of 1914. It contains no provisions which were not specifically recommended by the Select Committee, and it includes all their more important recommendations so far as they fall within the province of the Ministry of Health.

2. Provision is made for the establishment of a register of proprietary medicines and appliances, and of the owners thereof, and the Bill prohibits the sale of any unregistered proprietary medicine or appliance.

The expression "proprietary medicine" is defined in the Bill to mean a medicine which is held out by advertisement as of use for curative or remedial purposes, and which is either sold under a trade name or manufactured by a secret process.

Severe penalties are attached to the unauthorised disclosure by the registrar or any other person of the formula of any registered medicine.

3. The sale of remedies purporting to cure certain diseases, such as consumption or cancer, is prohibited, and it is made an offence to advertise any article in terms which suggest that it can be used to produce abortion.

4. The Minister of Health is empowered to remove from the register any injurious medicine or appliance, but the owner is given a right of appeal to the High Court.

5. The Bill, in accordance with the recommendations of the Select Committee, prohibits certain practices, chiefly in connexion with advertisements, which the Committee considered undesirable.

6. All regulations made under the Bill are required to be laid before Parliament.

Arrangement of Clauses.

1. Control of manufacture and sale of proprietary medicines and appliances.
 2. Prohibition of sale, &c., of remedies for certain diseases.
 3. Offences in connexion with advertisements.
 4. Register of medicines and appliances.
 5. Regulations.
 6. Removal from register of medicines and appliances.
 7. Appeal against removal from register.
 8. Penalties.
 9. Saving for sales on medical prescriptions and sales of existing stocks.
 10. Interpretation.
 11. Short title and extent.
- Schedule.

TEXT OF THE BILL.

Intituled

An Act to regulate the manufacture and sale of certain medicines and surgical appliances, and for purposes connected therewith.

Be it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

*I.—Control of Manufacture and Sale of Proprietary
Medicines and Appliances.*

(1) It shall not be lawful for any person to manufacture or prepare for sale any proprietary medicine or any proprietary surgical appliance unless—

(a) he is duly registered under this Act as the owner of the medicine or appliance, as the case may be, or is a person authorised by the registered owner to manufacture or prepare for sale the medicine or appliance on his behalf; and

(b) the medicine or appliance is a medicine or appliance duly registered under this Act; and

(c) in the case of a medicine, it is compounded of the ingredients and in the proportions specified in the register, or, in the case of an appliance, it corresponds with the specimen furnished under this Act to the registrar.

(2) It shall not be lawful for any person to sell, offer for sale, or have in his possession for sale, any proprietary medicine or proprietary surgical appliance which is not registered under this Act, or any proprietary medicine or proprietary surgical appliance registered under this Act unless it bears the number assigned to it in the register, or any proprietary medicine or proprietary surgical appliance which is manufactured elsewhere than in England or Wales unless the owner thereof or his representative is duly registered under this Act.

(3) If any person acts in contravention of this section he shall be guilty of an offence against this Act:

Provided that proceedings shall not be brought against any person for manufacturing or preparing for sale a proprietary medicine compounded of other ingredients or in other proportions than those specified in the register except by the Minister.

(4) This section shall come into operation on the expiration of six months from the date on which notice is given by the Minister in the *London Gazette* that applications for registration under this Act will be received.

II.—Prohibition of Sale, &c., of Remedies for Certain Diseases.

(1) After the expiration of six months from the commencement of this Act it shall not be lawful for any person to sell, or to offer or advertise for sale, any medicine or surgical appliance of any kind whatsoever purporting or stated directly or by implication to be effective for the cure of deafness or rupture or for the prevention, cure, or relief of any of the diseases or infirmities mentioned in the Schedule to this Act.

If the Minister is of opinion that the provisions of this subsection should extend to any other disease or infirmity he may by regulations under this Act add the name of that disease or infirmity to the Schedule to this Act:

Provided that before any regulations are made for the purposes of the foregoing provision, a draft of the regulations shall be laid before both Houses of Parliament, and the regulations shall not be made unless both Houses by resolution approve the draft either without modification or with modifications to which both Houses agree, and upon such approval being given the regulations may be made in the form in which they have been approved.

(2) No person shall print, publish or distribute, or be concerned in any manner in the printing, publication or distribution of, any advertisement or communication relating to any article expressed in such terms as may, or are likely or calculated to, suggest that the article may be used or may operate as a means of producing an abortion or miscarriage.

(3) If any person acts in contravention of this section he shall be guilty of a misdemeanour.

III.—Offences in Connexion with Advertisements.

If any person—

(a) being the registered owner or the vendor of any proprietary medicine or proprietary surgical appliance, or the agent of any such owner or vendor, solicits or invites, whether by advertisement or otherwise, any person suffering, or believing himself to be suffering, from any ailment to enter into correspondence with him, either directly or indirectly, with reference to the ailment, or by correspondence treats or offers to treat any person suffering or believing himself to be suffering from any ailment, or offers to give advice to any person with reference to the cure, relief, or prevention of any ailment or to return money paid therefor if such cure, relief, or prevention does not take place; or

(b) publishes or otherwise makes use of any fictitious, false, or misleading testimonials in relation to any proprietary medicine or proprietary surgical appliance; or

(c) publishes, whether in any advertisement or otherwise, a statement to the effect that a proprietary medicine or proprietary surgical appliance is recommended by a duly qualified medical practitioner without including in the statement correct and full particulars with respect to the name and qualifications and, in the case of a living person, the address of the medical practitioner; or

(d) publishes, whether in any advertisement or otherwise, a false statement to the effect that, or a statement calculated to induce any person to believe contrary to the fact that, a proprietary medicine or proprietary surgical appliance was discovered, invented or compounded by a duly qualified medical practitioner;

he shall be guilty of an offence against this Act.

IV.—Register of Medicines and Appliances.

(1) For the purposes of this Act the Minister shall form and keep, subject to and in accordance with the provisions of this Act, a register of owners of

proprietary medicines and owners of proprietary surgical appliances, and of proprietary medicines and appliances.

(2) The register shall consist of the following parts:—

(a) A register of the persons registered as such owners as aforesaid;

(b) A register of proprietary medicines;

(c) A register of proprietary surgical appliances.

(3) The Minister shall appoint a proper person to be registrar for the purposes of this Act, and shall assign to him such duties in connexion with this Act as he shall think fit.

(4) The register of proprietary medicines shall be kept in two separate books, in one of which (in this Act referred to as "the formulæ book"), there shall be contained the particulars with respect to the ingredients and composition of the medicines, and in the other of which there shall be contained all the other matters which are required to be registered in relation to proprietary medicines.

(5) Notwithstanding anything in Section 14 of the Evidence Act, 1851, or any other Act, the registrar shall not furnish any copy of or extract from any entry in the formulæ book relating to any medicine to any person other than the registered owner of the medicine, and the registrar shall not, except with the consent of the registered owner of a medicine, produce or otherwise disclose the entry in the formulæ book relating to that medicine on any proceedings in any court, other than proceedings against a person for manufacturing or preparing for sale a proprietary medicine alleged to be compounded of ingredients or in proportions other than those specified in the register or proceedings on an appeal against the removal of a medicine from the register.

(6) A certificate purporting to be a certificate under the hand of the registrar stating that any person or any medicine or appliance is, or was at any date, or is not, or was not at any date, duly registered under this Act, or stating that any other particulars are, or were at any date, or are not, or were not at any date, contained in the register with respect to any person, medicine, or appliance registered therein, shall be conclusive evidence in all courts of law of the facts stated in the certificate.

(7) If the registrar or any other person without lawful authority publishes or communicates to any person any information which has, for the purpose of procuring the registration of any medicine under this Act, been furnished by any person with respect to the ingredients or composition of that medicine he shall be guilty of a misdemeanour.

V.—Regulations.

(1) The Minister may make regulations for the following purposes:—

(a) For regulating the formation and maintenance of the register, and providing for the publication of any part of the register other than the formulæ book;

(b) For regulating the manner in which applications for registration under this Act may be made, including the payment of such fees as may be prescribed, and for prescribing the conditions to be complied with by a person applying to be registered as the representative of the owner of any medicine or appliance;

(c) For prescribing the causes for which and the manner in which a registered owner may be removed from the register and the manner in which notice of such removal is to be given;

(d) For enabling particulars entered in the register with respect to any medicine or appliance to be varied or amended, and a new registration number to be issued in any case in which particulars are so varied or amended;

(e) For providing for any matter for which provision may be made by regulations under this Act and for prescribing any matter which is to be prescribed under this Act.

(2) Regulations under this section shall contain provisions—

(a) requiring the prescribed particulars of the name or description under which a proprietary medicine or proprietary surgical appliance is to be sold or offered or advertised for sale to be included in the register:

(b) requiring that in the case of any synthetic drug sold as a proprietary medicine, the chemical name thereof shall appear on the label and in every advertisement relating thereto:

(c) requiring that a number shall be assigned to every medicine or appliance included in the register, and that every vessel or other package in which the medicine or appliance is sold or offered for sale shall bear the registered number:

(d) prohibiting the affixing to or insertion in any such vessel or package as aforesaid of any other reference to the fact that the medicine or appliance is registered under this Act:

(e) requiring every person registered as an owner under this Act, who is not himself the manufacturer of the medicine or appliance, to furnish in the prescribed manner the prescribed particulars with respect to the person by whom the medicine or appliance is manufactured:

(f) prohibiting the registration of any medicine unless and until full particulars of the ingredients of the medicine and the proportions in which those ingredients are used have been furnished to the registrar, including in the case of medicated wines or spirits particulars of the alcoholic strength thereof, and prohibiting the registration of any medicine or appliance until full particulars have been furnished to the registrar of the directions for use which will be supplied with the medicine or appliance when sold:

(g) enabling the Minister, if he so thinks fit, to direct that the name and quantity of any poisonous or dangerous substance forming an ingredient of any registered medicine shall be stated in the prescribed manner on all vessels or other packages in which the medicine is sold or offered for sale:

(h) requiring every proprietary medicine containing more than such an amount of alcohol as is in excess of that required in the opinion of the Minister for solvent or preservative purposes, to bear on the vessel or other package in which it is contained a statement in writing of the proportion of alcohol contained therein:

(i) prohibiting the registration of any surgical appliance unless and until a specimen thereof has been furnished to the registrar:

(j) prohibiting the affixing to or insertion on or in any vessel or package containing any proprietary medicine or proprietary surgical appliance of any statement declaring that the medicine or appliance possesses any therapeutic qualities other than such qualities as are specified in the register as being the therapeutic qualities of that medicine or appliance.

(3) If any person acts in contravention of or fails to comply with the provisions of any regulation made under this section, or furnishes any false or misleading particulars for the purpose of or in connexion with an application made under any such regulation, he shall be guilty of an offence against this Act.

(4) Every regulation made under this Act shall be laid before each House of Parliament forthwith, and if an address is presented to His Majesty within twenty-one days on which that House has sat next after any such regulation is laid before it praying that the regulation may be annulled His Majesty in Council may annul the regulation, and it shall thenceforth be void, but without prejudice to the validity of anything previously done thereunder.

VI.—Removal from Register of Medicines and Appliances.

Subject to the provisions of this section, the Minister may, where it appears to him that any medicine or appliance which has been registered under this Act will or is likely if used in accordance with the directions for use issued therewith, or will or is likely for any other reason, to cause injury to health, direct that the medicine or appliance shall be removed from the register, and where the Minister gives any such direction he shall cause notice of the removal to be given in the *London Gazette*, and in such other manner as he thinks fit:

Provided that the Minister before giving a direction under this section shall send by post to the registered owner of the medicine or appliance notice in writing of his intention in that behalf, and shall take into consideration any representations which may be made to him in writing with respect to the matter by or on behalf of the registered owner at any time within twenty-one days after the date of the sending of the notice, and the Minister shall not give any public intimation of his intention until the expiration of the said twenty-one days.

VII.—Appeal Against Removal from Register.

If any person being the registered owner of any medicine or appliance is aggrieved by the removal of his name or of any medicine or appliance from the register he may within three months after the date on which notice of the removal has been given in accordance with the provisions of this Act, appeal to the High Court against the removal in manner provided by rules of court, and on any such appeal the order of the Court shall be final and conclusive, and shall not be subject to any appeal to any other court.

VIII.—Penalties.

If any person is guilty of any offence which is declared by this Act to be a misdemeanour he shall be liable on conviction therefor to imprisonment for a term not exceeding twelve months, or to a fine not exceeding five hundred pounds, or to both such imprisonment and fine, and if any person is guilty of any other offence against this Act he shall be liable on summary conviction for each offence to a fine not exceeding fifty pounds, and in the case of a continuing offence to a further fine not exceeding five pounds for each day during which the offence continues after conviction.

IX.—Saving for Sales on Medical Prescriptions and Sales of Existing Stocks.

Nothing in this Act shall operate to render unlawful—

(a) the sale of any medicine or appliance to or for the use of any person in accordance with a prescription given in the case of that person by a duly qualified medical or dental practitioner; or

(b) the sale of any medicine or appliance which is proved by the vendor to have been bought by him at any time before the twenty-fourth day of July, nineteen hundred and twenty.

X.—Interpretation.

For the purposes of this Act—

The expression "medicine" includes any drug, preparation or compound of any description whatsoever to be used whether externally or internally for the prevention, cure, or relief of any malady, ailment, infirmity or disorder affecting human beings;

The expression "proprietary medicine" means any medicine which is held out by advertisement, label, or otherwise in writing, as efficacious for the preven-

tion, cure or relief of any malady, ailment, infirmity or disorder affecting human beings and—

(a) which is sold under a trade name or trade mark to the use of which any person has or claims or purports to have an exclusive right; or

(b) of which any person has or claims or purports to have the exclusive right of manufacture or for the making of which any person has or claims or purports to have any secret:

The expression "proprietary surgical appliance" means any instrument or contrivance of a medical or surgical nature which is recommended to the public by advertisement, label, or otherwise in writing, as of use for curative purposes and which is sold under a trade name or a trade mark to the use of which any person has or claims or purports to have an exclusive right or for the making or selling of which any person has or claims or purports to have an exclusive right;

The expression "Minister" means the Minister of Health;

The expression "registered owner" or "person registered as an owner" includes a person registered as the representative of an owner.

XI.—Short Title and Extent.

(1) This Act may be cited as the Proprietary Medicines Act, 1920.

(2) This Act shall not apply to Scotland or Ireland.

SCHEDULE.

- | | |
|--|-----------------------|
| 1. Cancer. | 7. Diabetes. |
| 2. Consumption. | 8. Paralysis. |
| 3. Lupus. | 9. Locomotor ataxy. |
| 4. Fits. | 10. Bright's disease. |
| 5. Epilepsy. | |
| 6. Amenorrhoea and other diseases peculiar to women. | |

PROPRIETARY MEDICINES BILL: SECOND READING IN THE HOUSE OF LORDS.

Viscount ASTOR moved the second reading of the Proprietary Medicines Bill in the House of Lords on July 29th, 1920. He said that this measure was introduced in fulfilment of an undertaking given by the Lord Chancellor on behalf of the Government last year. It had been framed on the recommendations of the Select Committee which reported in 1914. The Committee's recommendations were in the nature of a compromise, and were not based on either of the two conflicting views. This country was very much behind several of our dominions, as well as most other civilised countries, in its treatment of proprietary and patent medicines and surgical appliances. As an example of the way in which our public were victimised the Select Committee quoted the instance of a man who came with a certain instrument to this country and was reported to have made over £60,000 by its sale. He went to France and was sentenced to three years' imprisonment, as well as heavily fined, for trying to sell the same instrument. Additional legislation was certainly necessary here to deal with the matter. At the present moment there was no Minister or Government department which was responsible for protecting the public, or for seeing that the public did not suffer grievous injury. The Bill did not propose to protect the purse of the public, though possibly amendments might be moved later to strengthen the Bill in that respect. Injury might be caused in one or two ways. Sufferers who purchased and attempted to use these appliances and medicines very often postponed going to a proper medical practitioner while trying to treat themselves. The delay very often aggravated their ailment, sometimes very seriously. In other cases actual injury was caused through these remedies. They proposed to prohibit the advertisement and sale of remedies purporting to treat, cure, alleviate, or prevent diseases which were set out in the schedule—cancer, consumption, diabetes, certain diseases peculiar to women, fits, epilepsy, deafness—because they knew that serious risk was involved if sufferers tried to treat themselves by using a patent drug. These were serious complaints, and it was not in the public interest that people, haunted by fear, should be encouraged to use these remedies. Too often they merely touched a symptom of the disease. A case was quoted in the report where a particular medical wine was advertised, and it was stated that if two wine glasses full were taken that was a sufficient amount to cause sleep. It was recommended for children in these words, "For colds, coughs and bronchial affections." It contained cocaine, or the elements of cocaine, and nobody would advocate the continuation of a law which allowed or encouraged people to purchase cocaine in order to make their children sleep when they were suffering from a cough. It was essential that they should take powers to deal with these evils.

In a limited number of cases death was caused, particularly where remedies were used intended to produce abortion. A considerable number of remedies were advertised as being suitable for female irregularities. He was told that at the best these remedies were useless, and that too often the most serious consequences resulted from their use. It was impossible, he was told, to kill an unborn child without endangering the life of the mother. Some of these remedies were intended to give lead poisoning. It was quite true that you might kill the unborn child by this means, but too often they also killed the mother. These remedies also led to blackmail. A case was quoted of two men who had threatened to expose the purchasers of a particular remedy intended to cause abortion. The police intercepted 600 letters containing two guineas each from these unfortunate women, who were paying this money under a threat of exposure. If the Bill did nothing else but prevent this reprehensible practice they would be justified in trying to pass it. The Assistant Director of Public Prosecutions said it was almost impossible to prove fraud, and that practically the law was non-existent. They could not expect the purchaser of a remedy intended to produce miscarriage to come forward after having bought the remedy and say: "I bought this remedy in order that I should be able to commit a crime. I have not been able to produce miscarriage. I have been defrauded." He knew a case where a bottle of mixture was sent with the intimation that the powerful and certain action of the medicine contained in the bottle necessitated the warning that the contents should not be taken by those expecting to be mothers, as the medicine was very liable to cause a miscarriage. That was the way in which these drugs were brought to the notice of a large number of unfortunate women who too often in the past had availed themselves of them. He would quote a brief paragraph from the Report of the Select Committee which summarised, very briefly, the situation. The Committee stated:—

"For all practical purposes British law is powerless to prevent any person from procuring any drug, or making any mixture, whether potent or without any therapeutical activity whatever (so long as it does not contain a scheduled poison), advertising it in any decent terms as a cure for any disease or ailment, recommending it by bogus testimonials and the invented opinions and facsimile signatures of fictitious physicians, and selling it under any name he chooses on the payment of a small stamp duty, for any price he can persuade a credulous public to pay."

The Bill proposed that a register should be made on which every proprietary medicine and surgical appliance and the owners thereof should be registered. The sale of unregistered remedies was prohibited. Powers were taken, subject to the right of appeal, to remove the owner of a proprietary medicine from the register if his remedy was considered too dangerous

to health. Powers were also taken to compel the owner to disclose the contents, the formula, the ingredients to the Government privately and in confidence. Heavy penalties would be imposed for non-disclosure. Further, they prohibited the advertising of remedies purporting to prevent, cure, or relieve the diseases which were set out in the Schedule. Clause 5 stated that the alcoholic contents of a patent medicine must be given on the label. Many of the medicated wines contained as much alcohol as some of the heaviest wines and twice as much as claret. A particular medicine referred to by the Committee which was recommended for use at the time of confinement was found on analysis to contain something like 60 per cent. of alcohol and the rest was apparently pure water. This was recommended as assisting confinement and producing fine and healthy babies. The Bill prohibited correspondence with the vendors, and the enclosure of literature with one remedy recommending the use of another remedy. They also prohibited the advertising of remedies suggesting that they were useful or could be used for procuring abortion. Clause 5 set out that all regulations

must be laid before Parliament. The Minister of Health was made responsible for the supervision of the matters dealt with. In Clause 10 there was a definition of a "proprietary medicine." They excluded from the definition those proprietary medicines which were not advertised, pushed, or puffed in writing as being remedies, or having special therapeutic qualities. They proposed to exclude mixtures the composition of which was known, which were made by well-known and reputable chemists, and which were not pushed for sale on the ground that they had special therapeutic qualities. Nor did the definition include any recognised drug or preparation for which no monopoly was claimed. He knew that the press derived a large revenue from the advertising of patent medicines and surgical appliances, but he had too high an opinion of the press as a whole to believe that they would attempt to stop the passage of the Bill.

The Bill was read a second time, and on Friday, August 6th, 1920, the House of Lords went into Committee on the Bill. Certain amendments were agreed to and the measure as amended was reported to the House.

CONSTIPATION, AUTO-INTOXICATION, DRASTIC PURGATIVES

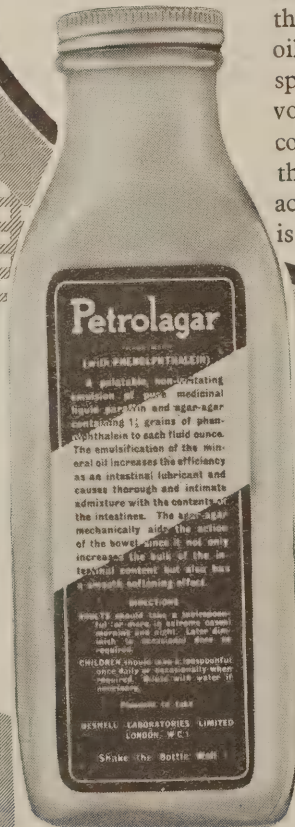
Petrolagar

(trade mark)

The Solution of the Problem of the Vicious Circle

PETROLAGAR contains 65% of pure medicinal liquid paraffin and 10% of prepared agar-agar in the form of a perfectly homogeneous, stable and highly palatable emulsion. It has effected very remarkable and uniformly successful results in the treatment of the Intestinal Atony which gives rise to Chronic Constipation and Intestinal Stasis. It breaks down the vicious circle—Chronic Constipation—Auto-Intoxication—Drastic Cathartics—and brings about a return to normal in the action of the bowel.

Petrolagar is non-habit-forming, does not leak, and, unlike cathartics, may be administered in progressively decreasing amounts. Microscopic examination of the intestinal content after its use shows intimate admixture throughout the mass—a result unobtainable with plain oil or plain agar-agar. The agar-agar in a table-spoonful of Petrolagar absorbs many times its volume of water and the increased bulk, combined with the lubricating action of the mineral oil, so stimulates peristaltic action that the inertia of the bowel is overcome.



PETROLAGAR is available in four forms:

PETROLAGAR Plain

PETROLAGAR Phenolphthalein

PETROLAGAR Alkaline

PETROLAGAR Unsweetened

Clinical Trial Samples will be sent on request.

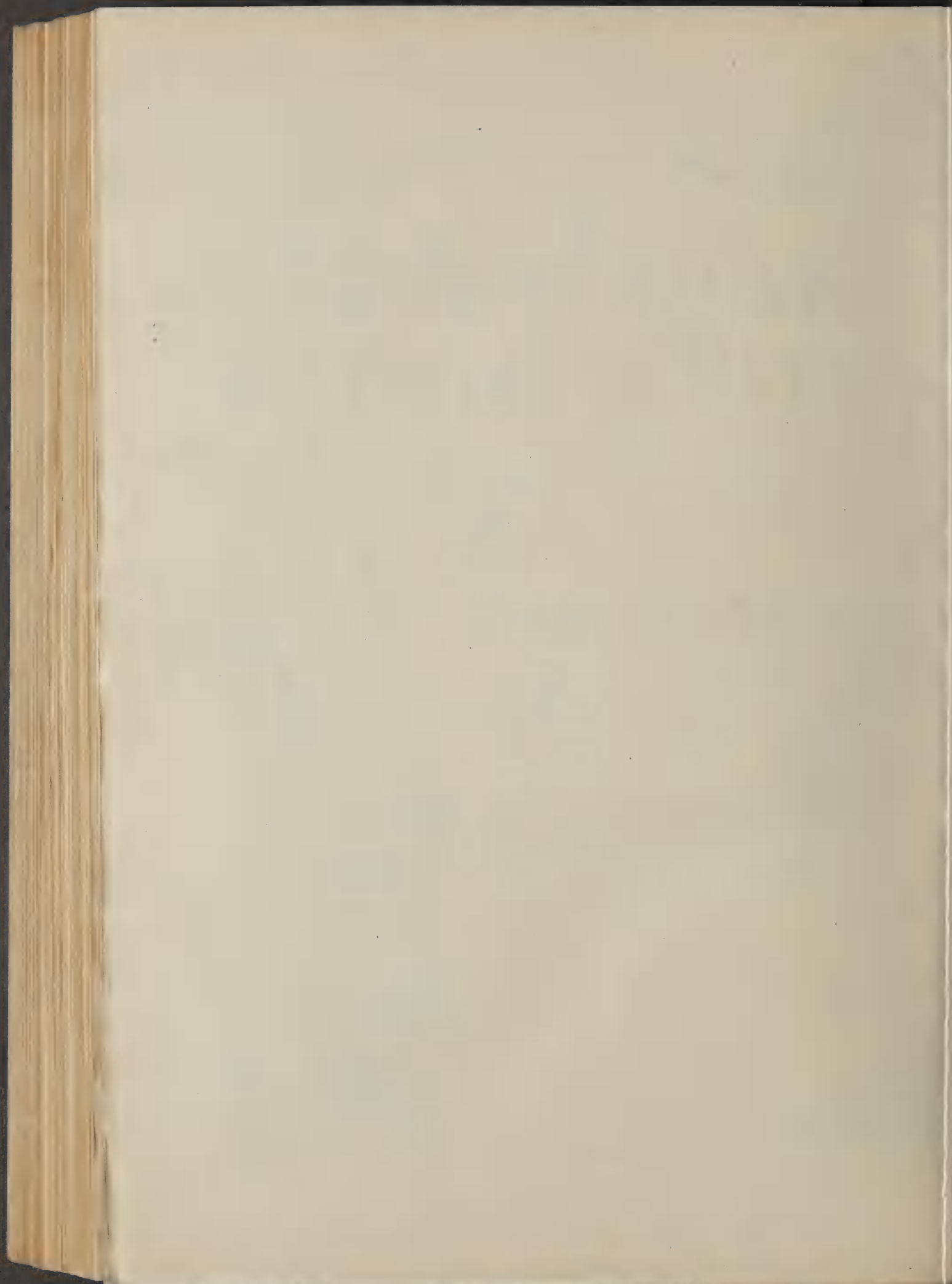
Sole Manufacturers:
DESHELL LABORATORIES,
 LIMITED
 Sentinel House,
 Southampton Row, W.C.1

Special Supplement
TO
THE LANCET

REX v. BATEMAN

BEFORE THE LORD CHIEF JUSTICE OF ENGLAND, MR. JUSTICE SALTER, AND
MR. JUSTICE FRASER, IN THE HIGH COURT OF JUSTICE, COURT OF
CRIMINAL APPEAL.

On Monday, February 9th, 1925.



REX v. BATEMAN

In the Court of Criminal Appeal Dr. Percy Bateman was granted leave to appeal against his conviction for manslaughter at the Central Criminal Court on Dec. 9th, 1924, when he was sentenced to six months' imprisonment in the second division.¹

The Court was composed of the Lord Chief Justice (Lord Hewart), Mr. Justice Salter, and Mr. Justice Fraser, and the appeal was made on Monday last on Dr. Bateman's behalf by Mr. Norman Birkett, K.C., with whom was Mr. Arthur Davis. Mr. H. D. Roome appeared for the Crown.

OPENING SPEECH FOR THE APPELLANT.

Monday, February 9th.

Mr. BIRKETT. May it please your Lordships. In this case I appear with my learned friend Mr. Davis for the Appellant, and my friend Mr. Roome appears for the Crown. Your Lordships may recall that last Monday your Lordships granted leave to appeal in this case, and this is the appeal by Percy Bateman, who is a doctor. He appeals against a conviction at the Central Criminal Court for manslaughter, a conviction on Dec. 11th, 1924, at the trial before Mr. Justice Shearman, when the Appellant was sentenced to six months imprisonment in the Second Division. My Lords, the grounds of appeal here are: (1) Misdirection as to the law; (2) misdirection as to the evidence; (3) the wrongful admission of evidence; and (4) that the verdict is against the weight of evidence.

SUMMARY OF EVENTS FROM DELIVERY OF THE PATIENT TO HER DEATH.

I made an application last week that although your Lordships were familiar with the facts of the case I might be allowed quite shortly to summarise them in order to assist the later arguments. I desire to do that quite shortly again to-day. The facts were these, that Mary Ann Harding, the deceased woman, was the wife of John Harding who was a builder's labourer at Deptford. The home consisted of two rooms, one a sitting-room-bedroom or a kitchen-bedroom, and the other a bedroom. Those two bedrooms were situate at the top of four flights of stairs, and on the evening when the doctor first attended the room was dimly lighted by a broken incandescent mantle on the gas. Mrs. Harding was 33 years of age. She had had four children, ages 13 to 4. All those confinements had been quite normal. She had been attended in each case by a midwife and she was up to this time a normally healthy strong woman. She was pregnant again in the month of July, 1924, and on July 21st, a Monday, she had slight pains, there was some contest at the trial as to whether they were genuine labour pains or not, at any rate slight pains which passed away. On the 22nd, the Tuesday, there were slight pains again which passed away, but on the Wednesday, the 23rd, she had certainly definite labour pains. About 4 o'clock in the afternoon the pains became so pronounced and so acute that the midwife was sent for, and a Nurse Cleak, who had had 37 years' experience as a midwife, came in the

afternoon. She made her usual preparations as to dressing the patient, and so on, and then made a short manual examination of Mrs. Harding, and the midwife then discovered that there was an obstruction with which she was not competent or willing to deal. That was at about 6 o'clock in the evening and thereupon the doctor was sent for and at about 10 o'clock that night Dr. Bateman arrived at this house. He was informed by Nurse Cleak of one or two material matters, the previous labour pains and matters of that kind, and he then proceeded to make his examination. First of all he had a manual examination by means of the finger. Then, discovering the obstruction which had troubled the midwife, he administered chloroform and thereupon used the forceps for quite a short time, and then, finding that the forceps slipped, he abandoned the use of the forceps and for an hour afterwards was engaged in the attempt to remove the obstruction by the process which I understand to be known as version—merely turning the child. It was, according to the doctor, the most difficult presentation that is known to medical science: the head, feet and the cord all presenting together. The evidence was that for an hour he worked strenuously until the sweat came from him and at the end of the hour the child was delivered dead. The child was placed upon the bed and then the doctor turned to remove the placenta or after-birth. It was referred to by the learned Judge in his summing-up as membranous stuff, which may have rather confused the Jury, because, as I understand, the placenta itself (and it is important to remember this in connexion with the facts of this case) is a thick fleshy cakelike substance which is a span in breadth, an inch in thickness and a pound in weight, which certainly is not very accurately described as "membranous stuff." He turned to remove the placenta, and did so, and a chamber was held by the midwife, Nurse Cleak, to hold the placenta, and it was placed therein; and he was turning to go, having done all that he could, when the nurse called his attention to the placenta in the chamber, and the conversation, which I think is important, was shortly this. The nurse said: "What is this? I never saw anything like that before." The Appellant said: "Good God! What have I done." The nurse said: "I do not know what it is." The Appellant said: "Don't you know what it is?" The nurse said: "No, I don't, I have never seen anything like it before"; and the Appellant said: "It's the uterus." The nurse said: "Surely not." The Appellant said: "Whatever shall I do?" The nurse said: "I don't know"; and the Appellant said: "I will tell you." He then

¹ THE LANCET, Dec. 27th, 1924; Jan. 3rd, 1925; Feb. 7th, 1925.

removed the uterus from the placenta and wrapped it in a napkin and placed it in his bag and he took it away and he said to the nurse that she must not say anything so as not to shock the relatives; and later he said: "We had better keep this to ourselves and not shock the relatives." The nurse asked him if the patient ought not to go away to the hospital and he said that he would see in the morning. He then left the room and saw the husband and a friend, a Miss Lehoux, and he told the husband that the child had been born dead, that the wife was very bad and that she probably would not live, that she was about to die, and he told the same to Miss Lehoux, and the husband said: "Ought she not to go away?" and the Appellant said: "Not at present, she must not be moved to-night"; and the husband went with the doctor to the surgery for medicine about 1 o'clock the following morning. Now may I stop there in that short narrative. In this case it appeared, so far as one can judge, that two allegations were made against the Appellant. In point of time the first allegation stopped there—namely, the conduct of the operation of version and producing the child. That is No. 1. The second allegation, as I understand it, was confined to events which followed thereon. Just before I very shortly summarise the second matter, may I say this. It would appear from the post-mortem examination upon July 30th, the woman having died upon the 30th, that the injuries from which the woman suffered at that time might be described, as they were described by the medical witnesses for the Prosecution, as the destruction of the pelvic floor. The uterus, with one of the Fallopian tubes, the right Fallopian tube, and the right ovary had been removed with the placenta. There was a slight tear of 2 in. in the uppermost part of the bladder; there was a crushing of certain intestines against the sacral promontory, which I understand to be a part of the bony pelvic circle which encloses the pelvic cavity, and there was a slight tear in the rectum. That was the extent of the injury. It was alleged at the trial that some of those injuries may have been caused by natural labour—that was urged for the Defence. There is no question that at the post mortem those injuries were existent.

MR. JUSTICE SALTER. The doctors who were called for the Defence were inclined to think, were they not, that those injuries were caused in the course of the version?

MR. BIRKETT. Yes, they were.

MR. JUSTICE SALTER. They said that in their view it was possible that they might have been caused by natural labour, but probably by the manipulation.

MR. BIRKETT. Yes, that is exactly accurate. One of the doctors said that in his personal practice he had known a case where there had been injury by natural labour, but he did say, and it was quite clear their view was, that it had been caused in the manual traction later. Now shortly on the second head, the facts were these, and it is rather important, I think, that I should put the full strength against me in face of the subsequent argument. He said: On Thursday, July 24th, at 9 o'clock in the morning he saw her, the child being delivered somewhere about midnight, and he had gone at 1 o'clock, or early the next morning, she was weak, conscious, could speak, but was vomiting a little. He called again at night and more medicine was obtained for her. The next day, Friday, 25th, he made two visits again. It is said by the relatives she seemed a little better herself, weak and vomiting. The importance of what the relatives said I think lies in this, that it was contended for the Crown that that being so she might have been removed earlier for an operation; I think that is the whole weight they attach to what the relatives said. On that day Nurse Cleak went up to the doctor's, and the purport of what she said (I need not read the conversation) is:

"Do not you think it is advisable to send this poor woman to the hospital?" and the doctor said, "Not at present; we must see how she goes along." On the Saturday he made two visits again. The situation was practically the same. On Sunday, July 27th, he made two visits again, and on that day the nurse went again to the surgery and substantially the same kind of conversation took place, namely: "Don't you think this poor woman ought to go to the hospital?" and the answer given I think I ought to read. "Oh, Doctor, you ought to send her away, poor dear, she is so bad; she cannot get the treatment at home"; and he said he would when she got a bit better; and the nurse said: "She will never get better, she will go under." On Monday, the 28th, the husband asked in the morning if his wife could be taken away to the hospital as she was worse and the strain of looking after her at home during the night was getting intolerable; and the doctor made answer to that that he would send her a sleeping draught to see if she could not get a little rest, and he would go in the evening and see what he could do. The husband went at 6 o'clock again on the Monday and when he got back at 7.30 he found an order for the removal to the hospital. Summarising that matter, it appears from the evidence that there were five requests made to the Appellant, at least matters put before him for his consideration as to the desirability of removing the woman to the hospital, one on the 23rd by the nurse and the husband, one on the 25th by the nurse, one on the 27th by the nurse, and one on the 28th by the husband. Now on Thursday, the 29th, at the hospital she was conscious until 9 or 10 o'clock and she died at 1 o'clock on the 30th. The Coroner's inquest was held on the 30th, and, as I understand it, the post mortem took place that day. Now, my Lords, substantially, and I think accurately, those are the short facts in regard to this matter, and the case for the Prosecution, as I understand it, and as I desire to deal with it, is this.

THE CASE FOR THE PROSECUTION AND FOR THE DEFENCE.

It was said (1) the fact that this injury took place to this woman on the 23rd when you were attempting to deliver the child was in itself evidence of such negligence as, upon the Jury being satisfied that it existed, you could be convicted criminally of manslaughter; (2) either in addition thereto or alternatively (and I want to say something about this when I deal with the summing-up) when that situation had arisen and those injuries which were revealed by the post mortem on the 30th were made known—when that situation had arisen and you knew the uterus had been taken away with the Fallopian tube and the ovary, there was a duty laid upon you to see that you did something to remedy that state of affairs, and because you did not do it you were guilty again of that kind of negligence which renders you liable to a conviction on a criminal charge of manslaughter. Then, of course, it was said that either one or both contributed to, caused, or accelerated, the death of this woman.

The answer in a word that the Defence made—and I will deal with the evidence when I deal with what I submit was misdirection—is: (1) There was not at any time here negligence at all; (2) so far as the first part of the case is concerned, the Prosecution never alleged any act of negligence; (3) that so far as the second allegation of negligence is concerned the conduct of which you complain was considered conduct, as we submit the proper and the prudent conduct, and the Defence pointed to this overwhelming fact which in my submission was never put to the Jury in the form which I respectfully suggest it ought to have been, that of the three known recorded cases where a uterus by misadventure of this kind had been removed, one died within 30 minutes, one died on the way to hospital, and the other died 40 minutes after admission, and in our case by our treatment she had lived seven days, and yet we were

charged with accelerating the death. Now substantially that was the case that was made and the case that was put in opposition, and that being so I desire now to take my first point with regard to misdirection in the summing-up as to the law.

The Force used During the Manipulation.

Mr. BIRKETT. My Lords, the first point that I was desirous of dealing with quite shortly was the submission on behalf of the Appellant that there was here a misdirection as to the law applicable to the facts of this case.

Mr. JUSTICE SALTER. Before you go to the summing-up, will you tell me this. Was it alleged by the Prosecution or admitted by the Defence that there was negligence in the manipulation, assuming that that caused the ruptures?

Mr. BIRKETT. The answer to that is that it was certainly not admitted by the Defence. It is a matter of some conjecture as to whether it was persisted in by the Prosecution.

Mr. JUSTICE SALTER. I did not mean so much that. I meant as to the actual evidence. Was Sir Bernard Spilsbury or Dr. Donald Buchanan asked to say or to express the opinion that it was negligent to have used manipulation with very great force?

Mr. BIRKETT. The question was not so put. My Lord, I think all that it went to was this, that the questions asked were these: Would it need a very sharp pull or a very sharp tug?

Mr. JUSTICE SALTER. I was not talking about that. I was going to ask you about that afterwards. I am not speaking of the removal of the uterus, but of the other severe manipulation which resulted in delivering the child and probably accelerated the internal ruptures. Was that said to be a thing which a person of ordinary care and skill should not have done?

Mr. BIRKETT. No. On the contrary, Dr. Spilsbury, when questions were put to him by Counsel for the Crown, made answer that it was not an unusual thing.

Mr. JUSTICE SALTER. I do not want to interrupt your argument.

Mr. BIRKETT. I am obliged to your Lordship. That was so. It was put to Dr. Spilsbury by Counsel for the Crown: "What do you say about a man taking an hour; is that an unusual thing to do?" and he said, "No," and it was conceded throughout the case that so far as that operation was concerned, having regard to the difficult presentation, it could not be alleged there was a negligent act anywhere.

Mr. JUSTICE SALTER. Now coming to the next point, I want to ask the same question in regard to the removal of the uterus with the afterbirth. Was it suggested that in the circumstances of the case that was a thing which a person of average skill and care would not have done?

Mr. BIRKETT. No. The position with regard to that I think was this, that Dr. Spilsbury and Dr. Buchanan were both asked what amount of force would be needed to pull away or tug away the uterus, or tug away the placenta, and they said it would not require very much force, leaving the inference for the Jury that the man having said that he did use some force, the force so exercised was negligence. I think that is the way it was put. Just this further word. Sir Edward Marshall Hall, who led at the trial, in his observations to the learned Judge as to the law after the close of the case for the Prosecution makes the statement which appears upon the Notes: "It has never been alleged that there was any negligence in the operation," and then the learned Judge said: "Well, I think there is some evidence of it, and unless Mr. Percival Clarke desires to relieve you of any part of the case I propose to leave it to the Jury."

Mr. JUSTICE SALTER. Yes.

SUBMISSION AS TO MISDIRECTION IN THE SUMMING-UP.

Mr. BIRKETT. Now, my Lords, I was about to say that perhaps the most convenient way of putting my points precisely would be to read the part of the summing-up which purports to deal with the law. That I think appears at pages 138, 139, and 140 of the transcript. There are, of course, references throughout the summing-up which I have tabulated on the pages, but the substantial part of the direction as to the law is on those three pages. The learned Judge says: "Members of the Jury, this is a tragic case. It has been argued, and you have heard the evidence of very eminent people, and I am glad you heard it because it is a matter which demands your most anxious consideration, and I am sure will receive it. The charge against this man, who is a member of the medical profession, is that he by gross negligence has caused the death, or, if he has not caused it, has accelerated the death of a woman. It is a serious charge and I think you quite understand it. Although we are dealing with matters that laymen find it difficult to understand I think some of you have been in the jury-box before and understand this, that the function of the Judge is to explain the law to you, and also, to the best of his ability, marshal the facts and put them in detail to you, but the sole question as to what inferences are to be drawn from the facts which you find to be true, and how far you believe or trust one witness rather than another, is entirely for you. I will endeavour to do my part of the matter, and I am sure you will do yours. I want first of all to explain the law to you. The law is that anybody who causes the death of anybody else—it does not only apply to a doctor, it applies to motor drivers, railwaymen, or signalmen—it applies to a number of people—anybody causing the death of anybody else is criminally responsible. It is equally clear law that no one is criminally responsible for what I call making a mere mistake, and it is really for the Jury to draw the line between what is called making a mere mistake, an error of judgment, and doing something that is grossly and palpably wrong. I have only one objection to make to the law as put before you by the Counsel for the defence: That a man is bound to do to the best of such skill as he has." I ought to interpolate here to say that I think the transcript must be a little unjust to the learned Judge in several matters to which I shall make reference. "That a man is bound to do to the best of such skill as he has"—there is something not accurate there. "A medical man who practises for profit the medical profession professes skill; he does not come and say: I am an unskilled person—he is engaged and professes skill. Of course, you will understand it is not for every humble man of the profession to have all that great skill of the great man in Harley-street, but, on the other hand, they are not allowed to practise medicine in this country unless they have acquired a certain amount of skill; they are bound to show a reasonable amount of skill according to the circumstances of the case, and you have to judge them on the basis that they are skilled men, but not necessarily so skilled as more skilful men in the profession, and you can only convict them criminally if in your judgment they fall below the standard of skill which is the least qualification which any doctor should have. You should only convict a doctor of causing a death by negligence if you think he did something which no reasonably skilled doctor should have done. It was said a long while ago by a great Judge where a surgeon was convicted—it does not follow because he was convicted this one should be—'You as a Jury are concerned,' [here Mr. Birkett quoted the Judge's words to the Jury, defining what was meant by "degree of skill."]

Mr. JUSTICE SALTER. Have you discovered the case to which he made reference?

Mr. BIRKETT. No. I have made, if I may say so, the most exhaustive inquiries, and my learned friend Mr. Roome, who was present at the trial, has not been able to assist save to suggest that it was possibly Williamson's case; but it could not be that case because there was no conviction in that case and the prisoner

was not a surgeon. I think I have the case to which he made reference, and I will read it in one moment. "You have got to consider if this man in anything he did fell below the level which you expect of a doctor—below that degree of skill which you have the right to expect of a doctor—by no means the extreme skill which everybody knows of, but that degree of skill which you expect from a doctor who attends an accouchement and who is taken to know his business. There is one other thing about the law I have to say, and that is, some doctors at times have to deal with people who are very ill and are bound to die, and it is no good to say, 'Oh, I gave the wrong physic, but she would have died afterwards'; and I shall leave it to the Jury to say whether the death was caused or accelerated by the treatment administered. In adopting the word 'accelerated' you have got to act with great caution. It really means this: That you think by the treatment the patient died when otherwise she would not have died substantially at the time she did. You will consider carefully, and it is only right that you should consider carefully: Well, if he had done something else she would have lived a day longer, and whatever her chance was her chance of living was taken away by his attitude. You will apply that test. That is all the law I will explain to you." In addition to that, without troubling your Lordships with regard to the pages, at various stages when the learned Judge was dealing with the facts he used phrases to which I shall make reference if need be. He used the phrase "gross negligence" frequently. He used "gross and culpable negligence." He used "gross dereliction of duty," "gross wicked neglect and culpable neglect of duty," and "breach of duty." They were phrases which he used when marshalling the facts. But the law, I think, is comprehended in the passages which I have read.

The Distinction between Civil and Criminal Negligence.

Now my first observation with regard to the matter is as follows: It is to be noticed that there is here not one word which makes any distinction between what may be called civil negligence and criminal negligence, and in my submission that is a factor in this case of the very supremest importance, that while the summing-up might be quite unexceptional from that point of view of an action for damages against a doctor—and indeed a good many of the phrases which I have read would seem to point to that end—that in so far as it is a direction to a Jury on a criminal charge that omission in the summing-up is fundamental and is fatal to this conviction. Of course, I am perfectly conscious of the very great technical difficulties arising on the distinction one makes between civil negligence and criminal negligence. Both things, as I appreciate it, are proved by the same facts and Juries draw the inference from the facts, but unless a clear distinction is made and the ground for it made, then in my submission a grave injustice could be done to any prisoner, and certainly to any medical man, the technical distinction, as I understand it, being that civil negligence is that negligence in which reparation is sought by an individual, criminal negligence is that negligence in which reparation is sought by the State, one being private and the other being public. That being so, the State would not interfere with a matter of this kind unless there was something substantial and something which in its essence differs from that which may be termed civil negligence. My Lords, it is to be noticed right at the very outset that in all that discussion with the Jury as to the elements which constituted this crime, there is that first omission, that not one word is said to them that you must distinguish in this case between the ordinary case where there might be an action for damages, where the degree of skill would enter into it, and this case, where the charge is manslaughter.

Mr. JUSTICE SALTER. No doubt there may be that distinction often drawn in charging Juries in cases of manslaughter, and I suppose it is generally

in the interests of the accused that it should be drawn; but are you sure that it is in any way necessary to do it, or even that it is desirable to do it? What have the Jury to do to establish the negligence which is set up in different circumstances? Is it not rather a complicated way of going to work, first of all to explain to them a safe standard and then say there must be some addition to that?

Mr. BIRKETT. In my submission it is both necessary and certainly, with greater force, it is desirable. I ventured in my prefatory words to say that I did appreciate how difficult this matter is to put to a lay Jury having regard to the distinction which ought to be drawn between civil and criminal negligence, and how frail the margin between the two may very well be; but in its absence, and particularly in a case like this—your Lordship uses the word "desirable"—can it be doubted that the sympathy of every single man on the Jury was with the husband and with the poor dead woman? The ordinary instinct of mankind, when you hear a narrative of the suffering and the pain and the misery that poor woman endured, is to say it might very well have been avoided, and if it were, it might be a case where civil remedies applied. It is a very difficult thing as to the ingredients of the matter when it becomes a criminal offence. Now may I put, not in detail, the two points arising out of that main position. I submit it is a misdirection to say to the Jury on a criminal charge: "You can only convict them criminally if in your judgment they fall below the standard of skill which is the least qualification which any doctor should have." In my submission, it has no application to a crime at all. I submit with very great respect and deference it is an admirable matter when dealing with a civil action, but to say of a doctor who is in the dock charged with manslaughter you can only convict him criminally if in your judgment he falls below the standard of skill which is the least qualification a doctor should have—

The LORD CHIEF JUSTICE. The expression, no doubt, is concise. Is not the learned Judge there meaning, going back to the phrase in which he summarised the contention of the Defence, that there are two elements; first of all there is the implied undertaking of reasonable and competent skill; secondly, there is the obligation to exhibit that skill in fact. Those observations to which you are now referring are observations under the first head. You must not say that a doctor who holds himself out to do a doctor's work is negligent because his skill falls short of the highest skill. You can only say that he is negligent in that first sense if his skill is not such as is reasonably to be expected of a practitioner.

Mr. BIRKETT. My Lord, I so apprehended it, and my submission is that on that apprehension it is a misdirection; that in a criminal charge the question is not whether this man fell below the standard of skill, but the question is, was he negligent? and your Lordships are probably familiar with this: there is a passage in *Beven on Negligence* which I think puts this matter clearly.

The LORD CHIEF JUSTICE. Do you say that the *spontis expertum artis* has no relation to negligence as a crime?

Mr. BIRKETT. No. What I say with regard to the position is this, that so far as the negligence in crime is concerned, what the Jury have to find, upon a proper direction (as I say, the margin is small) is that the negligence was something different from the negligence which would be a matter of civil liability, and something which is so gravely wicked and wrong that it is out altogether of the category of civil negligence and comes within the definition of crime.

Mr. JUSTICE SALTER. I am not sure that you answered my Lord's question. I will put it in my own way. Take a case where there is a very gross lack of skill, and no lack of care at all. Suppose an unqualified person performs an operation and is grossly

ignorant and kills a patient, but it is admitted that he did his utmost and used every faculty to the extent of his small skill. Could he not be convicted of manslaughter?

Mr. BIRKETT. It would depend on the facts. If in fact the patient, knowing that, had gone to him, then he could not be convicted. Your Lordship probably remembers the case where a man went to a farrier for some surgical operation, and the answer was: If you had not been an ass this would never have occurred. You would not have gone to a farrier. It was held it was no felony; and in any event (I propose to cite a case on this point) that when you are dealing with the crime of negligence, in my submission to speak of the degree of skill is quite irrelevant, and that the real point is, were you negligent with such skill as you had.

The Standard of Skill.

The LORD CHIEF JUSTICE. Then you are really setting up the standard attributed in this passage to the learned Counsel who appeared at the Central Criminal Court; that is to say, you are saying that even when a man holds himself out as a qualified person to perform a difficult and complicated operation, he is not to be judged, as regards skill, by any objective test; he is to be judged by such skill as in that particular case he happens to have?

Mr. BIRKETT. Yes.

The LORD CHIEF JUSTICE. Do you say that really?

Mr. BIRKETT. No, I put it in this way. I do not desire to advance a point which I should shortly have to give up. I say at once that I perceive many intellectual difficulties about this matter; but the degree of care, which is the standard by which the Jury must judge both civil and criminal, of course is dependent in some degree upon the person with whom you are dealing, and if you are dealing with a Harley-street specialist or if you are dealing with a general practitioner, then different standards would obviously apply. But when you have a general practitioner, let us say, who is a qualified man, who does an operation to the best of his skill and knowledge, without any negligence that can be attributed to him, it is no ground for anybody to come along and say: But you are not quite as skilful as the ordinary general practitioner; and it is no element, in my submission, of the crime of manslaughter by negligence to say that you fall below the standard of the general practitioner.

The LORD CHIEF JUSTICE. Now you introduce the words "not quite as." Do you or do you not assert, as a principle of law, that under the head of "skill" the practitioner in such a case is to be judged, not by reference to any general standard of skill, but by reference only to such skill as he in the particular case had?

Mr. BIRKETT. My Lord, I submit the latter. May I cite, in order to fortify myself about that matter, from Beven on Negligence. My volume is the third edition, Vol. II., at page 1156: "The principle of most extensive scope, prevailing throughout all classes of skilled labour, and not confined to medical practitioners, is that he who undertakes the public practice of any profession undertakes that he has the ordinary skill and knowledge necessary to perform his duty towards those resorting to him in that character. Where malpractice is found to have been used, whether the practitioner is qualified or unqualified, ignorant or negligent, matters nothing. The legal wrong is the incompetent or negligent treatment, not treatment by one wanting a qualification; and thus it is that a defence that the patient's treatment has been followed by improvement 'as good as is usually obtained in like cases' is ineffectual where there has been negligence; for the patient is entitled to the chance of the better results that might have followed proper treatment. From the same principle flows the consequence that whether the service is remunerated or gratuitous, is immaterial.

Still the standard of care and competency is perpetually variable. Negligence in one man may be competent care in another. For instance, a specialist consulted in his speciality would be liable for negligence in respect of treatment which in a junior and ordinary member of the profession would more than pass muster; and that might be negligence in a doctor of repute in the west of London which would yet come up to the highest warrantable expectations of the patient of the village doctor in remotest Kerry or Sutherlandshire. Where the charge is of negligent treatment it is obvious that the question of competency or incompetency is irrelevant." My Lord, that is the passage which deals with the various theories of school and practice.

The LORD CHIEF JUSTICE. But does that mean quite what you suggest it means?

Mr. BIRKETT. My Lord, I confess that I have spent a very long time thinking about that passage.

The LORD CHIEF JUSTICE. You see how it begins. It is dealing with the topic of malpractice, and then it goes on to the standard of care and competency, and is not it saying this, that under the heading of "negligence in act" a man is not to be excused because of lack of skill?

Mr. BIRKETT. Yes, my Lord. I think it does say that; that where you are dealing with an allegation of negligence it matters not whether your man is skilled or unskilled.

The LORD CHIEF JUSTICE. But on the other hand, where the negligence alleged is that the man is unskilful, he does not excuse himself by saying he was negligent. It does not work the other way round, in other words.

Mr. BIRKETT. My Lord, even putting it, for the purpose of argument, upon that footing, even then in my submission to say in a criminal charge that you cannot convict him criminally unless he falls below the standard of skill which is the least qualification which any doctor should have, must in my submission be a misdirection upon the law with regard to negligence as constituting a crime.

The Two Elements: Competent Skill and Diligence in Act.

The LORD CHIEF JUSTICE. Is not the learned Judge really saying this, though not quite in so many words: There are two elements: (1) competent skill, (2) diligence in act?

Mr. BIRKETT. Yes.

The LORD CHIEF JUSTICE. As to competent skill, do not try this Defendant by the higher standard of Harley-street; on the other hand, do not try him, as it has been suggested you should, by what you conceive to be the particular degree of skill which he may have. Ask yourselves what a reasonably qualified medical practitioner is to be expected to have in the way of skill?

Mr. BIRKETT. It is. That is the submission that I make upon the first point, and I do not think I can usefully add to it, my submission being first that the summing-up had been vitiated from the beginning by no clear line of demarcation being drawn between civil negligence and criminal negligence, this matter, which might quite properly have been put to the Jury as a matter of testing civil liability, was out of place altogether when you were dealing with crime. My Lord, on the next page there is another matter which I ought to call attention to.

Mr. JUSTICE FRASER. I do not want to interrupt you, but you are going, apparently, to leave this passage in Beven.

Mr. BIRKETT. Yes, my Lord.

MR. JUSTICE FRASER. Will you look at the top of page 1157. You quoted a passage from page 1156.

MR. BIRKETT. Yes, my Lord.

MR. JUSTICE FRASER. You see those first few lines at the top of page 1157.

MR. BIRKETT. Evidence of negligence?

MR. JUSTICE FRASER. The next three or four lines; will you read those?

MR. BIRKETT. Yes, my Lord. "Evidence of negligence is not suggested by an arbitrary standard. Given the presumptive competency of the practitioner, the standard of professional skill he is required to reach is that of the ordinary and average practitioner in the branch, or of the school, to which he professes himself to belong; for a person professing to follow one system cannot be expected to practise any other. Where the amount of skill displayed in treatment is in dispute, the evidence of an experienced practitioner of the school professed by the person charged is admissible to show that the treatment was careful and skilful according to the standard of practitioners professing the tenets of the school." My Lord, my submission, of course, upon that matter is that that would be perfectly applicable and properly applicable where the issue is one of civil liability, but is not applicable where the question is one of crime.

MR. JUSTICE SALTER. I am not quite sure that I understand what you are saying, and of course it is a very important thing. I want you to distinguish in your mind between incompetence and negligence—negligence in the narrower sense.

MR. BIRKETT. Yes, my Lord.

MR. JUSTICE SALTER. You agree, do not you, that in civil matters a man who does his very best may be civilly liable because he is incompetent?

MR. BIRKETT. Yes.

MR. JUSTICE SALTER. But in a criminal matter do you say that a man who has admittedly done his utmost cannot be convicted of manslaughter?

MR. BIRKETT. I do, without hesitation, and I say it upon the submission that in the one case the remedy is against the individual, there is a remedy there provided; but so far as the other is concerned it is an injury to the State, and there is no injury to the State if a man has done the best he can, although he may be somewhat under the skill of his fellow-practitioners.

THE LORD CHIEF JUSTICE. But is not there an injury if, being a skilled person, he undertakes to perform a delicate operation requiring skill, and death follows? I am not speaking of this case, but am putting a hypothetical case. Why is not that a matter in which the State has an interest?

MR. BIRKETT. May I take the case of a quack to make the thing clear? There are many cases in the books, to which I will make reference if need be, where a quack holds himself out as being able to do certain things and to provide proper treatment, and knowing that he does not possess the skill he deceives people by so doing. There, clearly, there would be a case where it would be to the interest of the State to say that this is a crime. But where it is a question that you have a fully qualified medical man doing that which by law he is authorised and entitled to do, the mere question that he may in some degree fall below the general level of the skill of the general practitioner in my submission has no relevance to the crime, though it has, I respectfully agree, to the question of civil liability. That is the distinction which I desire to draw, and why I said at the beginning that in my submission to omit to say to the Jury: "Now at all times remember here the clear distinction which has

been drawn by the policy of the law between civil liability and criminal liability," vitiated all that followed.

THE LORD CHIEF JUSTICE. Your first criticism, as I understand, is that here there was a failure to distinguish civil and criminal negligence?

MR. BIRKETT. Yes, my Lord.

THE LORD CHIEF JUSTICE. Is your criticism upon that point exhausted by what you have now said, about this passage relating to skill?

MR. BIRKETT. No, my Lord, there is another passage which I was just coming to, which is at page 140. I will read again: "You have got to consider if this man in anything he did fell below the level which you expect of a doctor—below that degree of skill which you think you have the right to expect of a doctor—by no means the extreme skill which everybody knows of, but that degree of skill," and so on.

THE LORD CHIEF JUSTICE. That is what you have been dealing with so far.

MR. BIRKETT. Yes. The passage I really want is this passage: Line 63: "I shall leave it to the Jury to say whether the death was caused or accelerated by the treatment administered." With great respect, that is not a direction in law to the Jury upon any issue that they really had to try: "by the treatment administered by the doctor." The question was whether he had been negligent, and here at that particular stage it was a question for the Jury whether the death was caused or accelerated by the treatment administered. The treatment, as I say, may have been right, the treatment may have been wrong.

THE LORD CHIEF JUSTICE. But this is with reference to the phrase: "There is one other thing about the law that I have to say."

MR. BIRKETT. Yes.

THE LORD CHIEF JUSTICE. This is cumulative upon the other. Lack of the proper quantum of skill or lack of proper diligence in act would not be sufficient to convict; the Jury must also be satisfied that by reason of that lack in the one case or in the other or both, the death was caused or accelerated. It is not an alternative. It is bringing the negligence which is alleged into relationship with the death which has occurred.

MR. BIRKETT. Yes, my Lord. If I may put it, adopting respectfully what your Lordship says, again myself in this way: If it is said, now members of the Jury, the question you have to consider, and you must not convict this man unless you are satisfied that he falls below the degree of skill which you would expect of a doctor—

THE LORD CHIEF JUSTICE. And even so, you must not find him guilty unless you are satisfied that by reason of that failure or defect (if you find it to be there) this woman's death was brought about or hastened.

MR. BIRKETT. Yes; that is the way I propose to put it: and even if you are satisfied that he fell below that degree of skill which you are entitled to expect of an ordinary doctor, do not convict unless it was because of the treatment that he so gave that this woman died. And, my Lord, if I may put it now in another way, if the direction be: You have got to consider whether this doctor was an ordinary skilled doctor or if he fell below it, and, if so, whether the treatment he gave was given because of his lack of knowledge—if that be the direction, again I submit it is a misdirection; that the real question for the Jury is never put there, and it really is not to be implied there either; that the real question for the Jury was this: Look at this evidence; look at these facts. Is there

here evidence of gross and culpable negligence which entitle you to say this man is guilty of manslaughter?—not the refinements of degrees of skill, not the very highly contested medical questions as to the proper treatment. On that question your Lordships will remember (and I do not want to take up time this afternoon) that I cited one or two cases, upon the application for leave to appeal: Williamson's case and Spiller's case. Perhaps I may just refer to 3, Carrington & Payne again, because it emphasises much better than I can do myself, the point.

The LORD CHIEF JUSTICE. Is that Williamson's case?

Mr. BIRKETT. In 3, Carrington & Payne, at page 629, there is the case of *Rex v. Edwin Martin van Butchell*. At page 632 there is the *Summing Up*. Your Lordships will remember that case; it was of the disease of the rectum. On page 632: "This is an indictment for manslaughter, and I am really afraid to let the case go on lest an idea should be entertained that a man's practice may be questioned whenever an operation fails. In this case there is no evidence of the mode in which this operation was performed; and, even assuming for the moment that it caused the death of the deceased, I am not aware of any law which says that this party can be found guilty of manslaughter. It is my opinion, that it makes no difference whether the party be a regular or an irregular surgeon, indeed, in remote parts of the country, many persons would be left to die if irregular surgeons were not allowed to practise. There is no doubt that there may be cases where both regular and irregular surgeons might be liable to an indictment, as there might be cases where, from the manner of the operation, even malice might be inferred. All that the law books have said has been read to you, but they do not state any decisions, and their silence in that respect goes to show what the uniform opinion of lawyers has been upon this subject. As to what is said by Lord Coke, he merely details an authority, a very old one, without expressing either approbation or disapprobation; however, we find that Lord Hale has laid down what is the law on this subject. That is copied by Mr. Justice Blackstone, and no book in the law goes any further. It may be that a person, not legally qualified to practise as a surgeon, may be liable to penalties, but surely he cannot be liable to an indictment for felony. It is quite clear you may recover damages against a medical man for a want of skill; but, as my Lord Hale says, 'God forbid that any mischance of this kind should make a person guilty of murder or manslaughter.' Such is the opinion of one of the greatest judges that ever adorned the bench of this country, and his proposition amounts to this, that if a person bona fide and honestly exercising his best skill to cure a patient, performs an operation which causes the patient's death, he is not guilty of manslaughter." Now, my Lord, that is authority for the proposition I was putting forward on Williamson's case, which is the next case in the same volume, which I cited last week, which was the nearest case to be found in the books to the facts of this case—where the uterus was in fact removed believing it to be a part of the placenta. Lord Ellenborough said: "There has not been a particle of evidence adduced which goes to convict the prisoner of the crime of murder; but still, it is for you to consider whether the evidence goes so far as to make out a case of manslaughter. To substantiate that charge, the prisoner must have been guilty of criminal misconduct arising either from the grossest ignorance or the most criminal inattention. One or other of these is necessary to make him guilty of that criminal negligence and misconduct which is essential to make out a case of manslaughter."

The LORD CHIEF JUSTICE. There you see the two elements are clearly distinguished: ignorance on the one hand, inattention on the other.

Mr. BIRKETT. Yes, my Lord. "It does not

appear in this case that there was any want of attention on his part; and, from the evidence of the witnesses on his behalf, it appears that he had delivered many women at different times, and from this he must have had some degree of skill. It would seem that, having placed himself in a dangerous situation, he became shocked and confounded. I think that he could not possibly have committed such mistakes in the exercise of his unclouded faculties; and I own that it appears to me, that if you find the prisoner guilty of manslaughter, it will tend to encompass a most important and anxious profession with such dangers as would deter reflecting men from entering into it." There is nothing said there in regard to the standard of skill, or that the man fell below the general standard of skill; it is put clearly, either gross ignorance or criminal negligence, and in my submission, when dealing with the question of crime, that is the proper thing in that event to do.

Mr. JUSTICE SALTER. Mr. Birkett, that judgment of Lord Ellenborough is fatal, is it not, to your contention?—that a man who does his best cannot be convicted for manslaughter? That judgment appears to lay it down that a man who does his utmost may be convicted of manslaughter if he was grossly ignorant.

Mr. BIRKETT. I said that if a man holds himself out to be a skilled man, when in fact he was a quack, it is quite clear he could be convicted of manslaughter for purporting to have that skill, purporting to be a medical man and performing an operation, when in fact he had no such skill or no such schooling.

Mr. JUSTICE SALTER. That is a different thing to manslaughter. You see, in some cases of civil negligence, where there is a holding out as to competence, it is in the nature of a breach of contract.

Mr. BIRKETT. It is.

Mr. JUSTICE SALTER. It is in the nature of a breach of contract. But you cannot say that, for example, in the case of a person who is a beginner at driving a motor car, and who goes out and drives and kills somebody, he taking the utmost care but being quite incapable of driving. Such a person would be liable to be convicted for manslaughter.

Mr. BIRKETT. Yes, I think so.

Mr. JUSTICE SALTER. Although there is no implied contract there.

Mr. BIRKETT. No, but that would be on the ground that he purported to have that skill required of a driver, when in fact he had not. But it would not be a question as to the degree of his proficiency as compared with the general standard of motor drivers; it would be a question whether he was in fact negligent in the circumstances in taking the car out when he knew that he had not the capacity to drive. Let me take a skilled motor driver, who had been driving for many years. The question would not be, did he fall below the general standard of motor drivers, but the question would be: with the skill that he had, was he in fact negligent on this particular occasion; and the degree of skill or the difference in skill between that driver and other drivers in my submission would be quite irrelevant.

The LORD CHIEF JUSTICE. Have you looked at the case of *Rex v. Burdee* (86 Law Journal, K.B., p. 871) which refers to the judgment in the case of *Spiller*. In the case of *Spiller* apparently it was held that gross ignorance is enough, and that doctrine was re-affirmed in the case of *Burdee*. "Any person, whether licensed or unlicensed, who deals with the life or health of any of His Majesty's subjects, is bound to use competent skill, and sufficient attention; and if the patient dies for want of either the person is guilty of manslaughter."

Mr. BIRKETT. I am not contesting that, my Lords.

The LORD CHIEF JUSTICE. I understood you to say—I may be quite wrong—that part of your argument was that questions of skill though relevant in civil matters are not relevant in a criminal inquiry.

Mr. BIRKETT. They are relevant, my Lord, in the jury estimating the standard of care. If you are dealing with a medical man and a layman two different standards are then applicable. If a man who was not a skilled man professed to be a medical man and undertook to cure people that would, in my submission, be in an entirely different category to the case of a medical man who was doing that which he was ordinarily and customarily employed to do. Spiller's case was the case of a corrosive and dangerous plaster, and the child was two years and eight months. This was put to the jury: "The law as I am bound to lay it down (and I believe that I lay it down as it has been agreed upon by the judges, for many cases of this kind have occurred of late more frequently than in former times) is this: If any person, whether he be a regular or licensed medical man or not, professes to deal with the life or health of His Majesty's subjects, he is bound to have competent skill to perform the task that he holds himself out to perform, and he is bound to treat his patients with care, attention, and assiduity." It is not there a question as to the exact degree of skill or whether they fell below the general standard of such persons, whether they have skill or not.

The LORD CHIEF JUSTICE. That case was in the year 1832. Thirty-two years later, in 1864, Mr. Justice Willes in the case of *The Queen v. Markuss* (4, Foster and Finlason) said this: "Every person who dealt with the health of others was dealing with their lives, and every person who so dealt was bound to use reasonable care, and not to be grossly negligent. Of course, negligence might be of two kinds: in one sense where a man, for instance, went hunting and neglected his patient, who died in consequence. Another sort of gross negligence consisted in rashness, where a person was not sufficiently skilled in dealing with dangerous medicines which should be carefully used, with the properties of which he was ignorant, or how to administer a proper dose. A person who with ignorant rashness, and without skill in his profession, used such a dangerous medicine, acted with gross negligence. There again you get the division into two. It may be intention in act or it may be insufficient equipment in skill.

Mr. BIRKETT. The case which your Lordship has just cited, if I may again refer to it, is dealt with in *Beven on Negligence*, Volume 2, page 1158. The learned author in following those cases summarises them in this way: "If a person assumes to act as a physician, however ignorant of medical science, and prescribe with an honest intention of curing the patient, but through ignorance of the quality of the medicine prescribed, or the nature of the disease, or both, the patient die in consequence of the treatment, contrary to the expectation of the person prescribing, he is not guilty of murder or manslaughter. But if the party prescribing have so much knowledge of the fatal tendency of the prescription that it may be reasonably presumed that he administered the medicine from an obstinate wilful rashness, and not with an honest intention and expectation of effecting a cure, he is guilty of manslaughter at least, though he might not have intended any bodily harm."

The LORD CHIEF JUSTICE. What does that purport to be which you are reading?

Mr. BIRKETT. It is the learned author's summary of the decision which your Lordship has just cited.

The LORD CHIEF JUSTICE. With great respect, I think it is better to look at the decision.

Mr. BIRKETT. If your Lordship pleases. I have not the volume here at the moment.

The LORD CHIEF JUSTICE. The next sentence rather helps you, perhaps. "It was not, however, every slip that a man might make that rendered him liable to a criminal investigation. It must be a substantial thing. If a man knew that he was using medicines beyond his knowledge, and was meddling with things above his reach, that was culpable rashness." It must be a question of fact.

Mr. BIRKETT. That is the submission I make with regard to it.

Mr. JUSTICE SALTER. That last case puts it on rather a different footing and puts it in the way which you put it a moment ago when I put the case about driving a motor car. It puts it not that the ignorance itself was a ground for prosecution, but the acting when you are ignorant.

Mr. BIRKETT. I am obliged to your Lordship. That is what I was trying to put to your Lordships a few moments ago with regard to the motor driver. My complaint about the words of the learned Judge in this case is that when you have this passage, which I hope I have not distorted from its context, that "you should only convict a doctor of causing death by negligence if you think he did something which no reasonably skilled doctor should have done," in my earnest submission that is a misdirection in law upon any view of the matter, and whilst it may be said, and I can see that where you have somebody, let us say a quack—

The LORD CHIEF JUSTICE. Is not the rest clearly implied? A man is not being tried for his want of qualifications on paper. He is being tried because he has done something. When the reference is to want of skill what is meant is the doing of this act although he wanted skill.

Mr. BIRKETT. I understood this direction to the Jury to be this. If you think that the removal of the uterus in this case by this man was due to the fact that he fell below the standard of skill which you expect from an ordinary doctor you can convict him of manslaughter. In my submission that is wrong.

The LORD CHIEF JUSTICE. In either case what is involved is the doing of the act.

Mr. BIRKETT. My submission has always had that in mind, when you say to the Jury you can only convict this man if you come to the conclusion that he removed the uterus from this woman which caused her death because he has not the degree of skill you expect in a doctor. In my submission that is a misdirection. The cases discuss the question of skill and the competency where you are dealing with the degrees of skill in any profession and where you are dealing with people who hold themselves out as possessing certain qualifications, whereas they do not hold those qualifications. That is negligence; they do the things recklessly which constitutes the element which makes up the crime. In my submission the omission to distinguish between civil liability and criminal liability and the two passages to which I have referred as a direction to the Jury with regard to the law are such as to entitle me on behalf of the Appellant to say that that was a misdirection in law and, having regard to that fact, I suppose the onus then would be upon the Crown to show that even if there had been any other direction to support that he must necessarily have been convicted.

The LORD CHIEF JUSTICE. You mean so as to bring in the proviso to Section 4: on a right direction the Jury would have come to the same conclusion?

Mr. BIRKETT. The onus would then be upon the Crown to show that upon a right direction they must have come to the same conclusion.

SUBMISSION AS TO WRONGFUL ADMISSION OF EVIDENCE.

I want to pass to the next point, which is in some degree technical, that there was a wrongful admission of evidence. I put it at this stage because in some degree it is rather intimately connected with the summing-up, and if I am right about this, it gravely affected the whole course of the trial. May I put it in this way: your Lordships will recollect the use that was made of the Coroner's depositions at the trial. The Coroner's inquiry was held on July 30th and on that date the Appellant attended and gave evidence. It was upon the evidence which was given at the Coroner's Inquest that Dr. Spilsbury based his view, and it was upon the Coroner's depositions that he gave evidence at all. Those depositions which were so used were never proved and in my submission were quite wrongly admitted, to the great injury and detriment of the Appellant. Would your Lordships look at page 53, Question 697 of the transcript of the shorthand notes in Sir Bernard Spilsbury's evidence. He is asked with regard to his qualifications, and then the next question is: "Did you have an opportunity of reading what the Defendant said at the Coroner's Court?" (A.) Yes, I read the Coroner's Depositions. (Q.) And have you heard the evidence given by Mrs. Cleak, the midwife, and by Dr. Buchanan?—(A.) Yes. (Mr. Justice Shearman): Are you proposing to put those in? (Mr. Percival Clarke): Yes, my Lord. (Mr. Justice Shearman): Perhaps they had better be read now in order that the Jury may know on what Sir Bernard Spilsbury formed his opinion. (Mr. Percival Clarke): Yes, my Lord. If Sir Bernard Spilsbury leaves the box I will prove it. (The witness left the box.) (Mr. Justice Shearman): Gentlemen, this is the evidence at the Coroner's inquiry, and it is what Dr. Spilsbury read; it is Deposition No. 2. If you undertake to put it in afterwards it can be read now. (Mr. Percival Clarke): Yes, my Lord, I will undertake to prove it. (The Clerk of the Court): 'Percy Bateman deposed.' Then it goes on over the whole of the next page. I may have to read it, but I do not want to do so for the moment. On page 55 your Lordships will see at the bottom the reading of the depositions: "I produce a letter I have received from Nurse Dossiter. (Signed) Dr. Percy Bateman."

The LORD CHIEF JUSTICE. That is to say the learned Counsel for the Crown put in a statement made by the Defendant: that statement was a deposition before a Coroner.

Mr. BIRKETT. Yes, my Lord, at that stage it was. Your Lordship sees it says it was signed "Dr. Percy Bateman." In fact it never was signed.

The LORD CHIEF JUSTICE. What is it you are complaining of?

Mr. BIRKETT. A coroner's depositions stand upon entirely the same footing as depositions taken before Justices and must be proved in proper form. These were never so proved, and as they contain some highly controversial statements, on which there was a contest before the Coroner and the Court, in the absence of formal proof—

The LORD CHIEF JUSTICE. How do you say they should be proved?

Mr. BIRKETT. In the same way as a deposition is proved.

The LORD CHIEF JUSTICE. I see that the learned Counsel for the Defendant was not merely present, but from time to time corrected the reading of this deposition.

Mr. BIRKETT. I do not want to press this point further than I ought, but in my submission it is quite clear that the deposition never was proved. If your Lordship looks at the evidence of Waldoock it is quite

clear they were not. I think it is at page 72. He is asked: "Were you present on the 31st July last at the Coroner's Court at Deptford when the inquest was held on the body of Mary Ann Harding?"—(A.) Yes. (Q.) Was Dr. Bateman called into the witness-box?—(A.) Yes." The witness was not in Court. The witness who was called to prove what was said before the Coroner was never in Court at all, and there was no other witness who attempted to deal with the matter at all. The only point of it was, and your Lordships will see it in the summing-up, that there had been a change in the story from the version given before the Coroner and the version given before the Court, whereas it was the same as had been said before the Coroner. The Appellant said: "I went back into the box to contradict him in that matter, and we had a passage of words." It was a point whether the child was in the pelvic cavity or the peritoneal cavity which made a difference.

Mr. JUSTICE SALTER. How did the learned Judge know that the witness Waldoock was not in the Coroner's Court?

Mr. BIRKETT. No, my Lord, he means clearly not in Mr. Justice Shearman's Court; so that he could not say whether what had been read before Mr. Justice Shearman and the Jury was said before the Coroner.

The LORD CHIEF JUSTICE. It is following up Question 885: Did he give the evidence which was read in this Court, and the learned Judge said this witness was not here?

Mr. BIRKETT. Yes, that is the whole of that point, my Lord.

The LORD CHIEF JUSTICE. At any rate, the length to which it has gone is this, that Counsel for the Crown said he had put in the depositions. Then they are read; Counsel for the Defence follows the reading of them. Then a witness is called who swears that Dr. Bateman was called into the witness-box, and that before being sworn he was cautioned; but that particular witness did not happen to hear the re-reading of the evidence that morning.

Mr. BIRKETT. I am, of course, entirely in the hands of the Court with regard to this matter, and I do not desire for one moment to press this point beyond any stage which the Court say I ought not, but I do feel, having regard to the fact that here was a medical practitioner charged upon a matter in which the evidence dealt with medical matters and which were indeed matters of contest which I think cannot be controverted, that the deposition was not proved. With regard to the depositions, whatever the difficulty in the past may have been as to procedure, I submit they are on the same footing as depositions before Justices.

The LORD CHIEF JUSTICE. Do you say that the expert and medical question which was fatal to you was admittedly based on materials not in evidence?

Confusion between the Pelvic Cavity and the Peritoneal Cavity.

Mr. BIRKETT. I would not like to put it so strongly. Sir Bernard Spilsbury based his view, and your Lordships will know what weight the name of Sir Bernard Spilsbury would have with a Jury, on what was said before the Coroner; the important part of that matter was that when the Appellant was before the Coroner he had spoken of the pelvic cavity. Your Lordships will appreciate that on the question of the version and the subsequent manual traction it became important first of all, with regard to the length of time which the operation took, for the Appellant to show how difficult it was. He said the head or some part of it was not in the uterus but in the pelvic cavity. The Coroner thereupon put in brackets "abdomen." A great contest arose then. In order to show negligence of the Appellant it was said he said it was in the abdomen,

the peritoneal cavity. He was either quite mistaken or else he adopted the wrong term, the point being that he denied at all times it was the abdomen or that he ever meant the abdomen or that he ever meant the peritoneal cavity, but what he said was the pelvic cavity, which I understand contains the uterus, the bladder, and the upper organs.

Mr. JUSTICE SALTER. Can you refer us to the place where the Defendant challenged the correctness of this statement?

Mr. BIRKETT. Yes, my Lord. It is on page 120, Question 1365. May I go to page 113 first and then the whole story is complete. "He says that to show what he means by pelvic cavity, so whether you read 'head' or 'child' his explanation is quite impossible, is not it?—(A.) No, it is not; he might quite well use that word 'pelvic cavity.' (Mr. Justice Shearman.) He did not, he says 'the abdomen'—that is the word in the Coroner's deposition—"I do not know whether he said the abdomen or whether the Coroner has written it in, it is in brackets in my copy. Whether that is something the Coroner put in I do not know. It is not signed. (Mr. Justice Shearman.) He signed it, I think. (Sir E. Marshall Hall.) It is not signed; I saw the original yesterday." Then, my Lords, at page 120, Question 1364: "You went and gave your evidence which has been put in?—(A.) Yes. (Q.) You never signed it. Did you ever use the word 'abdomen' with regard to the pelvic cavity, or is it the Coroner's word?—(A.) Pardon me, I think that the Coroner tried to get me to say that the child was in the abdominal cavity, and I rather think that I contradicted him that it was in the pelvic cavity. I think we had a passage of words to that effect. (Q.) Did you ever intend to say that the child was in the abdominal cavity?—(A.) No." Then on page 126, Question 1437 in the cross-examination by my friend there is this: "Did you say before the Coroner three times that the child was outside the uterus and in the pelvic cavity?—(A.) Yes, in the pelvic cavity outside the uterus. (Q.) Out of the uterus in the pelvic cavity?—(A.) Yes. (Q.) Did not you mean by that in the peritoneal cavity?—(A.) No. (Q.) Can you understand how it appeared in your deposition, 'It had been expelled into the pelvic cavity,' and then in brackets 'abdomen'?—(A.) That sentence is incorrect, Sir. I did not say it was in the abdomen. In fact, I went into the witness-box a second time to contradict the Coroner on that point. I think those brackets are made by the Coroner. (Q.) It is plain the Coroner was referring to the peritoneal cavity?—(A.) Yes, and I was not.

The LORD CHIEF JUSTICE. Then the next question is: "You say you and the Coroner were at cross-purposes?—(A.) Yes, I rather think we misunderstood each other. (Q.) By pelvic cavity you mean the vagina?—(A.) Well, what I meant by the pelvic cavity was that part of the body below the brim of the pelvis."

Mr. BIRKETT. In the summing-up, page 153, line 508: "There is only one other matter, and you have to be satisfied before you convict the prisoner, and that is the evidence he gave before the Coroner. It runs as follows, and I will hand it over to you." Then he reads a good deal of it. Then he goes on: "There is no hint of that in his letter; there is no hint until he comes before the Coroner. It is said by the Crown when he is on his defence and he is called to explain, that he is giving a different account to what he gave before. The account he gave then was"—and then the learned Judge goes on to read it. Nothing was said by the learned Judge of the contest which had arisen with regard to what did appear in the particular depositions. The Jury were handed the written deposition without any warning that they must remember in the prisoner's interests what he said about that matter, namely, that the Coroner had not accurately recorded what he in fact said.

The LORD CHIEF JUSTICE. The learned Judge in this passage is not laying stress on the difference between the pelvic cavity and the abdominal cavity.

Mr. BIRKETT. No, my Lord, I do not think he is doing so. That is the whole of the matter with regard to the depositions; as I say, my Lords, I am not anxious to press it one inch further than I should.

Mr. JUSTICE SALTER. Sir Bernard Spilsbury was not re-called to say that this question made any difference.

Mr. BIRKETT. No, my Lord, he was not recalled. In fairness I should say that this is my point; it is nobody else's; it was not taken at the trial. What I mean to say is, the Prosecution were not put on warning at the trial so that they might have re-called Sir Bernard Spilsbury. It does seem to be a point of very considerable substance. You can never tell when you have a lay Jury in highly complicated technical matters how great an effect a matter like that might have upon the Jury. In my submission it cannot be said that that was rightful, and it may very naturally have influenced the Jury in coming to the verdict which they did.

The LORD CHIEF JUSTICE. What was there in fact which might make the Jury more prone to believe the allegation of negligence if he said abdominal cavity than if he said pelvic cavity?

Mr. BIRKETT. As a matter of fact, my Lord, to a layman, or shall I say to me, reading the transcript, the interchangeability by the witnesses of the words "pelvic cavity," "peritoneal cavity," and "abdominal cavity" is very difficult to appreciate.

The LORD CHIEF JUSTICE. You say a Jury of laymen might be more likely to draw an unfavourable inference from "peritoneal" than from "abdominal." I should think it would be more likely to be drawn by a Jury of surgeons.

Mr. BIRKETT. A layman, my Lord, would say the doctor knows what he is talking about; it is not a case of you and me; he knows a pelvic cavity that he is talking about; there is a reason for it. That is the kind of thing which might operate in the minds of a Jury, and the whole of my point with regard to it, in a case in which prejudice might so easily and quickly arise. It is a very unfortunate thing that when there was a grave test about what was said before the Coroner, because it had a very great bearing upon the skill or care that was required for the delivery of a child, that the Jury had that deposition, at any rate with no warning by the learned Judge in the prisoner's interests of how much he admitted and how much he denied.

SUBMISSION AS TO THE PROPER ISSUE FOR THE JURY.

Now, my Lords, I want to come to the third matter. In my submission there was no case to go to the Jury upon the first part of the case, if I may so term it. That is so far as the operation itself is concerned. Without going into any detail at all as to the first part of the case perhaps I may put it in this way: Apart from the evidence of Dr. Buchanan and Dr. Spilsbury, who gave evidence with regard to the probabilities of these matters based upon their medical opinion and knowledge, the testimony was only the testimony of Nurse Cleak as to his conduct at the time of the delivery of the child. I think it is very accurately summarised at Question 332, page 23, where Nurse Cleak says this: "He did everything a doctor ought to do for this woman." She also said "Yes, I thought so." Question 330 is: "Was the only light a broken incandescent mantle?—(A.) Yes. (Q.) Not giving a full light?—(A.) Not much light. (Q.) I will ask you as far as you could

judge, and you have had great experience, did Dr. Bateman seem to do everything that a doctor ought to do for this poor woman?—(A.) Well, I thought so.” That is first-hand knowledge. I think she said she had had an average of 100 confinements a year and had been engaged for 37 years, so that she was manifestly a person of very great experience, and the direct testimony of Nurse Cleak was to that effect. Apart from that it was positively and manifestly in the doctor’s favour. There was nothing in the nature of the evidence of any negligence on the first occasion.

MR. JUSTICE SALTER. You mean on the first occasion, the manipulation and the pulling out of the uterus.

MR. BIRKETT. Yes, my Lord.

MR. JUSTICE SALTER. Of course, they are quite different.

MR. BIRKETT. I mean, my Lord, the conduct of the operation from his arrival at 10 o’clock and the delivery of the child and his going away at 1 o’clock the next morning. I do not think that is suggested. There is certainly no direct testimony about it, so far as I can gather, from the cross-examination of the Appellant. It is said (1) you were negligent, and we ask the Jury to say so because you concealed the removal of the uterus from the relatives and tried to conceal it altogether; it is said in your letter to Dr. Wiggins, which is recorded here—I must confess for my own part that I cannot follow the argument on that,—that you tried to tell Dr. Wiggins by your letter that the uterus was merely introverted, pulled out like a glove and put back, instead of telling him that it was removed. I fail to understand that allegation at all. He said when he took away the placenta the uterus came with it, and it was upon that phrase that it is solemnly suggested that he tried to deceive Dr. Wiggins. Dr. Spilsbury’s opinion was asked about the letter. Then the third matter is that in the depositions before the Coroner there was some variation from the facts. It was said that there was unnecessary violence in pulling the placenta instead of peeling or coaxing the placenta away after the birth of the child. I think those are all the allegations that were made, and now may I shortly deal with them on this submission, that there was really no evidence.

MR. JUSTICE SALTER. Have you not left out the principal point with regard to taking steps to have an operation?

MR. BIRKETT. That, my Lord, I submit, is a separate head altogether. I say quite frankly what my point about the matter is. If I am right, there was no evidence to go to the Jury here. We are in doubt at this moment whether the Jury found their verdict upon the first head, upon the second head, or upon both. That being so, if I can satisfy the Court that there was really no evidence upon the first head to go to the Jury the fact that it was not withdrawn from the Jury at that moment would, in my submission, entitle me to say that this appeal should succeed. If I may take the question of the pulling of the placenta, would your Lordships look at Question 746 on page 59 of the shorthand note. Your Lordships will see that that refers to a matter which Mr. Justice Salter put to me a little while ago. It is in the examination of Sir Bernard Spilsbury: “(Q.) We have heard he was struggling and working hard for an hour. Is that consistent with a proper endeavour to deliver the woman of a child?—(A.) Oh, yes. (Q.) It might take as long as that?—(A.) Oh, yes, and longer. (Q.) The child having been brought into the world what happens next?—(A.) The usual procedure is, after a short time, if the after-birth is not naturally expelled, the doctor assists its expulsion. (Q.) Is the after-birth then retained in the uterus?—(A.) Usually at the time a child is born it is. (Q.) If it is it is part of the duty of the doctor

to take it away?—(A.) Unless it comes away naturally. It practically speaks for itself. (Mr. Justice Shearman.) That is why it gets the name ‘after-birth,’ it usually comes out with the child or shortly afterwards?—(A.) Yes. (Mr. Percival Clarke.) Here we know that when removing the after-birth he removed the uterus too?—(A.) Yes. (Q.) Can you imagine how that came to be done?—(A.) Only by seizing the wall of the uterus and pulling upon that instead of the after-birth, and that would probably only have happened if there were already a tear in the wall of the uterus which would enable it to be seized. (Mr. Justice Shearman.) You are suggesting that putting his hand in to get out the after-birth he caught the tear of the uterus and pulled that instead of the after-birth?—(A.) Yes, my Lord.” That was the view of the obstetricians called for the Defence as well. “(Mr. Percival Clarke.) Would that require force to dislodge it or not?—(A.) Oh, yes, very considerable. (Q.) Have you yourself ever known of a case of a similar kind?—(A.) Yes, I had one case. (Q.) When was that? (A.) About 1912. There was a Coroner’s inquiry in that case also. The doctor by mistake pulled out the uterus and the woman died from hæmorrhage about 40 minutes after it was removed. (Mr. Justice Shearman.) Is that the only case you have ever had in your experience?—(A.) That is the only personal experience I have had of such a case.” Then he goes on to speak of the effect of it, which properly belongs to the second allegation. If your Lordships would look at page 91, Question 1046, Dr. Banister, who was called for the defence, was being cross-examined by my learned friend. He is asked: “Now with regard to removing the placenta. Is that an operation which is usually done very gently by inserting the fingers and, as it were, coaxing or peeling the placenta away from the walls of the uterus?—(A.) Yes. (Q.) Can you understand such force having been used as would tear out the uterus, an ovary, and a Fallopian tube—tear them right out of the woman’s body?—(A.) To tear them right out considerable force obviously must be used. To remove a uterus almost entirely separated as I judge this to have been does not require very much force.” Then my learned friend cross-examined about the broad ligaments. There was nowhere any evidence of anything at any time in that connexion that was done improperly, and no direct suggestion of it at all. So on that matter I submit to your Lordships that there was really no evidence properly to be left to the Jury with regard to the allegation, if that be the allegation relied on. So far as the concealment from the relatives is concerned I should have thought, with very great respect, although it is quite right and proper for the Prosecution to put this matter before the Jury as fully and as strongly as they think they ought, I do not know whether I differ from other people, but the situation is that a doctor has removed the uterus, a terrible thing, in a tenement-dwelling where the poor husband and relatives are waiting in the next room, praying and hoping that all is going well. The doctor knows that she is going to die; he tells the husband she is going to die; he tells the sister and the friend that she is going to die. Was it merely humanity that said: Why distress them and tell them of this dreadful thing that has happened when it can do no good. All that was said on this matter before Mr. Justice Shearman was said by him and said by nobody else. The midwife never said it. He said to the nurse: “Let us keep this to ourselves so as not to shock the relatives.” That is urged as an allegation of negligence in this particular case. In my submission it is not evidence at all.

THE LORD CHIEF JUSTICE. I suppose that it was urged not so much as evidence of negligence as evidence throwing light upon his state of mind about what he had done, thereby intending to exhibit the nature of what he had done.

MR. BIRKETT. The issue, my Lord, for the Jury was not what he had done, but how he had done it; and

the fact that he concealed from the relatives what he had done in my submission is not relevant at all as to how he had done it. I say this, I know my learned friend perfectly well and I do not use the word in any offensive connotation, but it was used prejudicially, having no relevance or pertinence to the point at issue.

MR. JUSTICE SALTER. He took no steps to have an operation when he ought. Does it matter whether the motive was fraud, humanity, or carelessness?

MR. BIRKETT. No, my Lord, I do not think it does matter. In my submission intent would always be irrelevant, and on the question of negligence, strictly argued, those being the two ingredients which form any crime, intent would not matter. I propose to deal as faithfully as I can with the second head, that there was never any evidence to go to the Jury upon the first matter, and the proper course was to have withdrawn it. Would your Lordships just look at the discussion which took place at the end of the case for the Prosecution, because I think it makes quite clear what the real position was. At page 75 Sir Edward Marshall Hall said: "I understand, subject to your Lordship's ruling, that the allegation of negligence here is the omission to have this patient removed to the hospital for the purpose of an operation." That is what I have called the second operation. "(Mr. Justice Shearman.) I think what the Prosecution will have to prove is that either there was grave negligence in any one case in effecting the delivery or in the other in not taking the proper steps after the discovery of the tear to remedy it—either one or the other—and then, the third thing to prove is that the natural consequence of it was the death of the person. Sir E. Marshall Hall.) On the first part I submit there is no evidence to go to the jury at all." There is the submission, my Lord. "The only evidence is that of Dr. Spilsbury, and he was asked: 'In your opinion was the neglect to remove this person to the hospital such as to cause her death?' and he says, 'Yes.' That is the only question asked. It has never been suggested that the actual delivery of the woman was negligent or that the coming away of the uterus was negligent; that has never been suggested. (Mr. Justice Shearman.) I rather thought it was. (Sir E. Marshall Hall.) I submit there is no evidence of it. (Mr. Justice Shearman.) I do not want to say any more than I shall leave it to the Jury. I shall allow Mr. Percival Clarke to conduct his own case, but there is evidence I think for the Jury on both, and the third issue is whether the Prosecution have proved—I do not like to use the word accelerated—that substantially the cause of death at the time it happened was due to the negligence. (Sir E. Marshall Hall.) I will call my experts on that part of the case. (Mr. Justice Shearman.) Unless Mr. Percival Clarke wants to relieve you of any part of the case he will deal with that when your witnesses are called." I submit it is abundantly clear that there was no evidence on the first head to go to the Jury, and I submit the position on behalf of the Appellant is that this having been left to the Jury it is impossible to say whether the Jury convicted on that or convicted on the second, or convicted on them both, and that being so again if that point is good the Appellant here would be entitled to have this conviction quashed.

MR. JUSTICE SALTER. What should have been done if you are right? There is one indictment of negligence and one issue for the Jury. If there is evidence of negligence to go to the Jury it is right to leave the indictment to them.

MR. BIRKETT. But in my submission, my Lord, it was perfectly right to say to the Jury: I have ruled that upon this first head of the case there is no evidence at all, as it is my duty to do, and the only matter, therefore, upon this indictment which you will have to consider will be whether this indictment is sustained by the evidence relating to the second head: Did he take such reasonable steps thereafter as

he should have done, and have left it at large and say there was evidence for them when in my submission there was not? That does entitle this Appellant to come here and make this submission to your Lordship. It raises a very important matter. In a civil action you are entitled to the particulars of negligence alleged, but apparently when you are charged with a much more serious thing and being a medical man, to whom the effect means the loss of every prospect he had in life, the whole thing is at large.

THE LORD CHIEF JUSTICE. Adopting the two-fold division made by the learned Judge at page 275, that is to say, the division into the effecting the delivery on the one hand and remedying what had been done on the other hand, do you say with regard to this evidence that when the learned Judge came to sum up he should have said: There is no evidence of negligence here in and about effecting the delivery. All you have to consider is, was this doctor negligent in the steps he took or omitted to take to remedy the mischief that had been done.

MR. BIRKETT. I say, my Lord, on this first matter that there was no evidence upon this section of the case at all, but having regard to the charges of negligence, the one term that covers most things, the case had been clearly put and clear distinctions made between the first head and the second head; and the submission having been made about that in view of the fact that the defect, if any, in the evidence was not remedied when the Appellant gave his evidence, which would, of course, have cured the matter, the Appellant would have been entitled to say there is no evidence on the first head to go to the Jury.

The Force required for the Removal of the Placenta.

THE LORD CHIEF JUSTICE. Was it not open to the Jury to say upon this evidence that if the doctor had been taking away the placenta it would have been a very simple and easy matter, and that after the evidence had been given as to the considerable amount of force required to tear away the uterus, that he was negligent in tearing it away and that he ought to have known from the amount of force which was required that what he had got was not the placenta. Was it not open to the Jury to say that?

MR. BIRKETT. With great respect, my Lord, I submit that it was not. I have said that I appreciate certain difficulties in this matter of precise definition, if you are entitled to say this thing has happened, you have heard what has been said as to how it happened, the nurse said he did everything which a man reasonably could; nobody else was there to see it happen, that it is open to you to say that because it happened it was negligent.

THE LORD CHIEF JUSTICE. You used the word a few moments ago which learned Counsel for the Prosecution have used about the placenta, "coaxing the placenta." May not a Jury think after hearing the evidence: There seems to be a very great difference between coaxing away the placenta and tugging away the womb?

MR. BIRKETT. Put in that way there is a distinction, my Lord.

THE LORD CHIEF JUSTICE. The point I am upon is your proposition that there was no evidence to go to the Jury about what you might call the first chapter in the case.

MR. BIRKETT. The evidence, my Lord, with regard to the coaxing and peeling was, of course, put in cross-examination by my friend. Your Lordships will, of course, appreciate what the witnesses for the defence said about that. They gave a perfect answer to that matter. I am dealing with the other matter, that there was no evidence to go to the Jury.

MR. JUSTICE SALTER. It was in view of that that I was surprised to find apparently neither Dr. Spilsbury

nor Dr. Buchanan were asked to say anything as to what my Lord has just observed. Something of this kind happened. He said that he got hold of what was the placenta. Ought not he to have known that he had got something more?

Mr. BIRKETT. No, my Lord, the questions were put specifically on the second head about the necessity of the operation, and so on, and not upon the first head. I told your Lordships last week, and I think I am entitled to repeat it to-day, that in the record of the trial it was never really suggested that he had done anything that could be termed negligent with regard to the placenta and the uterus coming away together. Dr. Spilsbury said that the evidence he gave was entirely in accord with the two experts for the defence, namely, that the edge of the uterus having been torn, as indeed was the edge of the placenta, to put your hand in and take one rough edge and mistake it for the other was the most natural thing in the world.

The LORD CHIEF JUSTICE. At that stage, and then you begin to try and withdraw it. The words which you use, I have no doubt quite unintentionally, are always intransitive words, "it came away." The evidence was it was pulled away with considerable force.

Mr. BIRKETT. When Dr. Donald Buchanan gave evidence he was asked in chief at page 46, Question 631: "In order to dislodge it or remove it would much force or little force be required," and he answered: "Well, it is only personal opinion, but I should say a lot of force. I have never known it to be removed. (Mr. Justice Shearman): Is that the first time you have heard of a uterus being removed in the course of delivery?—(A.) In the course of delivery I have never known it occur." Is that really evidence to go to the Jury, my Lords? Mr. Justice Shearman goes on to say: "It is a very remarkable thing to pull out the uterus. I am not saying whether it is wrong or not, but it is a very remarkable thing.—(A.) As a technical point it is beyond my comprehension altogether." So far as evidence is concerned I submit it is no evidence at all which is based upon that.

The LORD CHIEF JUSTICE. There was the evidence upon this point also, was there not, of Sir Bernard Spilsbury at Question 754: "You are suggesting that putting his hand in to get out the after-birth caught the tear of the uterus and pulled that instead of the after-birth?—(A.) Yes, my Lord. (Mr. Percival Clarke): Would that require force to dislodge it or not?—(A.) Oh, yes, very considerable."

Mr. BIRKETT. I am not taking the precise point at the moment, my Lord, but the evidence for the Defence was quite the contrary.

The LORD CHIEF JUSTICE. The point you are on now is that there was no evidence so far as the effecting of the delivery was concerned.

Mr. BIRKETT. I appreciate that that is the point I make, at any rate so far as the first head of negligence is concerned. I think your Lordships are in possession of all the facts relevant thereto. My submission about the whole matter is that there was in fact no evidence to go to the Jury.

THE ALLEGATIONS OF NEGLIGENCE AFTER DELIVERY.

Now, my Lords, with regard to the second head, I will try to be brief about that. I have said all I desire to say about the first matter, and may I go to the second head. May I, for my own assistance, summarise what I conceive here to be the allegation that is made against the Appellant? It is said because of what you had done, whether it was negligent or not, you had destroyed the pelvic floor and your first duty, therefore, as a medical man, using the knowledge which you had, was to repair the pelvic floor so as to prevent what the witnesses, I think, termed herniation,

so that when the patient stood up things which ought to have remained inside came outside, and the way to do it was by an operation, by sewing or by stitching. If you had done that you might have saved the patient's life, and in any event the exploration for the purpose of the operation would have shown you there was an injury to the bladder and the intestines, which had been crushed against the sacral promontory. It was derived from the evidence of her friends that she was at some time after the birth in a condition to stand an operation. Then it is said, lastly: It was your duty to take a second opinion. As I appreciate them, those are allegations of negligence which are made upon the second head. The answer made is this: The non-removal for the operation between July 24th and 28th was not a negligent thing at all; it was a carefully considered medical view. It is said in support of that view that to move the patient at any time after this event had occurred would have meant probably immediate death. It is said that there was no moment between the happening of the uterus giving way and the removal to the hospital when it was a wise and safe or proper thing to do. It is said the symptoms of peritonitis, the woman having died from peritonitis, and shock, were coincident with the moment of delivery; and with regard to drainage, it was suggested that the patient, having regard to the removal of the uterus and the position in which she was placed, had in fact the most effective and natural drainage that you could possibly have to get away the poisonous matters which might have infected the system. Then it was said of all the previous cases which are recorded everything in those cases pointed against the operation and in support of the very conduct which Dr. Bateman followed. In the case in 1912 of which Dr. Spilsbury spoke from personal knowledge, the patient died 40 minutes after removal. In the two cases spoken to by Dr. Banister for the Defence, one woman died before she reached the hospital and the other woman died 30 minutes after admission. Those are the answers which are made, speaking quite generally, with regard to the second head of negligence.

Mr. JUSTICE SALTER. How many requests did Nurse Cleak make to the doctor?

Mr. BIRKETT. The nurse made three requests, my Lord. She asked on the night of the 23rd when the child was delivered: Ought not she to go to the hospital? She asked on the Friday, the 25th, and she asked upon the Sunday, the 27th.

Mr. JUSTICE SALTER. Was she ever asked whether when she made those requests she thought that the woman could be moved?

Mr. BIRKETT. I am much obliged to your Lordship for mentioning that. Mr. Justice Shearman in his summing-up to the Jury put that point in favour of the Defence, that the nurse herself never thought that there was a moment when she was any better from the night when this thing first happened. It is an extremely important point. At page 30 of the transcript in Question 418 in Nurse Cleak's evidence there is this question: "You realise the question of moving this woman down four flights of stairs is a very serious matter?—(A.) Yes. (Q.) You say the doctor said to you when you said you thought she ought to go to a hospital, I am talking of the night of the 21st, 'I will see how she is in the morning and then send her away, she is not to be moved yet'?—(A.) Yes." That, as a matter of fact, was, as your Lordships perfectly well know, the view of the experts who were called for the Defence and who spoke in the very strongest possible way.

The LORD CHIEF JUSTICE. So far from being a useful step it would in fact have been a dangerous step?

Mr. BIRKETT. Yes, my Lord, it would. If I may say it now, my Lord, the two doctors who were called for the Defence—your Lordships will have read the

qualifications of those two gentlemen; they have tremendous experience—when the question was put to them what you would do in the like circumstances answered; I should do exactly what this Appellant did. Then when they were asked: Is there anything that you could suggest that he did do which he ought not to have done with regard to removal to the hospital? the doctors make answer: It would have meant in my view immediate death.

MR. JUSTICE SALTER. Sir Bernard Spilsbury said he thought she may have had just a chance.

MR. BIRKETT. Yes, my Lord, he said just a chance. I think, if I may say so respectfully, the view that was taken apparently by Dr. Spilsbury and Dr. Buchanan was this, that the uterus having been torn away and the ligaments having been torn away certain blood vessels were torn at the same time, and unless you did something either by stitching or sewing to deal with those blood vessels to prevent the possibility of toxic poisoning, the woman would certainly die. The answer made, as your Lordships appreciate, was that the bleeding stopped, and the evidence given was that the clotting might have been a very proper and natural thing to stop the bleeding. To leave her in that position so that she might have some chance of healing before being removed was not merely the most humane, but the wisest and most prudent thing to do.

THE LORD CHIEF JUSTICE. I understand one of the questions which you suggest under this fourth head is the question whether a professional man can be found to be criminally negligent for doing that which two heads of his profession swear they themselves would have done in the same circumstances?

MR. BIRKETT. I submit that, my Lord, and I am sure it will be understood that nobody in this Court could have a higher admiration for Sir Bernard Spilsbury than I, but he is a pathologist and not an obstetrician. It is put as strongly as this, my Lord: I myself with my knowledge and my experience would have done exactly the same. If you had done what Dr. Spilsbury said it would have meant death.

THE LORD CHIEF JUSTICE. Is it not material to look at the frequency or rareness of such a dilemma? Apparently the tearing away of the uterus is a very rare thing. Is a man to know or to be expected to assume that if that rare event happened then all risks must be taken and the patient must go to hospital?

MR. BIRKETT. No, my Lord, I should have submitted not.

THE LORD CHIEF JUSTICE. If it were a thing that happened every day other considerations might arise.

MR. BIRKETT. Your Lordships will appreciate that upon the last point your Lordship has raised it is again a substantial ground on which I rely for the misdirection of the evidence. The learned Judge told the Jury that that factor did not really matter. My learned friend took the extreme course of interrupting the learned Judge in his summing-up to point out what Dr. Banister said about that matter; but the learned Judge said it really did not matter. But it was vital to the defence that in this very rare occurrence in their view this man had done in that emergency everything that a practitioner could do. It is a matter upon which I rely with regard to the misdirection. Would your Lordships now look at page 61 of Dr. Spilsbury's evidence. At Question 769 he is asked: "If that is left, and no attempt made to repair it, what would be the result on the patient?" (A.) I think the inevitable result must be death either very shortly from shock and hæmorrhage, or at a later period, from the development of the infection, peritonitis.—(Q.) That is quite apart from the tear of the bladder, the rupture of the colon?—(A.)

Yes, quite apart from that. (Q.) If that would be the result if it was not attended to, what would it be the duty of a medical man to do?—(A.) To take steps to arrange for an operation as soon as possible afterwards. (Q.) This injury took place just after midnight on Wednesday, the 23rd July, early morning of the 24th July; would it have been the doctor's duty to have had an operation performed either there or at an hospital that night or when?—(A.) It would depend upon the patient's condition. She would, no doubt, be unfit for operation immediately afterwards, she would be in a state of collapse, but as soon as she rallied from that she ought to have been operated upon. (Q.) Can you form any opinion from the length of time she lived afterwards, and after the removal to the hospital, whether at any time after this injury she was in a condition to stand the operation?—(A.) It is very probable she was. I have no doubt in my own mind she was in a condition to be operated on from the account given of her condition by her friends. (Q.) She was admitted to the infirmary and a letter was written by Dr. Bateman saying: "On extracting the placenta I found to my surprise that the uterus came with it. Evidently the foetus had been expelled into the pelvic cavity some time previously, and the uterus had contracted, firmly, on the placenta." What do you say about that having regard to the evidence which has been given?—(A.) From what I have heard of the evidence I think it is clear the child had not escaped into the pelvis, because, as I have already said, there would have been signs of collapse as soon as that occurred. (Q.) 'She was very collapsed, she has been doing fairly well until the present, but is now in a bad way.' If she had been doing 'fairly well' up to the present, can you see any justification for not sending for the ambulance or the hospital authorities?—(A.) No." The only thing on that is that Dr. Spilsbury is forming the best view he can, but he relies upon those statements which are made by the husband and mother and Miss Lehoux that she seemed brighter, whereas he ignores entirely the more skilled evidence of the midwife of 37 years' experience, who was likely to know, and she says there was at no time any change between what happened on the night of the delivery and the day that she was sent to hospital. Your Lordships realise that she was sent to hospital. Dr. Bateman said: If I give her an anæsthetic she will die on the table. Now, my Lords, I propose to turn to the question of misdirection with regard to the evidence.

SUBMISSION OF MISDIRECTION WITH REGARD TO THE EVIDENCE.

Tuesday, Feb. 10th.

MR. BIRKETT. My Lords, there were two matters remaining with which I wanted to deal quite shortly. They were under two headings, the first being misdirection by the learned Judge, as to the evidence, and my last and final point, that the verdict was against the weight of evidence.

The first of those two matters, namely misdirection by the learned Judge on the evidence, I approach with some diffidence. I do not know whether your Lordships are familiar with the facts which are set out in the Notice of Appeal, but there are set out there, I think, fourteen separate heads upon which misdirection is alleged. I can spare your Lordships a good deal of time and trouble upon that, I think, by saying this, that the only importance that is, I think, to be attached to the allegations of misdirection on the evidence would be as to their possible cumulative effect.

THE LORD CHIEF JUSTICE. You may take it that we are aware of what was said in the summing-up.

MR. BIRKETT. If your Lordship pleases. Subject to that, I think the only matter to which I can draw attention, because we regard it as of some importance, is this: it is I think rather imperfectly expressed in No. 5: "The learned Judge told the Jury, upon a

matter of the gravest importance to the Defence, that the evidence of the doctors called for the Defence was of no importance. The injurious effect of this was heightened by the fact that the learned Judge persisted after the error had been pointed out." I think that is a little improperly worded, due probably to some little misapprehension; but there is a substantial point at line 260 of the summing-up, which your Lordships will find on page 146, about four lines from the top: "It is admitted that the coming away of the womb in the case of a childbirth is almost unknown. Dr. Spilsbury in his wide experience has only heard of it twice, and the doctor who was in charge of Queen Charlotte Hospital said 'I have had under my charge 60,000 cases and I have never heard of such a case,' and the other witness said he had not heard of such a case. Dr. Spilsbury said when it has happened before, in his experience the child has died at once. (Mr. Davis): Dr. Banister said he has two cases."

The LORD CHIEF JUSTICE. It was the mother who died?

Mr. BIRKETT. Yes.

The LORD CHIEF JUSTICE. Not the child?

Mr. BIRKETT. That is so, my Lord. I do not think that the child was mentioned. The child may have died, but it was the mother who was mentioned in the evidence.

The LORD CHIEF JUSTICE. It is not disputed that it was the mother who died.

Mr. BIRKETT. Yes. Then Counsel for the Defence says: "Dr. Banister said he had two cases"—and, of course, the Defence relied in the strongest possible way on the evidence of Dr. Banister with regard to that matter. (Mr. Justice Shearman): I think he said as regards turning the womb inside out; certainly at the hospital he said there had been no case, but at any rate it does not matter whether they heard of one or two cases, it is an extremely rare case and one of those where the experts differ." I think with very great respect that the learned Judge and learned Counsel for the Defence at that time were somewhat at cross purposes. The learned Judge was minded to point out I think in the interests of the prisoner that the situation that the prisoner had to deal with was an extremely rare occurrence, and his mind was solely centred upon that matter. Counsel for the Defence interrupted him to point out that there had been two cases, because of the enormous importance to the Defence of those two cases, which, in the submission of the Defence, justified entirely the line of conduct which had been pursued by the Appellant in this case, namely that the proper course of treatment was rest, and that if you moved the patient either to hospital or elsewhere, according to the recorded cases death was the almost certain and immediate result; and the matter which is complained of in the Notice of Appeal I think amounts to this, that there was, shall I put it, an inadvertent misdirection on the evidence, inasmuch as the Jury may very well have believed from the way that matter was dealt with that the evidence which had been called by the Defence through Dr. Banister upon so vital and important a matter was said by the learned Judge in that passage to be a thing of no account, inasmuch as it did not matter.

If I may take that as an illustration, and refer only to one more, the complaint, if it justifies so strong a term as complaint, which is made by the Appellant on this head is that in several matters in the summing-up there are, shall I say, inadvertent mis-statements which might have worked, and in the submission of the Defence did in fact work, greatly to the prejudice of the Appellant. The only other one I will mention is one which I think is numbered (ii.): "The learned Judge told the Jury that the removal of the womb was sufficient to support a conviction." On line 254 on page 145, if this is an accurate transcript, the learned Judge says: "Let me pass on to the second question.

The Crown first of all say there was gross negligence, and you will not find it unless you are quite satisfied of it, in pulling away the womb at all"—then the transcriber has put what I presume he intended for a dash—"in what he did before and in pulling it away." I do not apprehend that something is left out there.

The LORD CHIEF JUSTICE. It is undoubtedly a dash.

Mr. BIRKETT. I have two marks.

The LORD CHIEF JUSTICE. That is not the shorthand writer, that is the typewriter.

Mr. BIRKETT. Yes. I only mention it because it might very well have been that there was some word left out there. "The Crown first of all say there was gross negligence, and you will not find it unless you are quite satisfied of it, in pulling away the womb at all—in what he did before and in pulling it away. It is suggested by the defence nothing of the sort," and so on. The point about that is in my submission really rather important. Here was a Jury no doubt shocked and horrified at hearing of what actually did happen—that is, the removal of the uterus from a woman in childbirth; and I hope that I am entitled to say that an ordinary jury might very well and very naturally think "Why, the mere pulling away of the uterus at all in any circumstances was in itself a grossly negligent thing," being naturally ignorant of the fact that the placenta and the uterus had an edge which was, as I understand it, precisely similar, soft and thin and regular, so that to the touch there would be no distinction whatever. The submission on behalf of the Appellant on this point—

The LORD CHIEF JUSTICE. When I hear you say that, it occurs to me to ask: Is it not necessary to consider the various movements in that process? It may well be that the doctor might begin to pull away the edge of the torn uterus, believing it to be the placenta, but when he perceived, if the Jury found he ought to have perceived, the degree of force which was necessary to pull away the uterus, ought he not to have realised that he was not removing the placenta.

Mr. BIRKETT. With respect I should have thought that that observation was exceedingly just if in point of fact it was beyond contest that a very considerable amount of force was used.

The LORD CHIEF JUSTICE. Not beyond contest, but there was evidence to go before the Jury.

Mr. BIRKETT. Yes, there was evidence on both sides about that. The evidence for the Defence, I think, was that it was a natural mistake to regard the edge of the uterus as the edge of the placenta.

The LORD CHIEF JUSTICE. That is the beginning.

Mr. BIRKETT. Yes, that is the beginning. Now, my Lord, this is the question as it is put here: "The Crown first of all say there was gross negligence, and you will not find it unless you are quite satisfied of it, in pulling away the womb at all—in what he did before and in pulling it away." Now, my Lord, the submission I make to you there is that the Jury might quite naturally and reasonably have believed that the mere fact that the uterus was removed, however it was done, was in itself an act of gross negligence. The point I want to urge about it is that in my submission it was so natural a thing for the Jury to do that it was very, very important in the Appellant's interest that the natural danger upon that head should be guarded against by very careful and precise wording in summing up the evidence, and in this phrase "you will not find it"—that is the gross negligence—"unless you are quite satisfied of it, in pulling away the womb at all—in what he did before and in pulling it away"—as I said, I approach this matter of misdirection—

The LORD CHIEF JUSTICE. In your opinion might the Jury not have taken this view: Here was a woman

33 years of age, the mother of four children, and a doctor has pulled away the uterus?

Mr. BIRKETT. That was the danger to be guarded against, I think. I speak my own mind and not anybody else's in saying I am very afraid that the Jury might do that, and I think in my submission it would be an entirely wrong thing for them to do.

The LORD CHIEF JUSTICE. The question I am asking you is: Might the Jury not say that in fact, but might they legitimately do it?

Mr. BIRKETT. They might do it in fact, and I think probably did, but legitimately I submit they had no right whatever to do it. That is a point which I endeavoured to put some considerable time ago in the interests of the Appellant, that that was the precise danger to be guarded against on the first head of negligence. Here, if I may reinforce the points I make upon this alleged misdirection, the wording of the learned judge in this sentence, "pulling away the womb at all" having regard to the very natural view that the Jury might take, was a very serious misdirection in fact so far as the Appellant was concerned.

Mr. JUSTICE SALTER. I am not quite sure that I follow that. I understood your point yesterday to be that this Part I. ought to have been withdrawn.

Mr. BIRKETT. Yes.

Mr. JUSTICE SALTER. The learned Judge decided not to withdraw it, thinking there was some evidence on Part I. What is your complaint on that sentence?

Mr. BIRKETT. The complaint I make is this, that the sentence may have led a lay Jury to suppose that the mere fact that the womb came away at all in this doctor's hands was sufficient for them to find him guilty upon the first head, whereas in truth and in fact the real question was whether in the pulling away of the womb there was in fact negligence. It may be an unsubstantial point, but it seemed to me to be a matter which might be capable with a lay Jury of leading to great misunderstanding.

The LORD CHIEF JUSTICE. It is fair to add, is it not, that Dr. Spilsbury at any rate had said that he had known of similar cases?

Mr. BIRKETT. He had.

The LORD CHIEF JUSTICE. In the language you are using you are drawing rather fine shades of distinction, are you not? You use three different phrases: One is "pulled away," another is "came away," and the intermediate term which you now use is "came away in the doctor's hands."

Mr. BIRKETT. I was brought up in a school, my Lord, where language was intended to conceal one's thoughts, but certainly in this Court it is not my desire so to do. I suppose it is the voice of the advocate adopting the language which comes to his mind which is most favourable to the Appellant; but whatever the precise shade of meaning to be attached to any of the phrases, the point I make with regard to this matter is that there was here, in my submission, a very natural danger to be guarded against, namely, that in a case which would shock and indeed horrify the members of the Jury—because it has occurred to me in dealing with this matter last night that there probably was not a man on this Jury who at some time had not been in the position of that husband waiting outside the door hoping that all would go well—in a case such as this, that being so, the mere fact that this very dreadful thing had occurred might cause them to say, very reasonably: "It does not occur in the ordinary case, and it is due to the negligence of this man."

The LORD CHIEF JUSTICE. There are two statements there: First, "that it does not occur in the ordinary case," and "it is agreed on all sides that

it was an exceedingly rare event." That it was due to negligence is different.

Mr. BIRKETT. That, as I understand it, was a matter which was dealt with by the Judge, but in this particular phrase in my submission he is not putting the true issue to them—"you have to be satisfied that in the act of taking away the womb there was criminal negligence." He is saying here, "in pulling the womb out at all." As I say, that is the point that I make, and I do not want to labour it. That is all I propose to say with regard to the heading of misdirection.

The LORD CHIEF JUSTICE. On that point, assuming that it was a point proper to have been left to them, what ought to have been said, do you mind telling us?

Mr. BIRKETT. With some hesitancy, I submit that the proper direction—I say this with great diffidence—that the proper direction to the Jury on that matter was that after there had been put before the Jury quite plainly the difference between civil negligence and criminal negligence, the learned Judge should have said, "Now upon this first head of the case it is said here that the uterus was in fact pulled away. Now, members of the Jury, put entirely from your mind any thought of convicting the prisoner merely because the uterus was pulled away; that is not enough. It might be removed by a skilled man—it might have been in any event. You must put that from your mind to consider this question, whether at any stage before that uterus was pulled away some act—"

The LORD CHIEF JUSTICE. Or in the pulling of it away.

Mr. BIRKETT. Yes, my Lord, "or in the pulling of it away, there was some act, some omission, something blameworthy on the part of this man which could make you say: Had it not been for your blameworthiness this thing never would have happened. Until you can do that you must not convict the prisoner."

The LORD CHIEF JUSTICE. Suppose, to bind the thing, a hypothetical Jurymen says, "I do consider it, and I observe he pulled it away."

Mr. BIRKETT. Yes, "I observe he pulled it away." The hypothetical Jurymen in that event would be himself blameworthy in so far as he did not sit there as he ought in a judicial mind to look at the evidence.

Reported Cases of Similar Catastrophes.

Dr. Spilsbury knew of one case, Dr. Banister himself knew of two others, and although I cannot refer to it here, I have been spending some of my days recently in reading text-books on this matter, and amongst the medical profession it is not confined to the three cases; the thing does occur.

Mr. JUSTICE SALTER. Are those cases where the womb is accidentally taken from the body as in this case?

Mr. BIRKETT. They were in the act of childbirth, as in this case, as distinct from where it is taken away on purpose.

Mr. JUSTICE SALTER. They were not cases where the womb was expelled from the body in childbirth?

Mr. BIRKETT. No, not as I understood them.

Mr. JUSTICE SALTER. But taken by manipulation?

Mr. BIRKETT. Yes, in the act of childbirth, in every case of which I have heard after prolonged labour, and where in most cases there had been the operation of version in order to turn the child before manual traction.

The LORD CHIEF JUSTICE. Was not one of the

reported cases a case where the mother was suffering from prolapsus?

Mr. BIRKETT. Yes, in the reported cases. That, my Lord, is what I submit, and I end practically upon that head with regard to misdirection by saying this: I know it is an easy thing for Counsel standing here to say that the learned Judge at the trial ought to have said this and that and to have picked out a matter here and a matter there and to say that the cumulative effect of those matters is really very important. I appreciate how easy that is and how difficult it is for him to put the matter as Counsel would like it from the difficulty I have in putting my own argument here.

The LORD CHIEF JUSTICE. You have put your points very ably indeed, Mr. Birkett.

Mr. BIRKETT. Thank you, my Lord. The statement I make upon that is that if these matters are taken into view in this rather extraordinary case (because I think everybody will concede that this is a very extraordinary case) these statements of misdirection to which I have drawn attention were such as to influence a Jury most materially on this particular matter. Now, my Lord, I come to the last point I have to make: It is a common rhetorical device, but with sincerity I put before the Court this—and perhaps the point I am now going to make is the sum of all the points which I have been endeavouring to make yesterday and to-day—the point is this: If you look at this case from every aspect and from every point of view, the statement can be made, and I make it, and I hope to make it with great force, that the final conclusion in this matter is that the verdict is against the weight of evidence, is unreasonable, and cannot be supported.

The Evidence of Expert Witnesses Recalled.

I do not want again to summarise or to review the facts, but I do desire to call attention to some of the answers given by the two expert witnesses for the Defence. Your Lordship will find the evidence of Dr. Banister at page 76. Your Lordship will see that he is a Doctor of Medicine, a Member of the Royal College of Physicians, a Member of the Royal College of Surgeons, London, a Member of the Royal College of Physicians, Edinburgh, of Harley-street, an Obstetric Surgeon and Consulting Surgeon to Queen Charlotte Hospital. He is also an Assistant Obstetric Physician and Lecturer on Obstetrics at Charing Cross Hospital. He is Surgeon to the Chelsea Hospital for Women, Consulting Obstetric Surgeon to Northwood Memorial Hospital, the Passmore Edwards Hospital, and the Florence Nightingale Home, and Examiner to the Central Midwives Board. Those are the qualifications of Dr. Banister.

The LORD CHIEF JUSTICE. And 15 years' actual experience in obstetric practice?

Mr. BIRKETT. Yes. I do not suppose it is a conclusive test, but I think the witnesses for the Defence on the precise point at issue were more qualified to speak than the witnesses called for the Prosecution. At any rate, there are the qualifications. At Question 915 he says that he has read Dr. Bateman's evidence given before the Coroner, and in reply to the next question he says that he has heard the evidence given at the trial. Then at Question 919: "(Q.) I want to ask you this first: In your own practice how many cases have you known of the uterus being removed in the course of parturition?"—(A.) Only two. (Mr. Justice Shearman.) Two besides this?—(A.) Yes, two besides this. (Sir E. Marshall Hall.) Was any operation done in either of those two cases?—(A.) No. (Q.) Why not?—(A.) The first case that I saw was dead when she reached the hospital, and the second died within half an hour of her admission. (Q.) You have heard Sir Bernard Spilsbury's evidence in which he said the woman had a chance; would you accept that or qualify it?—(A.) I should say

that her chance was so small as almost to be disregarded, and that it would be without probability that she would recover. (Q.) Will you put yourself in this position for one moment, the position of the doctor, the prisoner here, after he has discovered, according to the evidence, that the uterus has come away with the placenta. You have heard all the evidence about the collapse, and would you yourself have taken the responsibility of removing her to a hospital for an operation then?—(A.) I should have forbidden her removal. (Q.) Whatever chance she had of life in your opinion would it have been increased or diminished by such a removal?—(A.) I think her chance of life would have been wholly removed. (Mr. Justice Shearman.) Do you mean she had any if she was alive?—(A.) I think you can say they have a chance so long as they are alive. (Q.) Assuming you have got ruptured arteries in the inside and intestines not sewn up, I can quite understand you saying it was hopeless, it was no good removing her, but I cannot understand that you could have left a woman like that in the belief that she could survive and recover." That is a question by the learned Judge which I think puts very concisely the main point which was alleged by the Prosecution upon this second head. "Do you suggest she could revive and recover without having something done to her to sew her up?"—(A.) I have not suggested that. (Q.) I understand you to say that the chance of recovery was practically nil?—(A.) Death was." I do not follow that, but that is the answer given.

The LORD CHIEF JUSTICE. "Death was certain," I suppose.

Mr. BIRKETT. Yes, I suppose he means "Death was certain." Then he is asked: "I thought you said the contrary?"—(A.) I said I would forbid her being removed then. (Mr. Justice Shearman.) I did not understand that. (Sir E. Marshall Hall.) Do you agree with Sir Bernard Spilsbury that probably there was a period between Wednesday midnight and 8 o'clock on the following Monday, when she might have been removed with the probability of a successful operation being performed?—(A.) Change 'probably' to 'possibly' and I agree. (Mr. Justice Shearman.) I think they do agree there was just a possibility?—(A.) Just a chance. (Sir E. Marshall Hall.) Have you heard anything in the evidence which would lead you to say that between Wednesday midnight and Monday at 7.30 there was any more favourable moment at which she might have been removed?—(A.) No. (Q.) Who would be the best person to judge as to the desirability of her removal at an intervening period of time?—(A.) I should say the doctor in attendance. (Q.) You have heard the evidence of the husband as to the pains?—I do not think I need trouble about that; he is there beginning to deal with complex as against transverse presentation. On page 81, at Question 954, he is asked: "Do you agree with Sir Bernard Spilsbury that in all probability if the presentation was such as we are now describing the child was in fact dead, and dead for some time?" That was the head and feet and cord all presented together. His answer is: "I do not know that we can say that with certainty from the evidence. (Q.) Is there anything in that form of presentation that excludes the possibility of a living foetus?"—(A.) I should say it is almost impossible to obtain a living baby. (Q.) A delivered baby I agree, but I am asking you whether the foetus was in fact dead when the presentation was diagnosed?—(A.) It is more likely to be dead than alive, but I do not see that you can say it is either. (Q.) Supposing that presentation and no manipulative interference, what do you say, might you get a rupture of the uterus?—(A.) Yes." That is the point which Mr. Justice Salter raised yesterday as to the injuries being consistent in certain cases with natural labour. (Q.) Will you explain to my Lord and the Jury what you mean by that and why you say it?—(A.) It is a well-known clinical fact

that the uterus can rupture in the course of a perfectly normal labour. I myself have seen three cases in which the uterus has ruptured while the patient has been lying in bed and apparently being a perfectly normal labour. The most common cause of rupture of the uterus is, I think, the use of some manipulation to effect delivery during the time that the uterus is very tightly contracted. (Q.) I want you to tell the Jury how that acts?—(A.) The way in which a rupture takes place is that the head of the child—usually this manipulation is to deliver the baby by the feet, and in order to deliver the baby by the feet the head has to be pushed up out of the way, and sometimes during that pushing and pulling down the head is pushed through either the side of the uterus or the junction between the uterus and the vagina, and I believe when such an accident as that does occur that it is only chance which decides how wide such a rupture is going to be. (Q.) If such a rupture had in fact taken place can you say, would it increase the probability or the possibility of the uterus coming away with the placenta?—(A.) The wider the rupture the less the attachment of the uterus, and the less attachment the greater the chance of the uterus coming away. (Q.) The nurse's evidence is that in removing the placenta he gave it a sharp pull. Would that, in your opinion, be a possible cause of removing the uterus with the placenta?—(A.) I think it would be enough to separate what attachment was left. (Q.) In your opinion is it possible that a medical man might, in removing the placenta, remove the uterus and not be aware he had in fact removed the uterus? (A.) I think it is quite conceivable. (Q.) Would his power of discrimination be increased or reduced by the fact that he had been spending a whole hour in procuring delivery of the child?—(A.) It would be very much reduced. (Q.) We heard that the child was brought out feet first, dead; does that strengthen or weaken your theory with regard to the actual presentation in this particular case?—(A.) I think it strengthens it, Sir. (Q.) There is a statement here that there was an injury to the bladder and an injury to the rectum. Now as to the injury to the bladder, it is said that that probably had been caused by some instrument having caused the injury, what do you say about that?—(A.) In one of the comparable cases that I have seen, in my experience the rupture did run right across the top of the bladder. (Mr. Justice Shearman.) Do you mean it is the touching by the hands or pressure which breaks it?—(A.) No, as the head gets in between, and having started the tear it runs across the front and pulls the peritoneum with the bladder attachment. (Sir E. Marshall Hall.) Consequential?—(A.) Yes. (Mr. Justice Shearman.) The head of the child pushed up against it causes it to split?—(A.) Yes. (Q.) What is the bladder?—(A.) It is comparatively thin with a certain amount of muscle, and inside that a mucous membrane, and it can be very easily torn. (Sir E. Marshall Hall.) Has the placenta got an edge to it?—(A.) Yes. (Q.) Is the placenta something flat; what does it look like?—(A.) It weighs somewhere about a pound. It is about that size round and it is about that thick at the edge and that thick in the middle (describing). (Mr. Justice Shearman.) It is a Latin word which means an ordinary cake, a flat cake. (Sir E. Marshall Hall.) If there was a tear in the uterus would it be possible to mistake the edge of that tear for the edge of the placenta?—(A.) Yes, they would both be soft and they would both be irregular. (Q.) If that did happen and pressure was put on the edge of the torn uterus instead of the placenta what would you expect?—(A.) The uterus would come away. (Mr. Justice Shearman.) You think when he was pulling at the placenta he caught hold of the tear of the uterus and took it for the placenta and gave it a tug?—(A.) Yes, I think what he thought was the placenta was not the placenta, it was the edge of the uterus. (Sir E. Marshall Hall.) Is that quite a reasonable explanation of how this uterus came to be taken away?—(A.) I think so, yes. (Q.) Do you agree with Sir Bernard that great force would have to be used under those conditions to tear the uterus?—

(A.) No, I am afraid I do not. (Q.) From your own personal experience what is your own view with regard to the amount of force?—(A.) I do not think it would be any more than might reasonably be used in separating a placenta from a uterus. If you mistake the edge of the uterus for the placenta, an equal amount of force might quite easily separate the whole organ." That, subject to the cross-examination by my learned friend of the doctor, was in my submission absolutely overwhelming evidence for the Jury.

The LORD CHIEF JUSTICE. I see that in the question which was put to the Witness the expression which was used was that according to the nurse he pulled it sharply. That is at Question 961. The words are: "He gave it a sharp pull."

Mr. BIRKETT. Yes.

The LORD CHIEF JUSTICE. That is not exactly what she said. Her evidence is to be found at Question 209, on page 15. She is asked: "Describe that to us, will you? How did he do that?" and her answer is: "He pulled it rather sharply."

Mr. BIRKETT. Yes. On the other hand it would also be pertinent to remember that when the nurse was asked the general question: Did he do everything that a doctor ought to do, the nurse made answer, Yes, he did.

The LORD CHIEF JUSTICE. Yes, that is so.

FINAL ARGUMENT FOR THE APPELLANT.

Mr. BIRKETT. My submission upon that evidence which I have just cited is that it was absolutely overwhelming evidence of the highest possible kind on this very difficult case, which completely exonerated the Appellant from any charge of negligence; and when it is remembered, although I do not propose to read it, that Dr. Roberts, of equally high standing, agrees in substance with the evidence which is given by Dr. Banister (as will be seen on page 97), I do submit, and with some earnestness, that having regard to the responsible and honourable duties which fall to the members of the medical profession, called upon as they are to confront emergencies at all hours of the day and night, and who give all their time and skill in those circumstances, to say of a man, when an untoward thing like this happens which may be said to be almost unknown in the history of the profession, to speak quite generally, and when two of the most eminent physicians and surgeons which this country knows come and say in terms, and justify it, "I should have done what this man did, and to do other was to cause immediate death"—to say that that man shall be found guilty of manslaughter would be, to adopt the words which were used at the end of one of the judgments which I read yesterday, to place the members of that profession in a very hazardous situation which would deter men from entering the medical profession.

Those are the points which I venture to submit on behalf of this Appellant, and I submit that on any ground I am entitled to succeed, but that these last points which I have ventured to put, namely that having regard to the nature of the evidence given the verdict so given was against the weight of evidence, the verdict was unreasonable and against the weight of evidence, is a submission which in this Court ought to prevail.

Your Lordship will remember that last time at the application for leave there was a further application for leave to call further evidence. Your Lordship will remember the terms in which your Lordship addressed me at that time, which gave me a discretion in the matter with regard to calling certain evidence. I have in Court a very distinguished gentleman indeed of very great experience in this class of case, who is anxious to give evidence, and of course if the Court thought fit I should be glad too that he should do so;

but I am not able to say that that is evidence which was not available to us at the trial. It is evidence, if your Lordships would allow me to say so, of the very highest kind, which would support and confirm in detail the evidence which has been already given. In those circumstances, having regard to the terms in which your Lordship addressed me, I do not feel that I can press this application. The doctor, who is here now, and sitting by me, would be very glad to place himself at the service of the Court if the Court thought fit.

THE CASE FOR THE CROWN.

MR. ROOME. My Lord, the case for the Crown was, in the language of Lord Ellenborough in the case of *The Queen v. Williamson*, that the prisoner had been guilty of criminal misconduct arising either from the grossest ignorance or the most criminal inattention—

The LORD CHIEF JUSTICE. From what are you reading?

MR. ROOME. From the Judgment of Lord Ellenborough in the case of *The Queen v. Williamson*.

The LORD CHIEF JUSTICE. In a passage already cited?

MR. ROOME. Yes, my Lord. The two divisions into which this case falls rather illustrate the two branches of the negligence to which Lord Ellenborough drew attention. First of all it was said that to remove the uterus at all may be itself an act of gross negligence arising from the grossest ignorance, and also from gross carelessness. In other words, owing to the extreme rarity of such a tragedy occurring, it was put before the Jury on behalf of the Crown that they might find that the prisoner must have either been grossly ignorant or extraordinarily careless in not discovering before he had pulled out the uterus that it was not the placenta, as he had at first imagined that he had caught hold of, but owing to the increased resistance that the uterus would have over the placenta, he ought to have inferred that it was the uterus, or at any rate he ought to have paused for reflection, and if he had so paused and reflected, he could have checked himself, instead of going on to pull "rather sharply," and to use, in the opinion of the witnesses for the Crown, the very considerable degree of violence which must have been necessary to remove the uterus.

The LORD CHIEF JUSTICE. So far as I see on reading this transcript, there was no evidence in detail as to the difference between the physical surroundings of the placenta and of the uterus. The placenta is something which lies there, and may have to be pulled away, is it not?

MR. ROOME. Yes, my Lord.

The LORD CHIEF JUSTICE. But what is it that holds the uterus in position?

MR. ROOME. There is some evidence upon that. Your Lordship will find it in the cross-examination of Dr. Roberts. I questioned him upon that point.

The LORD CHIEF JUSTICE. Is that on page 97?

MR. ROOME. Yes. That was his evidence-in-chief.

The LORD CHIEF JUSTICE. The placenta was something which was intended to come away?

MR. ROOME. Yes, my Lord.

The LORD CHIEF JUSTICE. The uterus is not. What is it that holds the uterus in position?

MR. ROOME. There are several things which your Lordship will find at Question 1194 on page 106: "I want you to help me if you will in showing what

is involved by the uterus being removed in the circumstances in which it was in this case. What has to go?—(A.) What has to go? (Q.) Yes?—(A.) The floor of the pelvis first of all, and secondly, the cellular tissues which support the neck of the womb. Do you want me to go on? (Q.) Yes, please. —(A.) I do not think there is any more to say than that. (Q.) I suggest to you more than that must go before the uterus can be removed?—(A.) Yes. (Q.) Tell my Lord and the Jury what must go?—(A.) Very little. There must be a thin layer of the peritoneum and the very feeble peritoneal additions which are called ligaments. (Q.) They are what are called the broad ligaments?—(A.) Yes, the broad ligaments. (Q.) And they support the uterus on each side?—(A.) No, sir; they do not support it. (Q.) What are they for?—(A.) I do not quite know. (Q.) Are they useless, in your opinion?—(A.) Almost, except to convey the blood-vessels to the uterus."

The LORD CHIEF JUSTICE. This, as I understand, is the cross-examination of the doctor called for the Defence?

MR. ROOME. Yes, my Lord.

The Attachments of the Uterus.

The LORD CHIEF JUSTICE. Was there evidence on behalf of the Crown showing the strength and the variety of the different supports which retain the uterus in position?

MR. ROOME. I am afraid not. Sir Bernard Spilsbury, when he was in the Box, was not asked that question, but, of course, in putting the suggestions which I did put to Dr. Roberts, I was acting on instructions. Sir Bernard was sitting in front of me. There was no actual evidence to support the suggestion which I made that these ligaments are very strong, and that, in fact, they exist to hold the uterus in position, because they are—

The LORD CHIEF JUSTICE. The witness denied that.

MR. ROOME. He denied that they are strong.

The LORD CHIEF JUSTICE. But he said that if they did not support, he did not know what they did. Nature does nothing in vain.

MR. ROOME. That is what I was trying to suggest to him, but he would not accept it.

MR. JUSTICE SALTER. Can you refer us to the passages, if there are any—I will take the evidence of the Prosecution first—in which Dr. Spilsbury or Dr. Buchanan (I think it was) expressed any opinion that the removal of the uterus in the circumstances of this case was inconsistent with average care and average skill?

MR. ROOME. At Question 755 there is some evidence on the point. It really begins at Question 752, in the evidence of Sir Bernard Spilsbury.

The LORD CHIEF JUSTICE. Of course, one knows that as controversy develops, and as evidence is given, the perspective of a case changes, and quite properly changes, but when the case began, was it a cardinal point in the case for the Prosecution at its outset that here was the uterus pulled away, and that in itself was enough?

MR. ROOME. No, my Lord.

The LORD CHIEF JUSTICE. I thought not, or his evidence-in-chief would have been somewhat different from what it was.

MR. ROOME. Yes, my Lord. I was not present when the case was opened, but I had seen my learned friend, Mr. Percival Clarke, the evening before; and the case for the Prosecution originally was: concede every allegation of negligence that possibly can be

involved in removing the uterus, found no criminal charge upon that; it is the subsequent conduct of the Defendant which we say amounted to such criminal inattention as to be manslaughter.

The LORD CHIEF JUSTICE. And then the Defence counters, or seeks to counter, that by saying: "Yes, but in the events which have happened, it was not an acceleration but a retardation of death to keep this unfortunate mother in her bed." Then the Prosecution begins to pay a new attention, or a new degree of attention, to the pulling away of the uterus?

Mr. ROOME. Yes, my Lord; I think it was rather upon—I will not say the invitation, but upon the suggestion of the learned Judge that there were both aspects to be considered; but much more stress was laid, and laid by me (because my learned friend had left by that time) in my final address to the Jury, on the second aspect of the case, than on the first.

The LORD CHIEF JUSTICE. That is to say, you ended as you began?

Mr. ROOME. Yes, my Lord. On page 59, at Question 752, Mr. Percival Clarke, in examining Sir Bernard Spilsbury in chief, asks: "Here we know that when removing the after-birth he removed the uterus too?"—(A.) Yes. (Q.) Can you imagine how that came to be done?—(A.) Only by seizing the wall of the uterus and pulling upon that instead of the after-birth, and that would probably only have happened if there were already a tear in the wall of the uterus which would enable it to be seized. (Mr. Justice Shearman): You are suggesting that putting his hand in to get out the after-birth he caught the tear of the uterus and pulled that instead of the after-birth?—(A.) Yes, my Lord. (Mr. Percival Clarke): Would that require force to dislodge it or not?—(A.) Oh, yes, very considerable."

The LORD CHIEF JUSTICE. That is your strong passage on that point?

Mr. ROOME. Yes, on that point; but there is also a passage in the evidence of Dr. Buchanan—

The LORD CHIEF JUSTICE. Somebody else said, "A lot of force."

Mr. ROOME. Yes, my Lord. At Question 628 Mr. Percival Clarke asks Dr. Buchanan: "In the ordinary course how is the uterus kept in its position in the living body?"—(A.) There are several physiological factors operating in that case, but the principal physical one is its attachment to the broad ligaments, its inclusion in the broad ligaments. I should not say attachment. I think inclusion is the proper term. It is suspended by the broad ligaments. (Q.) To what are those attached?—(A.) The broad ligaments are like a curtain hung across the pelvis and they are attached to the bony wall on either side of the pelvis; it is suspended in that way. (Q.) Is the uterus suspended firmly in its position in that way or not?—(A.) It is normally. (Q.) In order to dislodge it or remove it would much force or little force be required?—(A.) Well, it is only personal opinion, but I should say a lot of force. I have never known it to be removed." Then a little later he said what my learned friend said yesterday: "(Mr. Justice Shearman): It is a very remarkable thing to pull out the uterus. I am not saying whether it is wrong or not, but it is a very remarkable thing"; and the witness says: "As a technical point it is beyond my comprehension altogether." Upon that it was suggested by the Crown that the mere removal of the uterus in those conditions might, if the Jury chose so to regard it, be an act of gross negligence, as showing the grossest ignorance of what the doctor was doing; and the Prosecution said that the conduct of the accused shows clearly that he thought it was, because you find that he does not inform the relatives of what has happened; you find that he

impresses upon the midwife to tell nobody—not only that she should not tell the relatives, but that she should tell nobody; you find him taking the uterus home and leaving the placenta behind, so as to indicate that an ordinary delivery had been brought about; and you find that he takes no steps to go and inform anyone at the hospital, or anybody holding a somewhat higher position than he holds in the medical profession.

The LORD CHIEF JUSTICE. Is not that a rather perilous line of argument, if the evidence is weak to show that the pulling away was negligent; because these things might come in, either 1, 2, or 3, but especially 1, 2, and 3 together, to supply the make-weight, and make the Jury say: "Well, he has shown by his conduct that he thought it was negligence."

Mr. ROOME. Yes, my Lord.

The LORD CHIEF JUSTICE. Would that alter the character of that which had been done?

Mr. ROOME. No, it would not alter the character of it, but if the Jury were of the opinion: "Well, this man himself must have thought that he had been grossly negligent—"

The LORD CHIEF JUSTICE. But suppose that that is a *non sequitur*, and that what he did was consistent with quite other views and quite other motives; what you get then is confusion of mind supplementing imperfect evidence, and producing a proof.

Mr. ROOME. It was for the Jury to say, and I should think that they were entitled amongst other things to take into account the Appellant's own conduct.

The LORD CHIEF JUSTICE. Of course they were.

The Patient's Chances of Survival.

Mr. ROOME. Much more stress was laid upon the second branch of the case. It was said that this was no error of judgment, but that this Appellant expected that woman to die. He admitted that himself, and he said that if he had come next morning and found that she had died, he would have given a death certificate, and in that case nobody would ever have known what he had done.

The LORD CHIEF JUSTICE. Again, supposing that were so, would that have altered the intrinsic nature of what he had done or omitted?

Mr. ROOME. No, but he supplied the motive for what the Crown said was his wicked and criminal inattention in leaving her there and doing nothing for four or five days, and not giving her that one slender chance of recovery to which she was entitled.

The LORD CHIEF JUSTICE. But unless there is to be a begging of the question, the question still remains: Was there criminal and wicked inattention? If there was not, you need not trouble about the motive of it.

Mr. ROOME. No, my Lord, but on the evidence the Crown said that there was first of all what he omitted to do, that is to say he omitted to do something which both the eminent doctors who were called for the Defence said they would have done: He omitted to make any attempt to insert a drainage-tube into this woman's body; they both said they would have done that; he omitted to take a second opinion; and they both said that that was desirable. All that the Appellant did was to mention what had happened to his locum-tenens when he returned to his consulting room. He made no attempt to remove the woman to hospital; and no attempt, if he thought that that was dangerous—

The LORD CHIEF JUSTICE. He said that that was a good thing.

Mr. ROOME. Yes, he said so.

The LORD CHIEF JUSTICE. He said that he prevented her from dying earlier by not removing her to the hospital.

Mr. ROOME. Yes, my Lord. The Prosecution said: "No, he did that in order to prevent anybody finding out what he had done." If he had thought that she was in too dangerous a condition to remove to hospital, when he found on the next day, and the day after, and the day after, that she was still alive, and according to the evidence of the relatives a little brighter, and according to the letter which he himself wrote to the hospital authorities, doing fairly well, then if his object had been to treat his patient in the best way, and if he were really trying to do his best, he might have brought a surgeon to her bedside to see whether or not in the surgeon's opinion she was fit to be operated upon in that room, if she was not well enough to be removed to hospital.

Mr. JUSTICE SALTER. Supposing that he had put in drainage-tubes, and had got a second opinion, and had had her taken to the hospital, what was the evidence that her life would have lasted longer than if did in fact last?

Mr. ROOME. The evidence upon that first of all will be found at Questions 854 to 862. Of course it was hypothetical evidence. The evidence was that, in the opinion of those medical men, there would have been just a chance.

The LORD CHIEF JUSTICE. And of course it was evidence after the event.

Mr. ROOME. Yes, my Lord. Question 854 is a question put to Sir Bernard Spilsbury: "You were asked a question by my learned friend, and you were asked whether you could say there was a period between then and the following Monday when she could have been operated on with safety?"—(A.) I do not think I said 'with safety'; I would not go so far as that. (Q.) She might be operated on?—(A.) Yes. (Mr. Justice Shearman.) I have got the words 'As far as I know it is a possibility.' (Sir E. Marshall Hall.) I thought he said that it was possible she might be in a fit condition. (Mr. Justice Shearman.) 'You must take steps to arrange for an operation as soon as possible after and it would depend on the patient's condition. So far as I can estimate she rallied sufficiently to permit of an operation.'"

The LORD CHIEF JUSTICE. Does that mean, to permit of a successful operation? One hears so often that the operation was perfectly successful, and the patient died.

Mr. ROOME. To permit of the operation which is the patient's one chance of life. If she is left as she is, with blood-vessels torn, the rectum ruptured, the bladder ruptured, impurity pouring into the peritoneum, death is certain. It is a question only of days and probably hours, but death is certain and inevitable. The one chance—a very slender one, but the one chance of saving her or prolonging her life—is to have an operation, which may or may not be successful.

The LORD CHIEF JUSTICE. Of course that statement involves a certain view of the facts. Another view was presented, namely that in the circumstances of this case, and in the physical posture in which the patient was lying, she was getting in fact at least as effective drainage as she would have artificially got.

Mr. ROOME. That was the evidence of the Appellant himself, but of no other witness.

The LORD CHIEF JUSTICE. All I am saying is that the proposition which you mention does not proceed upon admitted postulates.

Mr. ROOME. As far as the drainage proposition goes, it proceeds upon the evidence of the two witnesses who were called for the defence; and it was their proposition—the proposition of both of them.

Mr. JUSTICE SALTER. You have to prove, not that negligence may have accelerated her death, but that it did.

Mr. ROOME. Yes, my Lord.

The LORD CHIEF JUSTICE. In all this, if I may say so, exceedingly interesting and quite ingenious controversy, what becomes of proving beyond a reasonable doubt?

Mr. ROOME. It is for the Jury to say. When the Judge has ruled that there is evidence to go to the Jury, and they have evidence on the one side and on the other, is it not for them to say whether they consider it proved beyond all reasonable doubt?

The LORD CHIEF JUSTICE. Yes, it is for them to say, and then it may be for others to say whether they have reasonably said.

Mr. ROOME. In addressing the Jury I urged them not to convict this man unless they were absolutely driven to it by the weight of evidence. The case for the Crown was that they were not trying to snatch a verdict, and it was miles away from any question of error of judgment.

The LORD CHIEF JUSTICE. Nobody supposed for a moment that you would ever dream of snatching, or think of attempting to snatch, a verdict. No such thing is suggested.

Neglect to Obtain a Second Opinion.

Mr. ROOME. But if I may say so, this case was put particularly high for the prosecution. It was put: "Unless you think his conduct was so wicked that you are driven to find that he gave the grossest inattention to this unhappy woman, do not convict him." What impressed the Jury was the callous neglect, if I may put it in that way, shown by the Appellant in taking the uterus home with him, and not informing a single brother practitioner who might have been in a position to come and help, as it is common knowledge any doctor would. It is true the Appellant said that in Deptford doctors would not help one another without fee, but in my submission any doctor on being told of a terrible case like this having occurred, would have come at any hour of the day or night to that woman's bedside in order to see whether something might not be done for her; but the Appellant concealed from everybody who might be in a position to give help or advice what had really taken place, and then when he is being pressed, and the woman is getting worse after having been a little brighter, and he is pressed by her husband to send her away, he destroys the very foundation of his now alleged reason for keeping her there, namely that he thought she would not have been able to stand the shock, and when she is weaker he yields to importunity and sends her to the hospital.

The LORD CHIEF JUSTICE. I put to you a mere hypothesis following upon what you have said: Suppose that at that last minute of the eleventh hour he had still refused to let her go to the hospital, would your criticism have been less or more severe?

Mr. ROOME. His conduct at least would have been consistent, and one might be more disposed to accept his view that he did not send her because he thought it would be in her interest to leave her where she was. The prosecution did not for a moment accept his story. We did not accept that he had been consulting the interest of his patient. Our case was that having committed an unheard of, or practically unheard of, blunder, in the confinement, he then took every step in his power to conceal it, and that that was evidenced

by the whole of his subsequent conduct; and from the Jury having convicted him at all, they must have found that.

The LORD CHIEF JUSTICE. If that is an accurate representation of the case for the Prosecution, the foundation of it was that he had made a colossal blunder in pulling away the uterus, and that the rest of what happened threw light upon the colossal nature of that blunder; but that, I understand, was not the way in which the case was put at all.

Mr. ROOME. Yes, my Lord; perhaps "blunder" was the wrong word; I will say a colossal disaster—having done something at which he was appalled; because he said to the midwife, "What have I done? What shall I do now? I had better wrap it up and take it home." He was so appalled to think of what he had done—namely, having removed the uterus. No doubt he had never heard of such a thing having been done, but being appalled, being frightened, and thinking of his own position if this were found out, the case for the Crown was that he took every step to conceal it, and that in doing so he denied to this woman the one chance, although a slender chance, which she had; and that was the view which the Jury accepted in finding him guilty, because that was the way in which the case was presented to them on behalf of the Prosecution. Then when he writes to the hospital: "She has been doing fairly well, but is now in a bad way," he was expressing his own view. He says that she had been fairly well up to then, and if she had been fairly well up to then, what excuse was there for not sending her to the hospital long before she was in fact sent, or for not having some surgeon to her bedroom to see if he could operate upon her there? It was consistent in my submission only with his desire to hush this up for as long a period as he possibly could. It was not until he was driven to send her to hospital that he sent her. That being the case, and there being evidence to support it, the Jury had, of course, the great advantage of a most powerful speech from my learned friend Sir Edward Marshall Hall. It was a Jury of men only, because my learned friend had challenged all the women who originally were empanelled. No one could have had a fairer trial, and after what I submit was the most careful summing-up—

The LORD CHIEF JUSTICE. I do not follow that. I hear you say that; but your last remark seems to suggest that it could not possibly have been an advantage to the Appellant to have women on the Jury. You may be right, but I can imagine that it might be an advantage.

Mr. ROOME. I said my learned friend challenged them. It may have been an advantage, but he evidently did not think so. After what I submit was a most careful and accurate summing-up, the Jury convicted this man. Upon that I submit that there was abundant evidence to support that conviction if the Jury accepted it, and if the Jury took the view which was urged upon them on behalf of the Crown.

Mr. JUSTICE SALTER. The case against the accused, put in that way, is hardly negligence really, is it? I am not saying that that matters, but your case is not that he was ignorant or that he was careless, but that he concealed what he ought to have disclosed in his own interest or in the interest of the patient.

Mr. ROOME. Yes, but culpably and wickedly neglecting the patient—what Lord Ellenborough described as the most criminal inattention. It was put in that way; the most criminal inattention, desiring to shield himself.

The LORD CHIEF JUSTICE. Do you mean this, that he committed a blunder in taking away the uterus in the belief that he was taking away the placenta? So far, blunder; having committed that blunder he then proceeded not to seek to remedy the effects of the blunder, but to conceal the fact of it?

Mr. ROOME. Yes, my Lord.

The LORD CHIEF JUSTICE. That is your case?

Mr. ROOME. That is how it was put.

The LORD CHIEF JUSTICE. Must you not go a step further and say: and by reason of that concealment he accelerated the death of the patient?

Mr. ROOME. Yes, my Lord; and that was one of the points upon which the learned Judge specially directed the Jury, that they must be satisfied that the death was caused or accelerated—

The LORD CHIEF JUSTICE. That concealment amounted to inattention which was negligence, and that negligence accelerated the death?

Mr. ROOME. Yes, my Lord. While no one can say that the woman might not have died had she been removed to hospital the next day or the day after—she might not have stood the removal—yet there was evidence that an ambulance could easily have been procured, that a stretcher could have been sent up, and that she could have been carried down those stairs and taken in the ambulance and removed to hospital. There was the chance, at any rate, that something might have been done to prolong her life. On the other hand, it may have been that she would have lived no longer; but the Jury, I submit, are entitled to infer that her death was accelerated by leaving her where she was; in other words, they did not entirely accept the evidence of the two distinguished experts, who were not present, of course, and could not have been present, and never saw the woman during her life or at her death, but who came forward with theories which in their view would assist the Jury to arrive at a conclusion favourable to the accused.

THE CONVICTION QUASHED.

The LORD CHIEF JUSTICE. The Appellant, Percy Bateman, was convicted at the Central Criminal Court for manslaughter, and was sentenced to six months' imprisonment in the Second Division. He now, by leave of the Court, appeals against that conviction and that sentence. The Court is of the opinion that the appeal ought to be allowed and the conviction quashed. In view, however, of the importance of some, at any rate, of the questions which are raised, we propose to consider our judgment and to deliver it at a later day. Meantime, the Appellant is discharged.

THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON

Telephones—GERRARD 4314 & 4315

Offices—423, Strand, London, W.C.2

No. XIII. OF VOL. I., 1925.

LONDON, SATURDAY, MARCH 28, 1925.

No. 5300. Vol. CCVIII.

Founded 1823. Registered as a Newspaper. Published Weekly.

Pp. 128—Price 1s.

Annual Subscription
Inland £2 2s. Abroad £2 10s

SPECIAL ANNOUNCEMENT

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 4.

SYPHILIS AND VENEREAL DISEASES.

By C. F. MARSHALL, M.Sc., M.D., F.R.C.S. Eng.; and E. G. FRENCH, M.D., F.R.C.S. Edin., M.R.C.P. Lond., Lieut.-Col. R.A.M.C. (Ret.), late O.C. Military Hospital, Rochester Row, S.W.

Fourth Edition, revised and illustrated with 7 Coloured Plates and numerous Figures. Price 15s.

London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden.

MODERN TECHNIQUE IN TREATMENT.

IMPORTANT ANNOUNCEMENT.

See pages 6, 7 & 8.

(Now Ready). Medium 8vo. 7s. 6d. net.

THE ADVANCE OF ORTHOPÆDIC SURGERY.

By A. H. TUBBY, C.B., C.M.G., M.S.

PREFACE. The advance of Orthopædic Surgery in the past is significant of greater advances in the future.

London: H. K. Lewis & Co., Ltd., 28, Gower Place, W.C. 1.

DISEASES OF

THE MALE ORGANS OF GENERATION.

By KENNETH M. WALKER, F.R.C.S., M.A., M.B., B.C.

Price 12s. 6d.

"If andrology is fated to take its place in the overcrowded curriculum of medical study it could not have a more entertaining professor than Mr. Kenneth Walker."—BRITISH MEDICAL JOURNAL. Oxford University Press. Amen House, London, E.C.4.

BY C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.

SURGICAL "DONT'S" (AND "DO'S"). Price 3s. net.

"Full of practical wisdom."—BRITISH JOURNAL OF SURGERY.

"Much sound advice, not to be found in text-books."—MEDICAL PRESS & CIRCULAR.

ACUTE APPENDICITIS. Price 4s. net.

London: Harrison & Sons, Ltd., 44-47, St. Martin's-lane, W.C. 2.

NEW (2nd) EDITION. Price 7s. 6d. JUST READY.

H. WANSEY BAYLY'S

VENEREAL DISEASE: ITS PREVENTION, SYMPTOMS AND TREATMENT.

Pages 176 + xvi. 58 Illustrations.

"Well written synopsis . . . it is excellent."—LANCET.

London: J. & A. Churchill, 7, Great Marlborough-street, W.1.

BOOKS BY FRANK KIDD, M.A., M.Ch. Cantab., F.R.C.S. Eng.

COMMON INFECTIONS OF THE FEMALE URETHRA AND CERVIX (in conjunction with DR. MALCOLM SIMPSON). Based on an analysis of 650 cases treated at the London Hospital Venereal Clinic. 7s. 6d. net.

"We can thoroughly recommend the book to all officers of V.D. Clinics and to general practitioners."—EDINBURGH MEDICAL JOURNAL.

COMMON INFECTIONS OF THE KIDNEYS WITH THE COLON BACILLUS AND ALLIED BACTERIA. 18s. net. Oxford University Press.

Humphrey Milford, Amen House, London, E.C. 4

COMMON DISEASES OF THE MALE URETHRA. 6s. net.

URINARY SURGERY. A REVIEW. 7s. 6d. net.

Longmans, Green & Co., 39, Paternoster-row, London, E.C. 4.

New Edition, Rewritten and Enlarged.

DISEASES OF THE HEART.

By JOHN COWAN, M.D., D.Sc., F.R.F.P.S.,

Physician to the Royal Infirmary, Glasgow, &c.; and

W. T. RITCHIE, M.D., F.R.C.P.E., F.R.S.E.,

Physician to the Royal Infirmary, Edinburgh, &c.

Second Edition. 600 pages, 300 Illustrations. 30s. net.

"This well-written work is so admirably balanced that it is well fitted for students and practitioners."—BRITISH MEDICAL JOURNAL.

London: Edward Arnold & Co., Maddox-street, W. 1.

JUST PUBLISHED. Crown 8vo. Pp. viii. + 180. Price 7s. 6d. (postage 6d.)

SURGICAL UROLOGY: By W. K. IRWIN, M.D., F.R.C.S.

"Clearly written . . . eminently practical . . . we can thoroughly recommend it."—GLASGOW MEDICAL JOURNAL.

"Concise . . . clearly written . . . practical in outlook."—BRITISH MEDICAL JOURNAL.

"Well written and fully up to date. Should be of great assistance to the busy practitioner."—CLINICAL JOURNAL.

Baillière, Tindall & Cox, 8, Henrietta-street, London, W.C.2.

DR. MARIE STOPES' GREAT NEW WORK.

CONTRACEPTION (BIRTH CONTROL).

ITS THEORY, HISTORY, AND PRACTICE.

A MANUAL FOR THE MEDICAL AND LEGAL PROFESSIONS.

By MARIE CARMICHAEL STOPES, D.Sc., Ph.D.

With Introductions by Sir WILLIAM BAYLISS, M.A., D.Sc. Oxon. and others.

Medical Times.—"The book is unique and marks a new era."

The Lancet.—"Much of the evidence contained in the book is quite unobtainable elsewhere."

Demy 8vo. Cloth. Pp. xxiv. + 416. With 4 full-page plates. 12s. 6d. net; postage inland 9d.

Should be read by all members of the Clerical and Scholastic Professions.

London: John Bale, Sons & Danielsson, Limited, 83-91, Great Titchfield-street, Oxford-street, W. 1.

TWO GOOD BOOKS PUBLISHED BY SAUNDERS

Kolmer's Infection, Immunity and Biologic Therapy "is so well known to all practical pathologists and bacteriologists that, once the fact that a new edition has appeared and that it fully comes up to the standard of all its predecessors has been noted, little remains to be said."—THE LANCET.

By JOHN A. KOLMER, M.D., Dr. P.H., Sc.D. (Hon.), Professor of Pathology and Bacteriology in the Graduate School of Medicine University of Pennsylvania. Octavo volume of 1210 pages, with 202 original illustrations, 51 in colours. New (3rd) Edition. Cloth, 60s. net.

Stevens' Practice of Medicine: "Dr. Stevens has courageously followed in the footsteps of his old master, Sir William Osler, and of other famous writers, and has produced his book almost unaided. We congratulate him on the result. . . . A volume which will take a worthy place amongst the accepted text-books of medicine."—THE LANCET.

By A. A. STEVENS, A.M., M.D., Professor of Applied Therapeutics in the University of Pennsylvania. Octavo of 1106 pages. Cloth, 35s. net.

W. B. SAUNDERS COMPANY, Ltd., 9, Henrietta Street, London, W.C.2.

A fine product from the celebrated laboratories of E. SCHERING—a guarantee of purity and reliability.

ATOPHAN

TRADE MARK.

The **original** product, which is still made under the personal supervision of its discoverer, Dr. DOHRN.

Promotes the excretion and arrests the formation of uric acid.
Has powerful analgesic, antiphlogistic, and anti-pyretic properties.

Supplied also for injection in the form of :

ATOPHANYL.

Original Packings :

ATOPHAN : Tubes of 20 Tablets each of $7\frac{1}{2}$ grs.

ATOPHANYL : Cartons of 5 Ampoules, each 5 c.cm.

Samples and Literature on request from the Importers :

A. & M. ZIMMERMANN, LIMITED, 3, Lloyd's Avenue, London, E.C. 3

See Veramon announcement on inside back cover.



Valentine's Meat = Juice

For **Quieting** the Irritable Stomach,
 for **Aiding** the Digestion and for **Sus-
 taining** and **Strengthening**. Valentine's
Meat-Juice is **Extensively Employed**
 in the treatment of

Phthisis.

Dr. Gouel, Physician in Chief of the Villepinte Hospital for Consumption, Paris, France : "VALENTINE'S MEAT-JUICE succeeds well in cases of Anæmia and in the treatment of Tuberculosis in an advanced stage when the stomach is intolerant."

Dr. Pietro Borromeo, Physician and Surgeon of the Hospital of Rome, Italy : "I have tried VALENTINE'S MEAT-JUICE in the Tuberculosis Division of the Hospital of the Holy Spirit, and have proved the great advantages that it renders for the nutrition of the consumptive. Pleasant to the taste of the most fastidious of the sick, it does not irritate the stomach; but stimulates the peptogastric functions so as to improve notably the appetite, even in cases of continuous and high fever and extreme loss of strength."

For sale by European and American Chemists and Druggists.

**VALENTINE'S MEAT-JUICE COMPANY,
 RICHMOND, VIRGINIA, U.S.A.**

THE LANCET

No. 5300.

LONDON, SATURDAY, MARCH 28, 1925.

CCVIII.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

GOULSTONIAN LECTURES
on the Study of Gastric
Function in Health and
Disease. By JOHN A.
RYLE, M.D., F.R.C.P.
Lecture II.—(Illustrated) 641

ORIGINAL ARTICLES

The Diagnosis of Malignant
Disease of the Thyroid.
By A. J. WALTON, M.S.,
F.R.C.S. 650

The Renal Threshold for
Glucose in Diabetes
Associated with
Nephritis. By E.
WORDLEY, M.D.,
M.R.C.P. 655

Incidence of Glycosuria
During Pregnancy. By
ARTHUR CROOK, M.R.C.S. 656

CLINICAL AND LABORATORY NOTES.

Veronal Poisoning. With
Notes on a Case. By
E. P. SCOTT, M.B., B.S.,
M.R.C.S. 658

A Case of Encephalo-
Meningocele. By EMILY
G. STUART, M.B.—(Illustrated) 659

MEDICAL SOCIETIES.

Royal Society of Medicine:
Non-Specific Disturb-
ances of Health Due to
Vitamin Deficiency 659

Section of Electro-Thera-
peutics: Treatment of
Carcinoma of the Breast
by X Rays. 660

Combined Sections of
Surgery, Medicine, and
Pathology: Treatment
of Septicæmia 688

Bristol Medico-Chirur-
gical Society 662

Royal Academy of Medicine
in Ireland: Section of
State Medicine 663

Plymouth Medical Society 664

REVIEWS AND NOTICES OF BOOKS.

A Synopsis of Special
Subjects. Diseases of the
Skin. By H. C. SEMON,
M.D. Obstetrics, &c.
By Malcolm Donaldson,
M.B., F.R.C.S. Diseases
of the Ear, &c. By Archer
Ryland, F.R.C.S. Dis-
eases of the Eye. By
J. F. CUNNINGHAM,
F.R.C.S. 664

The Life-Story of the Adder.
By Norman Morrison,
F.Z.S. 665

Louis Pasteur. By Prof.
S. J. HOLMES, Ph.D. 665

The Weber Collection. Vol.
II. Macedon, Thrace,
Thessaly, North-Western,
Central and Southern
Greece. By L. FORRER. 665

Surgery, Gynaecology, and
Obstetrics 666

LEADING ARTICLES.

THE MEDICAL CURRICULUM:
AN INTERNATIONAL
SURVEY. 667

THE INTERPRETATION OF
PULMONARY RALES 668

THE NEW PUBLIC HEALTH
BILL 669

ANNOTATIONS.

The Bateman Fund 670

High Maternal Mortality:
Resolutions by the Mid-
wives' Institute 669

Intrathecal Medication in
Meningitis 670

The Mind of the Miner ... 670

Infectious Diseases in
Schools 671

The Visit of Foreign Public
Health Officers 671

The Seasonal Prevalence of
Disease 672

The Care of Crippled Child-
ren 672

Oxaluria 673

MODERN TECHNIQUE IN TREATMENT.

A Series of Special
Articles, contributed by
invitation, on the Treat-
ment of Medical and
Surgical Conditions.

CXV.—The Treatment of
Meningitis. By C.
WORSTER-DROUGHT,
M.D., M.R.C.P. 674

SPECIAL ARTICLES.

The Action of Water upon
Copper Pipes. By JOHN
C. THRESH, M.D., D.Sc.,
F.I.C. 675

Royal Commission on
National Health Insur-
ance: Evidence of the
Hearts of Oak Society.. 677

King Edward's Hospital
Fund for London. 679

Fellowship of Medicine and
Post-Graduate Medical
Association: Post-
Graduate Teaching in
London 681

The Health of the Royal
Air Force 682

Vienna: Results of
Attempted Rejuvenation 683

United States of America:
Records of the Metro-
politan Insurance Com-
pany 683

Memorial to the late Sir
William Macewen 684

Infectious Disease in
England and Wales. 684

The Bateman Appeal 689

CORRESPONDENCE.

Health Statistics of the
Mercantile Marine (Dr.
H. M. Hanschell, and
Sir P. J. Michelli) 685

The Medical Witness (Dr.
James Booth and Sir
William Willcox) 685

Artificial Sunlight in Infan-
tile Paralysis (Dr. G.
Murray Levick) 686

Stovarsol in the Treatment
of Syphilis (May and
Baker, Ltd.) 687

Vesalius, Rondelet, and
Rabelais (Dr. G.
Matheson Cullen) 687

The Infective Filtrable
Viruses (Mr. J. Jackson
Clarke) 687

The Goulstonian Lectures
(Dr. J. A. Ryle) 687

PARLIAMENTARY INTELLI- GENCE.

House of Lords: Thera-
peutic Substances Bill. 691

House of Commons: Naval
Ratings Discharged Medi-
cally Unfit.—National
Health Insurance Pay-
ments.—Appeals against
Final Pension Awards.—
Sick Benefit Regulations.
—Industrial Smoke and
Public Health.—Hous-
ing Schemes under 1923
and 1924 Acts.—Public
Health Bill.—Indian
Medical Service.—Test of
New Remedy for Foot-
and-Mouth Disease.—
R.A.M.C. Officers' Pen-
sions 691

THE SERVICES.

R.A.M.C. Officers.—Royal
Army Medical Corps. 684

OBITUARY.

Mary Darby Sturge, M.D.. 689

MEDICAL NEWS.

Society of Apothecaries of
London 689

Royal College of Surgeons
of England 690

University of London. ... 690

University of Manchester.. 690

University of Liverpool... 690

Two Yorkshire Hospitals.. 694

Royal Commission on
National Health Insur-
ance 673

Cardiff Royal Infirmary... 682

Royal Navy Medical Club
Balneological Congress... 690

Fellowship of Medicine and
Post-Graduate Medical
Association 690

Cremation Society of
England 690

Augustus and Alice Waller
Memorial 690

Royal Dental Hospital... 690

Mental After-Care Associa-
tion 690

A New Kensington Hospital
London School of Hygiene
and Tropical Medicine.. 691

Manchester Royal Infirmary
Liverpool: New Operating
Department at Mill Road
Infirmary 691

Chelsea Clinical Society... 691

Worthing Hospital 693

The late Dr. Frédéric Morin
Lancashire's Panel Pre-
scriptions 695

Royal Medical Benevolent
Fund 695

NOTES, COMMENTS, AND ABSTRACTS.

Rat-Guards for Ships'
Hawfers. By CHARLES
F. WHITE, M.B., Ch.B.—
(Illustrated) 695

Care of the Destitute in the
Irish Free State. 696

Medical Books 696

Calves' Foot Jelly. 696

Elizabeth Garrett Anderson
Hospital 696

Incorporated Society of
Chiropractists 696

Medical Diary 694

Appointments, Vacancies.. 694

Births, Marriages, Deaths 695

THE LANCET EXTRA NUMBERS

No. 1.

MODERN METHODS IN ABNORMAL AND DIFFICULT LABOUR.

Demy 4to. 144 pages. With 10 Plates
(4 Coloured) and 73 Illustrations in the Text.

To the ANNUAL SUBSCRIBER to THE LANCET this Extra Number will be supplied at a nominal price of 6s. 6d. net, post free Inland; Abroad 6s. 9d. The price to Non-subscribers is 12s. 6d. net, post free Inland; Abroad 12s. 9d.

THE LANCET OFFICE, 423, Strand and 1, Bedford Street, London, W.C. 2.

New English Edition. Lavishly Illustrated. With 1,086 Illustrations in the Text, and 20 full-page Plates. Super Royal 8vo. 824 pp. Cloth gilt. 63s. net; postage 1s.

URGENT SURGERY

By **FELIX LEJARS.**

Translated from the Eighth French Edition by W. S. DICKIE, O.B.E., F.R.C.S., and ERNEST WARD, M.A., M.D., F.R.C.S.

"The excellence of the text, clearness of description, fullness of suggestions for treatment, and the abundance of illustrations, should ensure the success of the book in this country."—LANCET.

"Will prove of the greatest possible help to any medical man not specially versed in surgery who is called upon to perform a major operation, and even specialist surgeons will derive many useful hints from its perusal."
—BRITISH JOURNAL OF SURGERY.

London: **SIMPKIN & CO. Ltd.**

JUST PUBLISHED. Ninth Edition. Fully Revised. Demy 8vo. 634 pp. With 343 Text Illustrations and 14 Plates. 21s. net; postage 9d.

PYE'S SURGICAL HANDICRAFT

A MANUAL OF SURGICAL MANIPULATIONS, MINOR SURGERY, AND OTHER MATTERS CONNECTED WITH THE WORK OF HOUSE SURGEONS, SURGICAL DRESSERS, ETC.

Edited and largely re-written

By **W. H. CLAYTON-GREENE,**
C.B.E., B.A., M.B., B.Ch.Camb., F.R.C.S.,
Late Surgeon to St. Mary's Hosp., and Lecturer on Surgery in the Medical School, etc.

With special chapters by distinguished Contributors.

"Full of information invaluable to the student, the house surgeon, and the general practitioner."—LANCET.

Bristol: **JOHN WRIGHT & SONS Ltd.**

JUST PUBLISHED

CANCER AND THE PUBLIC

BY

CHARLES P. CHILDE, B.A., F.R.C.S., M.R.C.P.E.,
Chairman of Health Committee, Borough of Portsmouth.

Demy 8vo.

10s. 6d. net.

The main object of this book is to justify a more hopeful atmosphere about Cancer than obtains at the present time. It sets forth in popular and non-technical language what is definitely known about Cancer and its treatment to-day.

METHUEN & CO., Ltd., 36, Essex St., London, W.C.2.

NOW READY. NEW & REVISED EDITION (7TH). 25/- net. 1100 pages.

WHITLA'S DICTIONARY OF TREATMENT.

Includes Medical, Surgical, Gynaecological, Obstetric, Cutaneous Eye and Ear Therapeutics.

Also, JUST ISSUED. ELEVENTH EDITION. 10/6 net.

PHARMACY, MATERIA MEDICA & THERAPEUTICS.

A Commentary on the B.P. Drugs and New Remedies.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden, W.C.2

Works by Sir Charles A. Ballance, K.C.M.G., etc.

A GLIMPSE INTO THE HISTORY OF THE SURGERY OF THE BRAIN. 10s. 6d. net.

ESSAYS ON THE SURGERY OF THE TEMPORAL BONE. £7 7s. net.

THE SURGERY OF THE HEART. 10s. 6d. net.

Macmillan and Co.

STAMMERING, SPEECH DEFECTS.

BEHNKE METHOD. Estab. 1882. CASES, non-resident, treated at 39, Earl's Court Square, S.W.5, and, in residence, in the Summer holidays at Miss Behnke's house on the Chilterns.

"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times*.

"Thoroughly physiological principles."—*The Lancet*.

"The method is scientifically correct and perfectly effective."
—*Guy's Hospital Gazette*.

"STAMMERING, CLEFT PALATE, SPEECH, LISPING," 3s. 9d.
of Miss BEHNKE, 39, Earl's Court Square, S.W.5.

That Book you Want!

FOYLES have a large Department for Medical and Surgical Works (Secondhand and New). They have also twenty other Departments in which are to be found books on every conceivable subject. Each Department has its own catalogue. Write indicating requirements or interests and suitable catalogues will be sent post free. Books sent on approval.

Books Purchased.

FOYLES, 121/5, Charing Cross Rd., LONDON.



Martin Arrowsmith

the new novel by

SINCLAIR LEWIS

Author of *Babbitt* & *Main Street*

'Martin Arrowsmith' is the story of a man of Science who begins life as assistant to a drunken doctor in a small provincial town.

'Not since "The Doctor's Dilemma" has the medical profession had such a facer as this.' *Manchester Guardian*

7s. 6d. net.

Jonathan Cape, Bedford Square

STAMMERING

W. J. KETLEY, "Tarrangower," Brondesbury, N.W.6
(Telephone: Willesden 435.)

30 years colleague of late B. BESLEY, Brampton Park, Huntingdon
Those interested in the subject should write for his book, which will be sent post free.

TRUSS MAKERS.

MATTHEWS BROS., 10, New Oxford Street, London, W.C.1.

Established 1840.

Telephone: Museum 1017.

PERSONAL ATTENTION GIVEN TO ALL CASES.
DIFFICULT CASES A SPECIALITY.

LEWIS'S PUBLICATIONS

NOW READY. Crown 8vo. 10s. 6d. net; postage 6d.

AN INTRODUCTION TO FORENSIC MEDICINE

For Medical Students and Practitioners.

By H. A. BURRIDGE, M.A., M.B.Dub., Associate of King's College, London; late Lecturer on Forensic Medicine and Toxicology in the King's College Medical School (University of London).

"Actually it teaches the average Student and Practitioner those very essential points of the various medico-legal problems he will come across."—WESTMINSTER HOSPITAL GAZETTE.

SECOND Edition. Thoroughly Revised and Enlarged. With 24 Plates. Demy 8vo. 25s. net; postage 1s.

OCCUPATIONAL AFFECTIONS OF THE SKIN:

Their Prevention and Treatment.

With an Account of the Trade Processes and Agents which give rise to them.

By R. PROSSER WHITE, M.D.Ed., M.R.C.S., Life Vice-President, Dermatologist, Senior Physician and Enthetic Officer, Royal Albert Edward Infirmary, Wigan; Ex-President of the London Dermatological Society, &c.

"This important and compendious book. All dermatologists will welcome it, and it should be in the library of all those engaged in practice among the artisan and factory workers."—BRITISH JOURNAL OF DERMATOLOGY.

"A truly remarkable fund of significant information."—ARCHIVES OF CUTANEOUS DISEASES.

SECOND Edition. Sixth Impression. Post 8vo. 7s. 6d. net; postage 6d.

ÆQUANIMITAS:

With other Addresses to Medical Students Nurses, and Practitioners of Medicine.

By Sir WILLIAM OSLER, Bart., M.D., F.R.S., late Regius Professor of Medicine, University of Oxford, &c.

"Written with all the breadth of view and the beauty of style which make Professor Osler's writings so characteristic and so valuable."—THE LANCET.

JUST PUBLISHED. With Illustrations. Crown 8vo. 7s. 6d. net; postage 6d.

AN INTRODUCTION TO SCHOOL MEDICINE

By H. LESLIE CRONK, M.A., M.D., D.P.H.Cantab., Assistant County Medical Officer, Lancashire; late Assistant School Medical Officer, Cornwall.

Demy 8vo. 10s. 6d. net; postage 6d.

THE NERVOUS PATIENT

By MILLAIS CULPIN, M.D. Lond., F.R.C.S. Eng., Lecturer on Psycho-neuroses to the London Hospital Medical College. With a Chapter on "The Major Psychoses" by Dr. STANFORD READ, and on "Eye Symptoms" by Mr. W. S. INMAN.

"For the practitioner who has little or no idea of the possible underground connexions of common symptoms, Dr Culpin's book should come as a flood of light in a dark place."—THE LANCET.

With 435 Illustrations. Royal 8vo. 42s. net.

SURGICAL PATHOLOGY

By JOSEPH McFARLAND, M.D., Sc.D., Professor of Pathology in the Medical Department of the University of Pennsylvania.

"... will serve a useful purpose ... of interest and value."—THE LANCET.

SECOND Edition. With 31 Figures. Crown 8vo. 6s. net; postage 3d.

The CLINICAL EXAMINATION of the NERVOUS SYSTEM

By G. H. MONRAD-KROHN, M.D. Christiania, M.R.C.P. Lond., M.R.C.S. Eng., Professor of Medicine in the Royal Frederick University, Christiania, &c.

With Foreword by T. G. STEWART, M.D.

"We have no hesitation in recommending it to medical students and practitioners."—GLASGOW MEDICAL JOURNAL.

EIGHTH Edition. With 14 Plates and 197 other Illustrations. Demy 8vo. 22s. 6d. net; postage 9d.

LEWIS JONES' MEDICAL ELECTRICITY

A Practical Handbook for Students and Practitioners.

Revised and Edited by L. W. BATHURST, M.D. Lond., Physician-in-Charge, Electro-Therapeutic Department, Royal Free Hospital (Officers' Section).

[Lewis's Practical Series.

"All the chapters show the hand of revision and the addition of the new material of the past three years."—BRITISH MEDICAL JOURNAL.

With 7 Plates. Crown 8vo. 7s. 6d. net; postage 5d.

THE DIAGNOSIS AND TREATMENT OF THE INFECTIOUS DISEASES

A Manual for Practitioners.

By F. H. THOMSON, M.B., C.M. Aberd., D.P.H., Medical Superintendent of the North-Eastern Hospital of the Metropolitan Asylums Board, &c.

"... admirably suited for the busy general practitioner, containing all that is material regarding the differential diagnosis and treatment of the infectious diseases."—THE LANCET.

FOURTH Edition. Revised and Enlarged. With 13 Plates and 475 other Illustrations. Royal 8vo. £2 2s. net.

DISEASES OF THE NERVOUS SYSTEM

A Textbook of Neurology and Psychiatry.

By S. E. JELLIFFE, M.D., Ph.D., formerly Professor of Psychiatry, Fordham University, New York, &c.; and W. A. WHITE, M.D., Professor of Nervous and Mental Diseases, Georgetown University, &c.

"In this book may be found a wealth of information. . . . Of great value."—BRITISH MEDICAL JOURNAL.

FIFTH Edition. Revised and Enlarged, with Plates and Illustrations. Crown 8vo. 10s. 6d. net; post free 11s.

MENTALLY DEFICIENT CHILDREN:

Their Treatment and Training.

By G. E. SHUTTLEWORTH, B.A., M.D., Hon. Consulting Physician, Royal Albert Institution, Lancaster, &c.; and W. A. POTTS, M.A., M.D., Medical Officer to the Birmingham Committee for the Care of the Mentally Defective, &c.

"The new edition will maintain the reputation of the book as the best of the smaller handbooks on its subject."

—EDINBURGH MEDICAL JOURNAL.

FIFTH Edition. Thoroughly Revised, with Illustrations. Crown 8vo. 6s. 6d. net; postage 5d.

THE DIAGNOSIS & TREATMENT OF HEART DISEASE

Practical Points for Students and Practitioners.

By E. M. BROCKBANK, M.D. Vict., F.R.C.P., Hon. Physician, Royal Infirmary, Manchester; Lecturer in Clinical Medicine, University of Manchester.

"... many excellent qualities ... will be much appreciated."

—BRITISH MEDICAL JOURNAL

** Complete CATALOGUE on application.

London: H. K. LEWIS & CO. LTD., 136 Gower Street & 24 Gower Place, W.C.1.

Telegrams: "PUBLICAVIT, EUSROAD, LONDON."

Telephone: MUSEUM 1072.

NEW MEDICAL



OXFORD PUBLICATIONS

Telephone: City 8960
Extension Dept. R.

Telegrams: Oxunipres,
Cent, London.

A ONE VOLUME MEDICINE.

PRICE	- - - -	A Textbook of the Practice of Medicine, including Sections on Diseases of the Skin and Psychological Medicine, and Tropical Diseases. By various Authors who have made a special study of the different branches of Medicine.	35/- net.
-------	---------	---	-----------

CHILDREN.

STILL	- - - -	Common Disorders and Diseases of Childhood. Fourth Edition.	25/- net.
ASHBY & WRIGHT	- - - -	Diseases of Children. Medical and Surgical. Sixth Edition.	42/- net.
CAMERON	- - - -	The Nervous Child. Third Edition.	7/6 net.

FRACTURES.

PAGE & BRISTOW	- - - -	Treatment of Fractures in General Practice.	12/6 net.
----------------	---------	---	-----------

KIDNEY & GENITO-URINARY DISEASES.

WALKER	- - - -	Diseases of the Male Organs of Generation.	12/6 net.
KIDD & SIMPSON	- - - -	Common Infections of the Female Urethra and Cervix.	7/6 net.

MISCELLANEOUS.

COPE	- - - -	The Early Diagnosis of the Acute Abdomen. Second Edition.	12/6 net.
COPE	- - - -	Clinical Researches in Acute Abdominal Disease.	12/6 net.
GOADBY	- - - -	Diseases of the Gums. Second Edition.	42/- net.
GROVES	- - - -	Surgical Operations. A Textbook for Students and Nurses. Second Edition.	21/- net.
JONES & LOVETT	- - - -	Orthopedic Surgery.	42/- net.
JORDAN	- - - -	Chronic Intestinal Stasis.	25/- net.
FAIRBAIRN	- - - -	Gynæcology with Obstetrics.	25/- net.
MUMMERY	- - - -	Microscopic and General Anatomy of the Teeth. Second Edition.	35/- net.
MORLEY	- - - -	Hæmorrhoids: Their Ætiology, Prophylaxis and Treatment by Means of Injections.	6/- net.
ROLLIER	- - - -	Heliotherapy	25/- net.
HUMPHRIS	- - - -	Artificial Sunlight and its Therapeutic Uses.	8/6 net.

Oxford University Press

HUMPHREY MILFORD.

Dept. R., Falcon Sq., London, E.C.1.

BAILLIÈRE, TINDALL & COX'S

PRACTICAL BOOKS FOR PRACTITIONERS.

HARRY CAMPBELL'S FUNDAMENTAL PRINCIPLES IN TREATMENT.

"An agreeable combination of criticism, comment, and advice, held together by a strong thread of common sense."
—LANCET.
Crown 8vo. Pp. viii. + 477. Price 10s. 6d., postage 6d.

LANGDON BROWN'S PHYSIOLOGICAL PRINCIPLES IN TREATMENT. FIFTH EDITION.

"... a fifth edition calls for congratulations."
—LONDON HOSPITAL GAZETTE.
Crown 8vo. Pp. viii. + 511. Price 10s. 6d., postage 6d.

Royal 8vo. Pp. x. + 452. With 166 Illustrations and many Formulæ. Price 21s., postage 9d.

MACKENNA'S DISEASES OF THE SKIN.

By ROBERT W. MacKENNA, M.D., B Ch.Edin., Hon. Dermatologist, Royal Infirmary, Liverpool.
"A book which is a credit to British dermatology. The author gives a very complete survey of the whole field of dermatology. The author is essentially practical in his methods of treatment, and this feature will prove a boon to the busy practitioner."—BRITISH JOURNAL OF DERMATOLOGY.

JONES'S PSYCHO-ANALYSIS.

THIRD EDITION.

"The appearance of a third edition shows that the book is able to compete successfully with less authoritative works on the subject."—THE LANCET.

Demy 8vo. Pp. x. + 731. Price 25s., postage 9d.

TREDGOLD'S MENTAL DEFICIENCY.

FOURTH EDITION.

"The most comprehensive work on the subject in English or, indeed, in any language."—MEDICAL OFFICER.

Demy 8vo. Pp. x. + 532, with 29 Plates. Price 21s., postage 9d.

Demy 8vo. Pp. xii. + 135, with 67 Illustrations. Price 7s. 6d., postage 6d.

EMERGENCY OPERATIONS FOR GENERAL PRACTITIONERS ON LAND AND SEA.

By H. C. ORRIN, O.B.E., F.R.C.S.Ed., Surgeon, Ministry of Pensions, Newcastle-upon-Tyne.

The general practitioner, the recent graduate, the medical man at home or abroad in isolated parts, the ship's doctor or the naval surgeon, who may have to perform emergency operations at any time under any circumstances, will find valuable guidance in this little volume.

LUYS' GONORRHOEA.

THIRD EDITION.

Translated and Edited by ARTHUR FOERSTER, Captain R.A.M.C.(T.C.), M.R.C.S., L.R.C.P.Lond., Late Resident Medical Officer, London Lock Hospital.

Pp. xvi. + 400. With 212 Illustrations and 5 Coloured Plates. Price 21s., postage 9d.

WHITLA'S DICTIONARY OF TREATMENT.

SEVENTH EDITION.

This volume possesses the great advantage of including articles on obstetrical and gynaecological subjects which are omitted in at least two other well-known dictionaries.

Demy 8vo. Pp. x. + 1100. Price 25s., postage 9d.

SECOND EDITION. Demy 8vo. Pp. x. + 554. With 47 Illustrations. Price 16s., postage 9d.

ADAMS' ACUTE ABDOMINAL DISEASES INCLUDING ABDOMINAL INJURIES AND THE COMPLICATIONS OF EXTERNAL HERNIA

By JOSEPH E. ADAMS, M.B., M.S. Lond., F.R.C.S. Eng., Surgeon to St. Thomas's Hospital.

"This is an admirable account of the main findings of modern abdominal work... The chief symptoms and signs and the general line of treatment in the common abdominal conditions are plainly set forth."—ST. BARTHOLOMEW'S HOSPITAL JOUR.

LEONARD WILLIAMS' MINOR MALADIES AND THEIR TREATMENT.

"Full of practical hints."
—LANCET.

Fifth Edition.

Pp. xii. + 412. Price 7s. 6d., postage 6d.

CAMPBELL STARK'S INDEX TO GENERAL PRACTICE.

"A real source of help."

—BRITISH MEDICAL JOURNAL.

Crown 8vo. Pp. x. + 181. Price 5s., postage 6d.

BRAND & KEITH'S CLINICAL MEMORANDA for GENERAL PRACTITIONERS.

"Deserves high praise."

—BRITISH MEDICAL JOURNAL.

Second Edition. Pp. xiv. + 375. Price 7s. 6d., postage 6d.

BAILLIÈRE, TINDALL & COX, 8, Henrietta St., Covent Garden, LONDON, W.C.

Large stock kept of Medical Books of all publishers. Orders by post despatched by return. Libraries supplied in any part of the world. Special attention given to orders from Colonies and Abroad. Orders sent by C.O.D. or V.P.P. (where available) to all countries or deposit accounts opened.



THE LANCET

MODERN TECHNIQUE IN TREATMENT

VOLUME I.

IN response to a very widely-expressed desire on the part of readers of THE LANCET, it has been decided to issue in permanent form the Articles which have been appearing weekly for the past two years under the general title of MODERN TECHNIQUE IN TREATMENT.

It will be seen from the List of Contents of Volume I. that a very wide range of subjects comes under treatment ; but all the Articles agree in being written from an entirely practical point of view, and it may therefore be said that every one will be found of interest and value to the general practitioner who wishes to keep abreast of modern ideas and methods.

The first volume will comprise about 350 demy octavo pages, and will be published at 10s. 6d. net. It is hoped to issue this volume in April next. To subscribers who order their copies in advance of publication the price will be 7s. 6d. net (postage 9d. extra), and an Order Form for this purpose is attached.

The Contents of Volume I. and the Advance Subscription Form are given on pages 7 and 8 respectively.

MODERN TECHNIQUE IN TREATMENT *(contd. from opposite page)*

CONTENTS OF VOLUME I.

THE MEDICAL TREATMENT OF GALL-BLADDER DISEASE. By Sir Humphrey Rolleston, K.C.B., M.D., F.R.C.P.
 THE TREATMENT OF EARLY PULMONARY TUBERCULOSIS IN THE YOUNG ADULT. By Claude Lillingston, M.D.
 THE TREATMENT OF NEURALGIAS OF THE HEAD AND NECK. By Wilfred Harris, M.D., F.R.C.P.
 THE TREATMENT OF WHOOPING-COUGH. By T Izod Bennett, M.D., M.R.C.P.
 THE TREATMENT OF SCABIES AND PEDICULOSIS. By H. W. Barber, M.B., F.R.C.P.
 THE TREATMENT OF ABDOMINAL INJURIES. By Prof. Charles A Morton, F.R.C.S.
 THE TREATMENT OF AURAL DISCHARGE IN CHILDREN. By Harold Barwell, M.B., F.R.C.S.
 THE TREATMENT OF VAGINAL DISCHARGE. By Aleck W. Bourne, M.B. F.R.C.S.
 THE TREATMENT OF MINOR INJURIES TO THE EYE. By Sir John H. Parsons, C.B.E., F.R.C.S., D.Sc., F.R.S.
 THE TREATMENT OF EPILEPSY. By Gordon Holmes, C.M.G., C.B.E., M.D., F.R.C.P.
 THE TREATMENT OF INGUINAL HERNIA IN CHILDHOOD. By C. W. G. Bryan, M.C., F.R.C.S.
 THE TREATMENT OF OBLIQUE INGUINAL HERNIA IN ADULTS. By Prof. A. W. Sheen, C.B.E., M.S., F.R.C.S.
 THE TREATMENT OF ECLAMPSIA. By Gibbon FitzGibbon, M.D., F.R.C.P.
 THE TREATMENT OF CLUB-FOOT IN THE NEWLY-BORN. By Sir Robert Jones, K.B.E., C.B., F.R.C.S.
 THE TREATMENT OF INTESTINAL WORMS. By Robert Hutchison, M.D.
 THE TREATMENT OF PRIMARY OR SPASMODIC DYSMENORRHOEA. By Sir George Blacker, M.D., F.R.C.P., F.R.C.S.
 THE TREATMENT OF MEASLES. By F Foord Caiger, M.D., F.R.C.P.
 HEART FAILURE: PREVENTIVE TREATMENT. By John Parkinson, M.D., F.R.C.P.
 HEART FAILURE: THERAPEUTICS. By John Parkinson, M.D., F.R.C.P.
 TREATMENT OF GONOCOCCAL EPIDIDYMITIS AND ITS BEARING ON STERILITY. By Kenneth M. Walker, F.R.C.S.
 THE TREATMENT OF ANTE-PARTUM HÆMORRHAGE. By T. Watts Eden, M.D., F.R.C.P.
 THE TREATMENT OF RINGWORM. By Arthur Whitfield, M.D., F.R.C.P.
 THE TREATMENT OF CYSTITIS. By James B. Macalpine, F.R.C.S.
 THE TREATMENT OF HÆMORRHOIDS. By R. M. Rowe, M.D., F.R.C.S.
 THE PROPHYLACTIC TREATMENT OF PUERPERAL SEPSIS. By Florence E. Barrett, C.B.E., M.D., M.S.
 THE TREATMENT OF CYCLIC VOMITING. By Prof. George F Still, M.D., F.R.C.P.
 THE TREATMENT OF ASTHMA. By E. P. Poulton, M.D., F.R.C.P.
 THE TREATMENT OF TRAUMATIC RUPTURE OF THE URETHRA. By G. Grey Turner, M.S., F.R.C.S.
 THE TREATMENT OF HABITUAL CONSTIPATION. By Arthur F Hurst, M.D., F.R.C.P.
 THE TREATMENT OF THE HYPERTROPHIED PROSTATE. By Prof. Charles A. Pannett, M.D., B.S., F.R.C.S.
 THE TREATMENT OF INFANTILE ECZEMA. By H. MacCormac, C.B.E., M.D., F.R.C.P.
 TREATMENT OF EXOPHTHALMIC GOITRE AND OTHER FORMS OF HYPERTHYROIDISM. By Prof. George R. Murray, M.D., F.R.C.P.
 TREATMENT OF SYPHILIS IN THE WOMAN OF CHILD-BEARING AGE. By Margaret Rorke, M.B., Ch.B.
 THE TREATMENT OF ANÆSTHETIC SICKNESS. By J. Blomfield, M.D.
 THE TREATMENT OF ENURESIS. By Hugh Thursfield, D.M., F.R.C.P.
 MENORRHAGIA IN YOUNG WOMEN WITHOUT GROSS LESION. By John S. Fairbairn, M.B., F.R.C.S.
 THE TREATMENT OF CHRONIC ARTHRITIS. By W. H. Wynn, M.D., M.Sc., F.R.C.P.

THE TREATMENT OF GLYCOSURIA IN PREGNANCY. By George Graham, M.D., F.R.C.P.
 THE TREATMENT OF FLAT-FOOT. By A. S. Blundell Bankart, M.Ch., F.R.C.S.
 THE MEDICAL TREATMENT OF EARLY OR SUSPECTED DUODENAL ULCER. By John A. Ryle, M.D., M.R.C.P.
 THE TREATMENT OF RETENTION OF URINE. By J. Swift Joly, F.R.C.S.
 THE TREATMENT OF THE NEUROTIC. By S. A. Kinnier Wilson, M.D., B.Sc., F.R.C.P.
 THE TREATMENT OF BLEPHARITIS AND STYES. By R. Affleck Greeves, M.B., F.R.C.S.
 THE TREATMENT OF INTERNAL DERANGEMENT OF THE KNEE-JOINT. By R. C. Elmslie, M.S., F.R.C.S.
 THE TREATMENT OF CÆLIAC DISEASE. By Reginald Miller, M.D., F.R.C.P.
 THE TREATMENT OF VARICOSE VEINS. By Philip Turner, M.S., F.R.C.S.
 THE TREATMENT OF COLLES'S FRACTURE. By Harry Platt, M.S., M.D., F.R.C.S.
 THE TREATMENT OF PYELITIS. By Sir John Thomson-Walker, F.R.C.S.
 THE TREATMENT OF PROLAPSE. By Beckwith Whitehouse, M.S., F.R.C.S.
 THE TREATMENT OF EPISTAXIS. By J. Gay French, M.S., F.R.C.S.
 THE TREATMENT OF CHRONIC COLITIS. By Adolphe Abrahams, M.D., M.R.C.P.
 THE PALLIATIVE TREATMENT OF TOOTHACHE. By A. T. Pitts, M.R.C.S., L.R.C.P., L.D.S.
 THE ACUTE MENTAL CASE: ACUTE CONFUSION OR DELIRIUM. By Henry Yellowlees, M.D., M.R.C.P.E., D.P.M.
 THE ACUTE MENTAL CASE: ACUTE DEPRESSION AND ACUTE EXCITEMENT. By Henry Yellowlees, M.D., M.R.C.P.E., D.P.M.
 THE TREATMENT OF ACUTE OBSTRUCTION DUE TO GROWTHS OF THE COLON. By Harold W. Wilson, M.S., F.R.C.S.
 SQUINT IN YOUNG CHILDREN. By T. Harrison Butler, M.D.
 THE TREATMENT OF ACUTE SEPTIC INFECTION: SEPTICÆMIA. By A. E. Gow, M.D., F.R.C.P.
 THE SURGICAL TREATMENT OF HÆMATEMESIS. By A. J. Walton, M.S., F.R.C.S.
 THE TREATMENT OF NEPHRITIS: GENERAL PRINCIPLES. By Prof. Hugh MacLean, M.D., D.Sc., M.R.C.P.
 THE TREATMENT OF NEPHRITIS: ACUTE AND CHRONIC FORMS. By Hugh MacLean, M.D., D.Sc., M.R.C.P.
 THE TREATMENT OF MALARIA AS MET WITH IN ENGLISH PRACTICE. By Philip Manson-Bahr, M.D., F.R.C.P.
 MASTURBATION IN YOUNG CHILDREN. By Hector Charles Cameron, M.D., F.R.C.P.
 INCREASING DEAFNESS IN ELDERLY PEOPLE. By Albert A. Gray, M.D., F.R.F.P.S.
 THE TREATMENT OF CERVICAL ADENITIS. By Walter G. Howarth, M.B., F.R.C.S.
 THE TREATMENT OF FUNCTIONAL DISORDERS OF THE HEART. By G. H. Hunt, M.D., F.R.C.P.
 THE TREATMENT OF HÆMORRHAGE FOLLOWING TOOTH EXTRACTION. By W. Warwick James, F.R.C.S., L.D.S.
 THE TREATMENT OF SPRAINS. By James B. Mennell, M.D., M.A., B.C.
 THE TREATMENT OF EARACHE. By T. B. Layton, M.B., B.S., F.R.C.S.
 THE TREATMENT OF ACUTE AND CHRONIC PAIN. By E. Bosdin Leech, M.D., F.R.C.P.
 INFECTIONS OF THE HAND. By R. M. Handfield-Jones, F.R.C.S., M.S.
 THE TREATMENT OF RENAL TUBERCULOSIS. By C. H. S. Frankau, M.S., F.R.C.S.
 THE TREATMENT OF BILHARZIA DISEASE. By J. B. Christopherson, C.B.E., M.D., F.R.C.P.
 THE TREATMENT OF FRACTURES OF THE ANKLE. By W. A. Cochrane, F.R.C.S.
 THE TREATMENT OF GLAUCOMA. By R. Foster Moore, B.Ch., F.R.C.S.
 THE TREATMENT OF ACUTE GONORRHOEA IN THE MALE. By J. Johnston Abraham, C.B.E., D.S.O., M.D., F.R.C.S.
 THE TREATMENT OF ACUTE GONORRHOEA IN THE FEMALE. By J. Johnston Abraham, C.B.E., D.S.O., M.D., F.R.C.S.

Send no money with Order.
You will be notified when the
work is ready for delivery.

The Price will be
increased after
Publication.

MODERN TECHNIQUE IN TREATMENT

VOLUME I.

ADVANCE SUBSCRIPTION FORM

*Available only for Immediate Application. (To secure special price
Subscribers must reserve copies AS SOON AS POSSIBLE.)*

To THE MANAGER

THE LANCET

423 STRAND, LONDON, W.C. 2.

Please enter my name as an Advance Subscriber to "MODERN
TECHNIQUE IN TREATMENT," Vol. I., price 7s. 6d. net (postage
9d. extra), for which I will send remittance when notified that the work
is ready for delivery.

Name.....

Address.....

.....
Date.....

Price to Subscribers before publication 7s. 6d. net (postage 9d. extra).

The price will be increased to 10s. 6d. net after publication.

(This Form may be handed to any Newsagent or Bookseller.)

WAKLEY & SON (1912) LTD.

423 STRAND, LONDON, W.C. 2.

HENRY KIMPTON'S STANDARD PUBLICATIONS.

NEW (19th) EDITION.

THIS DAY

HARE'S TEXTBOOK OF PRACTICAL THERAPEUTICS:

With Special Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By HOBART AMORY HARE, B.Sc., M.D. Nineteenth Edition. Thoroughly revised and largely re-written. Royal octavo. 1061 pages, illustrated with 144 Engravings and 8 Plates. Cloth. Price 36s. net. (Postage 9d.)

† The text has been revised to such an extent that it is practically a new work.

FRASER'S MONOGRAPH ON GONORRHOEA. By A. REITH

FRASER, M.D., Lecturer on Venereal Diseases, University of Cape Town. Royal octavo. 522 pages, with 56 Illustrations and 49 full-page Plates. Cloth. Price 18s. net. (Postage 1s.)

"Can be recommended to all."—JOURNAL ROYAL NAVAL MEDICAL SERVICE.

"A very excellent, practical work on gonorrhoea."—UROLOGIC AND CUTANEOUS REVIEW.

"Reaches a far higher standard than most works."—MEDICAL JOURNAL OF AUSTRALIA.

ROSE'S PHYSICAL DIAGNOSIS. By W. D. ROSE, M.D. THIRD

EDITION. Revised and Enlarged. Royal octavo. 736 pages, with 319 Illustrations. Cloth. Price 45s. net. (Postage 1s.)

† A practical work.

HADEN'S CLINICAL LABORATORY METHODS. By RUSSELL

L. HADEN, M.D. SECOND EDITION. Revised and Enlarged. Royal octavo. 310 pages, with 69 Illustrations and 4 Coloured Plates. Cloth. Price 18s. net. (Postage 9d.)

"Comprehensive and practical."—LANCET.

GURD'S INFECTION, IMMUNITY AND INFLAMMATION.

A Study of the Phenomena of Hypersensitiveness and Tolerance, and their Relationship to the Clinical Study, Prophylaxis, and Treatment of Disease. By FRASER B. GURD, B.A., M.D., C.M. Royal octavo. 329 pages. Price 25s. net. (Postage 9d.)

† The author brings to the reader a wealth of information on infection, immunity and inflammation.

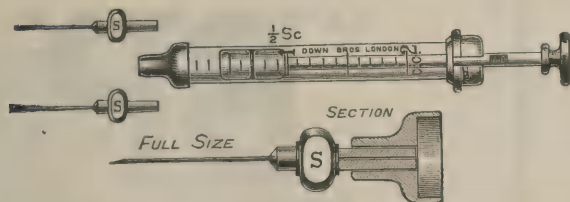
COMPLETE CATALOGUE FREE ON REQUEST.

HENRY KIMPTON, 263, HIGH HOLBORN, LONDON, W.C.1.

DOWN BROS.' SPECIALITIES.

Insulin Syringes

By E. A. Poulton, M.D., F.R.C.P.



Vide Brit. Med. Jour.,
16th February, 1924.

"Most Hypodermic Needles and Syringes lead to some waste of Insulin at each injection owing to the dead space in the nozzle. A special Needle which fits into the head of the Syringe has the advantage of minimising the waste."

GRANDS PRIX.
Paris, 1900. Brussels, 1910. Buenos Ayres, 1910



And GOLD MEDAL, Allahabad, 1911.

MANUFACTURED BY

DOWN BROS., LTD., Surgical Instrument
Manufacturers

21 & 23, St. Thomas's St., London, S.E.1.

(Opposite GUY'S HOSPITAL.)

Factories: KING'S HEAD YARD and TABARD STREET, LONDON, S.E.1.

Telegraphic Address: "DOWN, LONDON."
(Regd. throughout the World.)

Telephone: HOP 4400 (4 lines).

MOTOR - CAR EXCHANGE & MART**A SQUARE DEAL**

OUR MOTTO ——— YOUR SAFEGUARD

20 years ago our Principal adopted this slogan because he believed in it, and he does to-day ; moreover, he sees you get it.

1000 Motorists annually testify to our methods.

We sell only **Dependable Cars** and give Unequalled Service on both **NEW** and **USED Cars**.

100 USED GUARANTEED CARS IN STOCK.

WE BUY, SELL, OR EXCHANGE ALL MAKES.

RIDE as you will ——— **PAY** as you please.



(PROPRIETOR STANLEY WRENCH)

Specialists in **CARS** FOR **ECONOMICAL MOTORING.**

331, 410-414, EUSTON ROAD, LONDON, N.W.1.

TELEGRAMS: SIZAIRAUTO, EUSROAD, LONDON.

TELEPHONES: MUSEUM 3061 & 3143.

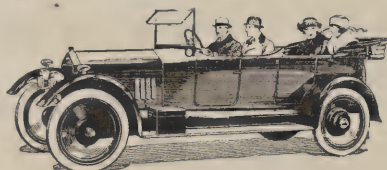
**A DOCTOR'S CAR DIFFICULTIES
CAN BE OVERCOME BY CONSULTING**

Warwick Wright Ltd.

150, NEW BOND STREET, LONDON, W.1.
Telephone: Mayfair 2904 Telegrams: "Salesundar, Phone, London"

who will diagnose the value of your car and will allow you
TOP PRICE IN PART EXCHANGE FOR A NEW CAR.
THE BALANCE CAN BE PAID TO SUIT YOUR CONVENIENCE

Experience only can prove if an
inexpensive article is true value.



16 H.P. Wolseley Touring Car. £435.

— Consult us with regard to —

Cars New & Secondhand.

All kinds of Coachwork.

Repairs & Renovations.

Service.

May we send our new and secondhand lists post free.



67, George Street, Baker Street, W.1.

Telephone : 99 Paddington.

And at South Kensington.



KEEP YOUR FOOT OFF THAT PEDAL

Many motorists use the clutch pedal as a foot rest. This is a bad habit which imposes undue wear on the clutch and the withdrawal mechanism, and originates in the need for constant gear changing. Run on "BP," the British Petrol, and gear changing is reduced to a minimum, for "BP" enables engines to develop maximum power and climb hills on top that would ordinarily call for an intermediate gear. In traffic, too, "BP" permits of a performance on top that makes constant changing unnecessary.

"BP"
BP
The British Petrol

British Petroleum Co. Ltd. Britannic House, Moorgate, E.C.2
Distributing Organisation of the
ANGLO-PERSIAN OIL CO. LTD.



A Saloon for £275.

AT almost the cost of a touring car, the new 11 h.p. "Piccadilly" Saloon is at £275 the best value in light enclosed cars. It is a British all-the-year car at low cost.

Ample room for four. Plenty of leg space. Everyone comfortable. Two wide doors make it easy to get in and out. The finish is good and the fittings are complete.

The All British Standard

11 h.p. "Piccadilly" Saloon.

Other 11 h.p. Models from £200.

14 h.p. Models from £245.

14 h.p. "Portland" Saloon £375.

14 h.p. "Pall Mall" Saloon £475.

Front Wheel Brakes on either 14 h.p. Models £10 extra.

Dunlop Balloon or Cord Tyres.

The Standard Motor Co., Ltd., Coventry.
London Showrooms: 49, Pall Mall, S.W. 1.

The 11 h.p. "Piccadilly" Saloon, £275 complete



This is
British.

"COUNT · THEM · ON · THE · ROAD."

The New CLYNO "REGENT" SALOON

£275 COMPLETE.

Open Touring Models from : 2-seater £175 ; 4-seater £195

COACH-BUILT BODY
SIX WINDOWS
FOUR DOORS

All with windows to open.

FRONT SEAT INSTANTLY ADJUSTABLE.

SPECIFICATION INCLUDES: — SELF-STARTER, ELECTRIC LIGHT, ELECTRIC HORN, SPEEDOMETER, 8-DAY CLOCK, SCREEN WIPER, LUGGAGE GRID, SPRING GAITERS, TOOL KIT, SPARE PETROL CAN AND HOLDER.

If you can find anything better—**BUY IT!**

Write for DE LUXE Catalogue free on request.

CLYNO Engineering Co. (1922) Ltd., WOLVERHAMPTON
LONDON: Showrooms & Export Dept.—ROOTES, LTD., 141, New Bond St., W.1
CLYNO SERVICE DEPOT - Ledge Place, St. John's Wood Rd., N.W.
BIRMINGHAM George Heath, Ltd (Staffs., Warwickshire & Worcs.)
MANCHESTER - Looker's, Ltd. (Lancashire and Cheshire)
BRADFORD - Central Garage, Ltd., Town Hall Square (Yorkshire)
EXETER - Maude's Motor Mart (Devon, Cornwall and Somerset)
NORWICH - Delves Motors, Ltd.
BELFAST - Queensbridge Co., Automobile Engineers, Oxford St.
DUBLIN - The Clanwilliam Motors, Ltd.



"Vel-fin" REGD Surgeons' Gloves



supplied with either smooth or slightly roughened surface.

"Vel-fin" Surgeons' Gloves are made of the finest Para Rubber. Although they are strong enough to withstand hard wear and frequent sterilization they are fine and pliable on the hand. They have no seams and are properly shaped to fit the hand, allowing ample length for the fingers. They are

*Sterilizable - - Seamless
British Made Throughout*

.....
Smooth - - 30s. per doz. pairs
Rough - - 33s. " " "

S. Maw, Son & Sons, Ltd.,
Aldersgate St., London,
and Barnet.



HOSPITAL OVERALLS

Operating Overalls

White Drill, fasten at back with tapes or buttons, fine quality 9/11 12/11 14/11

Surgeons' Coats

White Drill, 3 pockets. A coat that recommends itself 15/11

Dissecting Coats

White or Khaki Drill. Made from good solid cloths, 3 pockets 10/6 12/11 14/11

Hospital Jackets

White Drill, 3 pockets. Very durable. For hard wear 6/11 8/11

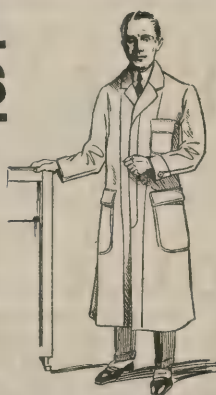
Your money will be returned if you are not entirely satisfied with any of these goods.

Orders by post, state chest measurement over vest.

Postage: Jackets 6d. Overalls and Coats 9d.

GARDINER & CO
THE SCOTCH HOUSE, Ltd.
1, 3, 5, Commercial Road, E.1.

Estab. 1839. Phone: Avenue 6650.



**Well-cut;
well-made;
comfortable;
protective.**

VACCINES AUTOGENOUS AND STOCK

In bulk or in graduated doses.

Apply SECRETARY,

LABORATORIES OF PATHOLOGY & PUBLIC HEALTH

6, HARLEY STREET, LONDON, W.1.

CULTURE MEDIA.

Freshly Prepared and Standardised Weekly.

In Tube or in Bulk.

Apply

LABORATORIES OF PATHOLOGY & PUBLIC HEALTH

6, HARLEY STREET, LONDON, W.1.

ANTIVIRUS.

BESREDKA'S METHOD.

For local treatment of bacterial infections of Skin and Mucous Membranes such as Carbuncles, Cellulitis, Sinuses, Ulcers, etc., etc.

For Prices and particulars apply to SECRETARY,
LABORATORIES OF PATHOLOGY & PUBLIC HEALTH
6, HARLEY STREET, W.1.

DISPENSING BOTTLES MEDICAL FLATS, VIALS, POISONS, ETC.

Good Quality, Accurate Measure

at

LOWEST REDUCED PRICES

Prompt attention to Country Orders

OLDEST BOTTLE HOUSE IN THE TRADE
ESTABLISHED 100 YEARS

I. ISAACS & CO.

NORTH LONDON GLASS BOTTLE COMPANY

London Office: 106 MIDLAND ROAD, N.W. 1.

Warehouse and Stores: London Midland & Scottish Railway Goods Depot
St. Pancras.

Telephones: Museum 4200.

Telegrams: Isaglasbot, Kinross London.

SCHOOL FOR THE DEAF.

Also for the Cure of Speech Defect
in Hearing Children.

KINGSFIELD HOUSE, OXHEY,
Herts.

Principal: Miss BULLOCK
(Qualified Teacher of the Deaf).
Large house & garden. Outdoor life, games, &c.
Careful Character training. Christian influence.

Phone: Watford One.

"GAMGEE TISSUE"

Sole Proprietors and Manufacturers:

ROBINSON & SONS, Limited,
Chesterfield.

PROFITS and INCOME INSURANCE COMPANY, LIMITED,

37-41, Gracechurch Street, London, E.C. 3.

ESTABLISHED 1901.

To the PHYSICIAN or SURGEON failure of health by disease or accidental injury means heavy financial loss.

PERFECT PROTECTION AGAINST LOSS OF INCOME

through incapacity arising from ANY kind of

SICKNESS OR ACCIDENT

is secured by effecting

A PERMANENT NON-CANCELLABLE SICKNESS AND ACCIDENT POLICY
with **THE OFFICE SPECIALISING FOR THE MEDICAL PROFESSION.**

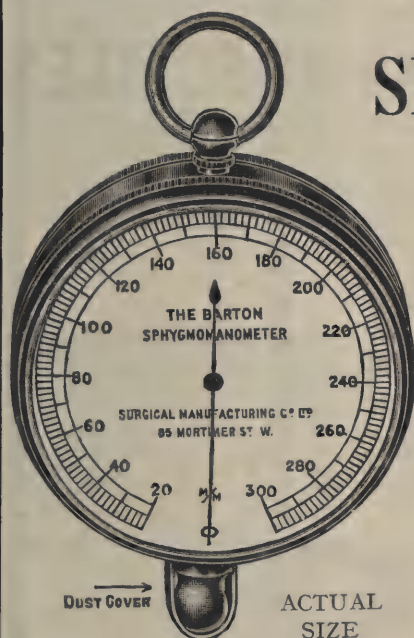
Send for "Medical" Leaflet, and state age next birthday.

Telephone No.: ROYAL 5101/4 (4 lines).

THE "BARTON" SPHYGMOMANOMETER

A WELL-KNOWN SPECIALIST writes:—

"There is no better Instrument than the Barton Sphygmomanometer, and it should be in the possession of every medical practitioner."



Price Complete

£3 : 3 : 0

British Made Throughout.



REDUCED PRICES—Our 1000-page Catalogue of Surgical Instruments, etc., will be forwarded free on application.



THE SURGICAL MANUFACTURING CO., LTD.,

Surgical Instrument and Appliance Makers,

83-85, MORTIMER ST., LONDON, W.1.

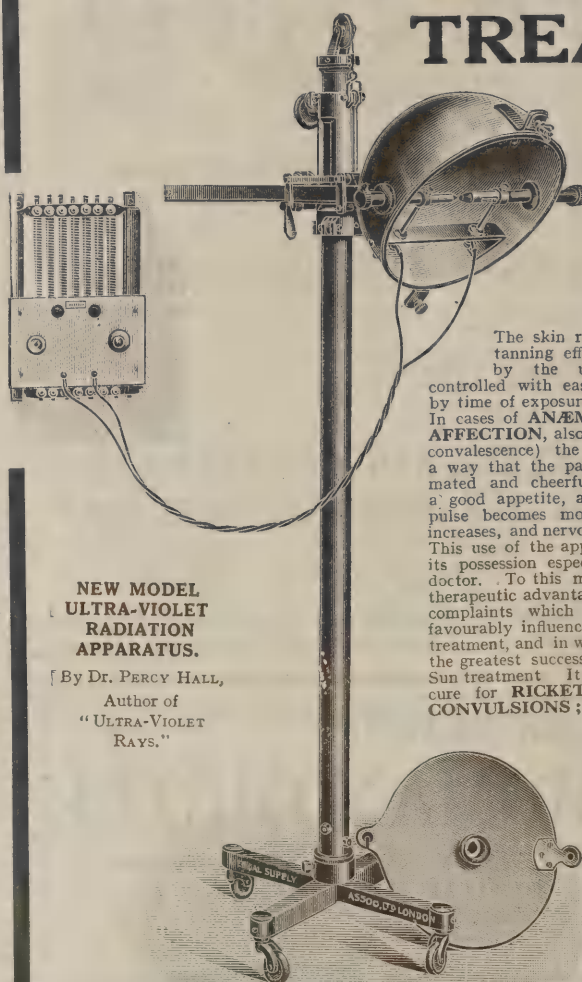
And at 89, West Regent St., GLASGOW, 14, Howard St., BELFAST,
and 39, Kildare St., DUBLIN.

Telephone:
MUSEUM
2960

Telegrams:
SURGMAN
LONDON.

The Latest Apparatus for ARTIFICIAL MOUNTAIN SUN TREATMENT

(Ultra-violet Radiation)



**NEW MODEL
ULTRA-VIOLET
RADIATION
APPARATUS.**

[By Dr. PERCY HALL,
Author of
"ULTRA-VIOLET
RAYS."

E.D. 116. DR. PERCY HALL'S MODEL

This apparatus, as will be seen in the illustration, is mounted on a vertical column and is accurately counterweighted by counterweight moving within the vertical tube. Cross movement is brought about by exceedingly easy running movement which permits of the apparatus being manipulated with the greatest ease. It is also free to rotate round the vertical column. The improved quick-action simple striking-gear for the arc is a feature of this apparatus. This apparatus is designed to burn one tungsten and one carbon electrode, or alternatively 2 tungsten electrodes. The lamp is enclosed in a spun aluminium hood and is supplied complete with reducing mask so that the apparatus can be used either for local application or general application. Price includes reducing mask fitted with quartz lens, also a marble rheostat. The price for the apparatus for Continuous Current is £35. Ditto apparatus, but complete with motor transformer for Alternating Current, £70.

WRITE NOW FOR FULLY DESCRIPTIVE CATALOGUES L5 and L5 A,
POST FREE ON REQUEST.

Patentees and Manufacturers :-

MEDICAL SUPPLY ASSOCIATION, LTD.,

167/185, GRAY'S INN ROAD, LONDON, W.C.1.

The largest X-Ray and Electro-Medical Apparatus Showrooms in the United Kingdom.

ULTRA-VIOLET RADIATION has been found to possess extremely valuable therapeutic properties, and is now being employed very extensively for many conditions, some of which yield so readily that it may be considered as a specific treatment.

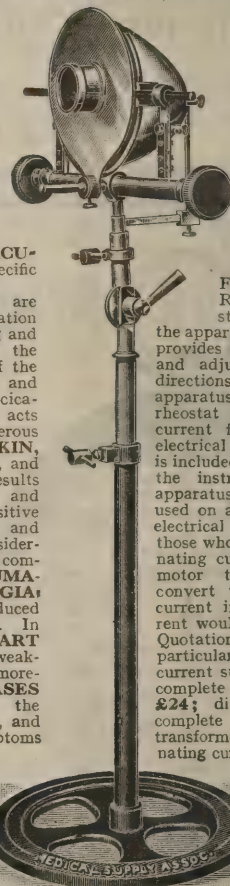
The Radiation is produced by—

An arc lamp which burns special tungsten electrodes.

The skin readily reacts to the illumination, which causes precisely the same tanning effect as is produced by sunlight—first a reddening of the skin, followed by the usual brown tint, and finally scaling. The treatment can be controlled with ease by adjusting the distance between patient and apparatus, also by time of exposure.

In cases of **ANÆMIA, NERVOUS DEBILITY**, and other conditions of **NERVOUS AFFECTION**, also with persons suffering from inanition and prostration (such as f.i. in convalescence) the salutary effects of Ultra-violet Radiation display themselves in such a way that the patients become more animated and cheerful, look better, and have a good appetite, and sleep soundly. Their pulse becomes more normal, their weight increases, and nervous excitement disappears. This use of the apparatus alone would make its possession especially valuable to every doctor. To this must be added the special therapeutic advantages in quite a number of complaints which are not so readily and favourably influenced by other methods of treatment, and in which, in fact, are some of the greatest successes of Artificial Mountain-Sun treatment. It proves a safe and rapid cure for **RICKETS** and infants' teething **CONVULSIONS**; gives excellent results in certain forms of **TUBERCULOSIS**; and acts as a specific remedy in **SCROFULA**.

By its aid **WOUNDS** are quickly healed, the radiation resulting in rapid drying and cleansing, exhaustion of the suppuration, alleviation of the pain, rapid granulation, and formation of soft, plant cicatrices. The treatment acts with safety in very numerous **DISEASES OF THE SKIN**, particularly loss of hair, and give very satisfactory results in **ERYSIPELAS** and **PSORIASIS**. It is a positive cure for **CHILBLAINS** and **BOILS**, and effects considerable improvement, if not complete recovery, in **RHEUMATISM, GOUT, NEURALGIA**, and every illness with a reduced or disturbed assimilation. In quite a number of **HEART DISEASES**, especially weakness of the heart muscles, moreover in chronic **DISEASES OF THE KIDNEYS**, the heart will be invigorated, and the most troublesome symptoms alleviated or removed.



**E.D. 27.
TUNGSTEN
ARC LAMP.**

For Ultra-violet Radiation. The stand on which the apparatus is mounted provides free movement and adjustment in all directions. With each apparatus we provide a rheostat to control the current from the main electrical supply, which is included in the price of the instrument. This apparatus can only be used on a direct current electrical supply. For those who have an alternating current supply a motor transformer to convert the alternating current into direct current would be necessary. Quotations on receipt of particulars of alternating current supply. **PRICE** complete with rheostat £24; ditto Apparatus, complete with motor transformer for alternating current £59. . . .

AWARDED THE CERTIFICATE OF THE INSTITUTE OF HYGIENE.

STERAID^{REGD}

SERIES OF

ABSORBENT AND MEDICATED GAUZE AND LINTS.

MADE IN ENGLAND.

An entirely new and original departure in the packing of Surgical Dressings.

This series is offered to provide a Surgical Dressing, which after packing retains its aseptic condition most nearly approaching perfection. The dressings after being placed in the Patent Containers are not handled or exposed to the atmosphere again.

In use, only the amount required is drawn out and cut off, the remainder of the contents is not exposed or handled, the whole operation being exceedingly simple and consisting of four motions only (*i.e.*, rotating outer cover to expose end of dressing, drawing out sufficient quantity, cutting off, rotating to close).

The "Steraid" series offers a great advantage over all other forms of Dressings, sufficient of the dressing for use is immediately available for application, and the remainder promptly re-sealed in the Patent Container, thus obviating the risk of exposure to dust and germs in the atmosphere, which occurs when the whole of the dressing has to be removed from a Carton or Package.

Medicated Gauzes should be preserved from the light, as being volatile they deteriorate. The "Steraid" series will be found eminently suitable for such dressings.

Supplies can be obtained from:—

Medical Supply Association, London.
J. Barker & Co., Ltd., "
E. & R. Garrould, "
Harrods Ltd., "

Selfridge & Co., Ltd., London.
W. H. Bailey & Son, Ltd., "
J. C. Arnfield & Sons, Ltd., Stockport.
Ayrton, Saunders & Co., Ltd., Liverpool.

And all high-class chemists and stores.

ABSORBENT AND MEDICATED GAUZE.

	Min.	Prices.
	6 yd.	3 yd.
Plain Absorbent	2/-	1/2 each.
Sal Alembroth		
Sublimite	2/3	1/3 1/2 "
Carbolic		
Boric		
Double Cyanide	2/6	1/5 "
Picric	3/-	1/8 "
Iodoform		

ABSORBENT AND BORIC LINT.

	Min.	Prices.
Absorbent Plain Lint	2"	wide 1/3
" Boric "	"	"
" Plain "	4"	wide 1/9
" Boric "	"	"
" Plain "	6"	wide 2/3
" Boric "	"	"

There are approx. 6 yds. of Plain Lint or 4 yds. of Boric Lint in each Carton.



Hold the container with the left hand—



Rotate the flange of the inner portion of the container in the direction of arrow until dressing appears and interior slot is visible.

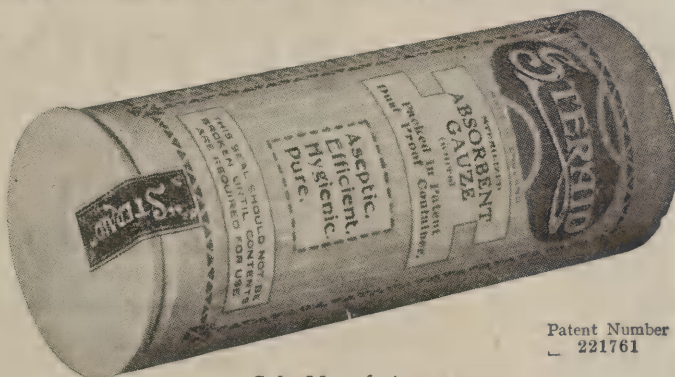


Draw out sufficient of the Dressing for immediate use and not more: and cut away about half an inch from container—



Rotate the flange in opposite direction (as arrow) until the dressing is quite covered.

The "Steraid" series are packed in special patented Cartons or Containers, any dressings packed in similar containers and not bearing this Trade Mark should not be accepted. Manufacturers, Vendors, and Purchasers are liable for infringement.



Patent Number
221761

Sole Manufacturers:

ROBERT BAILEY & SON, LTD.
MARRIOTT STREET MILLS - STOCKPORT
Telephone: 2794.

Telegrams: Undisputed, Stockport

London Office:

No. 307, SENTINEL HOUSE, SOUTHAMPTON ROW, W.C.1
Telephone: Museum 7560-9

TESTOGAN

For Men

Formula of late Dr. Iwan Bloch.

After twelve years' clinical experience
this product stands as a proven specific.

INDICATED IN

IMPOTENCE AND INSUFFICIENCY OF THE HORMONES.

Contains the hormones of the reproductive
glands and of the glands of internal secretion.

Special Indications for Testogan:

Sexual Infantilism and Eunuchoidism in
the male. Impotence and sexual weak-
ness. Climacterium virile. Neurasthenia,
hypochondria.

DIRECTIONS: A tablet three times daily after meals.
Also in ampoules for intragluteal injection.

Extensive literature and case reports on request to the
CAVENDISH CHEMICAL CORPORATION,

Empire House, 175, Piccadilly, LONDON, W.1.

BUTLER & CRISPE, 82, Clerkenwell Rd., London, E.C.1, Eng.
English Distributors.

Indian Rep: The Anglo-French Drug Co., Ltd., Yusuf Building,
Churchgate Street, BOMBAY.

BISMOSALVAN

Iodobismuthate of Quinine.

Guard against arsenic and mercury treatment
complications

* *

Least noxious specific for prolonged treatment of:—
Primal and Superimposed Infections in all
Stages;

Patients Resistant to Arsenic and Mercury
Preparations;

Hereditary Infection in Infants and Children;
Syphilis during Pregnancy;

Emaciated, Debilitated and Hypersensitive
Patients;

Neurosyphilitic Conditions.

NO GINGIVAL DISCOLORATIONS.

NO STOMATITIS.

NO KIDNEY DISTURBANCES.

Prophylactic in Post-Arsenical Supplementary
Treatment.



GEDEON RICHTER LABORATORIES, Inc.,
Empire House, 175, Piccadilly, London, W.1.
ENGLAND.

CLAYTON ANILINE CO. LTD.

The vegetable phosphorus isolated from plant seeds.

PHYTIN

(Calcium magnesium salt of inositol hexaphosphoric acid)

**A POWERFUL NERVE FOOD
AND GENERAL TONIC.**

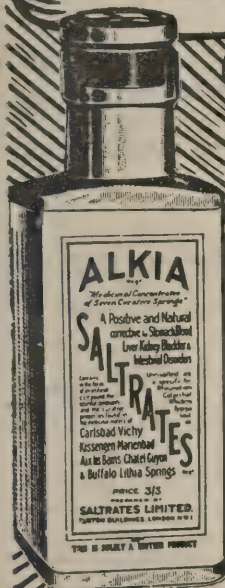
An organic phosphorus combination of vegetable origin,
assimilable and non-toxic, containing 22% of phosphorus,
i.e., 6½ times more than lecithin.

"The most assimilable of all phosphorus combinations."
Manquat, "Treatise of Therapeutics," 1912, vol. II., page 267

"May be classified among the most powerful modifiers of nutrition."
Gilbert & Lippmann, "La Presse Médicale," 1904, No. 73.

Alkia Saltrates

This saline aperient presents certain features which we believe to be unique amongst preparations of its class.



THE ingredients of Alkia Saltrates are combined in such proportions as to produce an exceptionally well-balanced and synchronous action upon all of the various organs affected. For instance, this formula does not act as a violent purgative with little or no effect as an hepatic stimulant. On the contrary, whilst having a very thorough laxative action, it arouses the liver and promotes a free flow of bile, therefore being of special value in clearing congestion of the liver and preventing such obstructions as gall stones. Alkia Saltrates is also an efficient antacid and diuretic. As a moderately strong anti-rheumatic agent, it has met with unusual success.

All materials are the purest obtainable and specially tested before compounding, to make sure of the complete absence of any harmful impurities. Each constituent responds fully to the B.P. test and in certain particulars answers to higher tests.

In spite of the really heavy dose of alkaline and saline ingredients provided, Alkia Saltrates is neither lowering nor griping in its effects and it is very palatable. It is stocked by all chemists, the price being 3/3.

A full-size bottle, for practical test, will be sent postpaid on receipt of a request from any member of the medical profession.

SALTRATES LIMITED (DEPT. A270A), EUSTON BUILDINGS,
LONDON, N.W.1.

TREATMENT OF SYPHILIS BY BISMUTH COMPOUNDS

BISMUTHYL

Precipitated Bismuth in Glucose Solution
(97%)

BIQUINYL 50%

Double Iodo-Bismuthate of Quinine
(50%)

Painless Injections.

- ☐ The therapeutic value of Bismuth is now an accepted fact and Bismuth is rapidly gaining for itself the position it is entitled to amongst the recognised anti-syphilitic remedies.
- ☐ Bismuthyl has now been tested and is being used in increasing quantities in a great number of hospitals and V. D. clinics in Great Britain. All reports have shown that this preparation combines a high therapeutic activity with notable freedom from pain and toxic effects.
- ☐ Bismuthyl is supplied in 1 oz. sterile rubber-capped bottles (28 c.cm.) ready for use ; also in boxes of 12 and 50 Ampoules of 2 c.cm.

Prices to the Medical Profession :—

1 oz. Bottles, 5/3 each ; 12 Ampoule Boxes, 7/- each ; 50 Ampoule Boxes, 25/- each.

SPECIAL TERMS TO HOSPITAL AND V.D. CLINICS.

Prepared by

Produits Chimiques et Pharmaceutiques MEURICE,
Soc.-An., Brussels, Belgium.

Literature etc. from

L. H. GORIS, 49, Queen Victoria Street, E.C. 4.

Telephone: City 6167.



IN POST-INFLUENZAL CONVALESCENCE

Carnrick's "LIQUID PEPTONIDS"

meets the requirement for a Tonic Nutrient that is palatable and easily assimilated.

Carnrick's "LIQUID PEPTONIDS," derived by predigestion from Beef, Wheat, and Milk, contains protein in the form of **PEPTONES** and albumoses, and its entire nutrient content is immediately available for nutrition.

Carnrick's "LIQUID PEPTONIDS" is aseptic, slightly stimulating, and very palatable.

CARNRICK & CO., LTD., 183, Acton Vale, London, W.3,
will be pleased to send Samples and Literary Matter, Free of Charge,
to Medical Men.

ADVANCE IN TREATMENT
of
Hyperchlorhydria and Associated Conditions

TRADE MARK **ALOCOL** BRAND

Colloidal Hydroxide of Aluminium

Modern medical experience has proven that while the usual alkalis and oxides possess power for neutralizing the normal or abnormal acids of the stomach their action is only symptomatic and transitory. They may give momentary relief to the painful condition, but they also have the effect of aggravating the morbid condition. For this reason they are distinctly contra-indicated, especially in stubborn cases.

"Alocol" does not neutralize acid; it absorbs the excess colloido-chemically and at the same time leaves a sufficiency for normal gastric digestion. The outstanding advantage of "Alocol" as an antacid is that it removes from the system the causative acid radicle (Cl), instead of merely temporarily neutralizing it. "Alocol" can be used for prolonged periods without the slightest harmful effect.

A supply for clinical trial with full descriptive literature sent free on request.

M.198.



TABLETS



POWDER

"Alocol" is indicated in all conditions in which diagnosis reveals high gastric acidity. It is particularly valuable in the treatment of chronic affections of the stomach, the dyspepsias, especially those of pregnancy, gastric and duodenal ulcer, gastrosuccorhea and in conditions characterized by gastralgia, pyrosis, flatulence, acid eructation and other symptoms common to gastric disease.

A. WANDER Ltd.,
184, Queen's Gate, London, S.W.7.
Works: KING'S LANGLEY, HERTS.

BRITISH IN PREFERENCE

WE EARNESTLY APPEAL TO MEDICAL MEN
TO PURCHASE AND RECOMMEND GOODS
MANUFACTURED IN GREAT BRITAIN, BY
BRITISH FIRMS, OR, FAILING THAT, THE
PRODUCE OF THE REST OF THE EMPIRE.

Benger's Food, Ltd., Otter Works, Manchester,
Manufacturers of **Digestive and Dietetic
Preparations.**

Bleasdale, Ltd., 23, Colliergate, York, Manu-
facturers of High-class and Guaranteed
**Galenical and Pharmaceutical Pre-
parations.**

Brand & Co., Ltd., Mayfair Works, South
Lambeth Road, London, S.W., Makers of
**Brand's Essence of Beef, Chicken or
Mutton, Meat Juice, Soups, Broths**
and other Invalid Delicacies.

Burgoyne, Burbidges & Co., Ltd., East
Ham, London, E., Manufacturers of
**Chemicals and Pharmaceutical Pre-
parations.**

Down Bros., Ltd., 21, St. Thomas' Street,
London, S.E.1, **Surgical Instrument
and Aseptic Hospital Furniture**
Manufacturers.

Fletcher, Fletcher & Co., Ltd., Vibrona
Laboratories, Holloway, N.7, Manufacturing
Chemists; "**Vibrona**," "**Bronomalt**"
and "**Cocoatina**."

Gale & Co., Ltd., Bouverie Street, London,
E.C.4, **Wholesale & Export Druggists.**

Thomas Kerfoot & Co., Ltd., Bardsley Vale,
Bardsley, Lincs, **Fine Chemical Manu-
facturers.**

Howard Lloyd & Co., Ltd., 20, Asfordby
Street, Leicester, Manufacturers of **Pills,
Tablets, Capsules and Pharmaceutical
Preparations.**

J. F. Macfarlan & Co., 32, Bethnal Green
Road, London, E.1, Manufacturers of
**Anæsthetics and Fine Medicinal
Chemicals.**

W. Martindale, 10, New Cavendish Street,
London, W.1, Makers of **Mercuro-
chrome, Flumercin (R.T.M.), Emetine
Periodide** and other **Fine Chemicals.**

May & Baker, Ltd., Battersea, London,
S.W.11, **Manufacturing Chemists.**

Mayer & Phelps, Chiron House, 59-61, New
Cavendish Street, London, W.1, Manu-
facturers of **Surgical Instruments (and
Aseptic Hospital Furniture).**

G. F. Merson, Ltd., St. John's Hill Works,
Edinburgh, **Sterile Surgical Catgut—
actual Manufacturers.**

Middleton & Co., Ltd., 90, Borough Road
West, Middlesbrough, **Wholesale Manu-
facturing Chemists and Scientific
Apparatus Dealers.**

G. T. W. Newsholme, Ltd., 27, High Street,
Sheffield, **Manufacturers of Phar-
maceutical Preparations, &c.**

Oppenheimer, Son & Co., Ltd., 179, Queen
Victoria Street, London, E.C.4, Manu-
facturers of **Pharmaceutical Special-
ities and Export Merchants.**

Pierson, Morrell & Co., Ltd., High Barnet,
The Original British Aspirin Makers,
Specialists in Aspirin and Salicylic Acid.

Prideaux's Pure Casein Co., Ltd., Mot-
combe, Dorset; Full Cream Dried Milk
"**Dorsella**," Pure Casein 90 per cent.
Proteid "**Casumen**."

John Richardson & Co., Leicester, Ltd.,
10, Friar Lane, Leicester, **Manufacturing
and Analytical Chemists.**

James Swift & Son, Ltd., 81, Tottenham
Court Road, London, W.1, **Manufacturers
of Microscopes.**

United Glass Bottle Manufacturers, Ltd.,
40-43, Norfolk Street, Strand, London,
W.C.2.

Whiffen & Sons, Ltd. (Incorporating George
Atkinson & Co.), Battersea and Fulham, S.W.,
**Manufacturing Chemists, Salicin, Eme-
tine, Bromides, Iodides, Quinine, &c.**

Medical men desirous of information on the subject of British produce
in general will be assisted, as far as possible, on communicating with
"**X.Y.Z.**," c/o Samson Clark & Co., Ltd., 57-61, Mortimer Street,
London, W. 1.

Any purely British concern, wishing to participate in advertising of
this kind, which will be continued on occasion during the year, should
also apply to the same address.

INTESTINAL STASIS

The Advantages of Virolax The Nutrient Laxative

Perfect emulsification of the Paraffin so that its uncertain action is avoided.

The administration of an easily digested food with a bowel lubricant, without overloading the already distended intestine.

Complete lubrication of the bowel, directly facilitating the progress of the intestinal contents and inhibiting undue bacterial growth and the production of microbic toxins.

Virolax and Intestinal Bacteria

Investigations have shown that Virolax has a peculiar selective action on certain bacteria which are known to be the cause of intestinal toxæmia. This fact goes far to explain the results of the Clinical use of the preparation and demonstrates the superiority of Virolax over liquid paraffin in its pure state.

Virolax

(Registered Trade Mark)

In Jars, 1/- & 2/8

VIROL LTD., Hanger Lane, Ealing, London

TRADE MARK

'STABILARSAN'

DIOXYDIAMINOARSENOBENZOL-GLUCOSE

BRAND

BOOTS*Approved by the Ministry of Health*

STABILARSAN has a more permanent effect upon the Wassermann reaction and is more convenient to use than any other arsenical. Manufactured under licence from the Board of Trade and passed for issue by the Government Director of Biological Standards.

TRADE MARK

'BISMOSTAB'

METALLIC BISMUTH SUSPENSION

BRAND

BOOTS

AMOST potent Spirillicide consisting of a suspension of Metallic Bismuth in Isotonic Glucose Solution.

Well Tolerated.

Non-irritant.

Therapeutically very active.

Supplied ready for use.

'INSULIN'**BOOTS**

MANUFACTURED under licence from the Medical Research Committee. Supplied by all branches of Boots The Chemists.

Vials 5 cc. (100 units or 10 doses)

2s. 8d. each.

Vials 10 cc. (200 units or 20 doses)

5s. 4d. each.

'ACRIFLAVINE'**BOOTS**

THE Premier brand of acriflavine—Acriflavine Boots—is now established all over the world. When injecting Neutral Acriflavine, use the *best* obtainable.

Pessaries, Gauze, Ointment, Tablets and Paraffin Emulsion also supplied.

SPECIAL LITERATURE ON APPLICATION.

SOLE MANUFACTURERS:

BOOTS PURE DRUG Co. Ltd.

Manufacturing Chemists and Makers of Fine Chemicals,
STATION STREET, NOTTINGHAM.

Telephone: 7000 Nottingham.

Telegrams: "Drug," Nottingham



Trufood offers the only scientific equivalent for Human Milk

Humanised Trufood is made at the Creameries, Wrenbury, from the purest milk that comes from the rich pastures of the Cheshire dairy country. As the accompanying analysis shows, it is the closest approximation to human milk available for the physician who is called upon to advise an alternative to the breast, owing to deficiency or poverty of the natural supply. This result has been achieved by removing a part of the casein of full-cream Cheshire milk, so that after the addition of suitable quantities of pure cream and lactose, a humanised milk powder of the following composition results :

	Breast Milk	Cows' Milk	Humanised Trufood
	%	%	%
Lactose	6.5	4.7	6.25
Fat	3.3	3.5	3.45
Casein	0.9	3.0	0.80
Lactalbumin	0.4	0.3	0.60
Salts	0.2	0.8	0.65
Water	88.7	87.7	88.25
	<u>100.0</u>	<u>100.0</u>	<u>100.00</u>

We are exhibiting at the Nations Food Exhibition, April 11th to May 2nd, Stand No. 152, Main Hall, where scientific data of an interesting nature will be available to Doctors and Pharmacists.

**No other baby food on the market can
make this claim.**

You are invited to apply for reproduction of actual photograph (in colours) of a recent incubation test of various milks. This is obtainable by post.



TRUFOOD

TRUFOOD LIMITED, The Creameries, Wrenbury, nr. Nantwich, Cheshire

T.F. 104-29

“MARSHALL’S”

THE list of Antiseptic substances is a fairly comprehensive one. The number of antiseptics capable of practical and easy application are few.

First and perhaps foremost of these is undoubtedly LYSOL—a saponaceous preparation of the three cresols—*ortho*-cresol, *meta*-cresol, and *para*-cresol.

These cresols vary in their bactericidal activity, and much depends upon the right selection when used in manufacturing.

The production of antiseptics and disinfectants that shall fulfil all requirements is the outcome of lengthy research and skilful manufacture—they cannot be prepared and standardised by small inexperienced makers.

For this reason, and owing to the number of substitutes offered to Surgeons and Doctors, it is necessary to specify “MARSHALL’S” when ordering or prescribing “Lysol” to ensure the genuine original product, which is guaranteed free from causticity and the impurities which give rise to irritation and frequently cause intense pain.

MARSHALL’S LYSOL does not attack the skin or numb the hands. Its use generally will be found quite agreeable.

**Marshall’s Lysol can be obtained in
all the Dominions and Dependencies.**

A four-ounce Bottle will be sent upon request by the Sole Makers—

LYSOL LIMITED, LONDON, S.W. 20

FOR SPECIAL CONSIDERATION AT THIS SEASON.

GENERAL
DEBILITY

WASTING
DISEASES

ANÆMIA

CONVALESCENCE

RICKETS

NEURASTHENIA



"The Collosol Malt preparation is very good."

LANCET, Jan. 8th, 1921.

Samples and full particulars on application from

THE CROOKES LABORATORIES

22 CHENIES STREET,

TOTTENHAM COURT ROAD, LONDON, W.C.1.

Telephones:

Museum 3663-3697.

Telegrams:

"Colossally, Westcent, London."

THE
NEW
ANALGESIC **HYPNOTIC** SEDATIVE

SONERYL

(REGISTERED)

For treatment of all forms of
INSOMNIA.

TABLETS—1½ gr.—for ORAL ADMINISTRATION.

Supplied in tubes of 12, and bottles of 25.

SONERYL

INDUCES NO CRAVING

*Awakening is normal and without depression or other
ill-effects.*

NON-TOXIC IN THERAPEUTIC DOSES.

Literature sent upon request.

MAY & BAKER, Ltd.,
Battersea, LONDON.

Telephone: BATTERSEA 1813.

Telegraphic Address: "BISMUTH, LONDON."



Rapid Headway after Influenza

The present epidemic is providing the medical profession with further evidence of the power of 'Roboleine' to build up the system.

Roboleine

has always owed a great deal to the support of medical men, but at this time particularly we are experiencing the effects of its prescription to a degree unprecedented in the history of the firm.

In all cases where progress is slow, 'Roboleine' will prove of great benefit, for it provides a means of administering nourishment without overburdening the system.

FORMULA :

Marrow from the long bones, Red² Marrow from the rib bones of prime oxen, "Cream of Malt," Egg Yolk and Neutralized Lemon Juice.

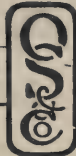
CONSTITUENTS :

Animal Fats, Maltose, Diastase, and natural Nitrogenous and Phosphoric Compounds

Clinical Sample and Literature on request.

OPPENHEIMER, SON & COMPANY LTD.
179 Queen Victoria Street, London E.C.4.

O & S



REDUCTION IN THE PRICE OF

AETHER PURISS. B.D.H.

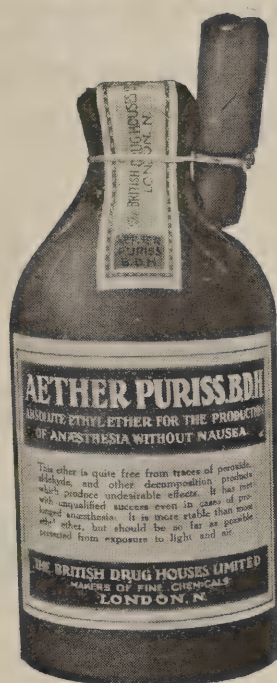
Absolute Ethyl Ether for the production of
Anaesthesia without Bronchial Irritation or Nausea.

THE BRITISH DRUG HOUSES, LTD., the manufacturers of AETHER PURISS. B.D.H. have pleasure in announcing that, as a result of the greatly increased scale of manufacture, they are enabled already to make a substantial reduction in the price of this product.

AETHER PURISS. B.D.H. is manufactured exclusively in the Chemical Works of The British Drug Houses, Ltd., under conditions which ensure very close scientific supervision and exacting analytical control.

A gratifying and ready reception has been accorded to this new ether by leading anaesthetists, whose prompt appreciation, following clinical tests, is based upon the following characteristics:—

1. It is the most stable form of ETHYL ETHER which can be obtained.
2. It gives no reaction to the exceedingly delicate ferrous thiocyanate test for organic peroxide, thus indicating the absence of this toxic impurity.
3. It contains no decomposition products which produce post-operative retching and nausea.
4. It is issued in amber bottles made specially for the purpose, wrapped in black paper; the action of light is thus entirely precluded.



A descriptive pamphlet and particulars of reduced prices will be sent on request.



THE BRITISH DRUG HOUSES LTD.,
Makers of Fine Chemicals,
LONDON, N.1

Headquarters for the Endocrines

PARATHYROIDS, Powder & Tablets—1/10, 1/20 & 1/40 grain.

Indicated in gastric and infantile tetany, chorea, eclampsia, paralysis agitans. These preparations are made from fresh glands carefully trimmed and desiccated in vacuum dryers at low temperature.

PITUITARY, Powder, 1/4, 1/2, 1, 2, 3, 4, and 5 grain tablets.

ANTERIOR PITUITARY, Powder, 2 grain tablets.

POSTERIOR PITUITARY, Powder, 1/10 grain tablets.

PITUITARY LIQUID—standardized 1 c.c. & 1/2 c.c. ampoules.

CORPUS LUTEUM [true] Powder, 2 grain tablets; capsules 2 and 5 grains.

THYROIDS U.S.P.—0.2 per cent. iodine in thyroid combination.
Powder, 5, 4, 3, 2, 1, 4/5, 3/5, 1/2, 1/4, 1/5 and 1/10 gr. tablets.

SUPRARENALIN SOLUTION 1:1000 in 1 oz. g.s. bottle, cup stopper.

The above and other Endocrines can also be had in capsule form and in ampoules for hypodermic injection.



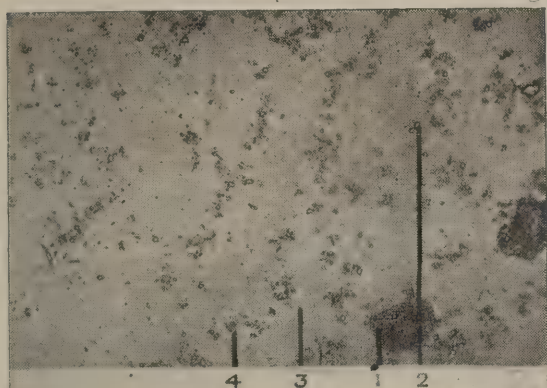
STERILE CATGUT LIGATURES — boilable and non-boilable, plain and chromic. Iodized — non-boilable.
Nos. 000 to 4 inclusive—60 in. Special Prices.

UNSTERILE, Plain and chromic, 10 ft. lengths.

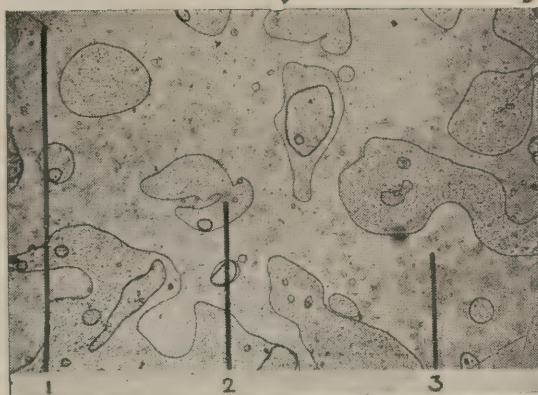
Booklet for physicians.

ARMOUR AND COMPANY
LIMITED

Queen's House, Kingsway,
LONDON, W.C.2.



Micro-photograph of stool after Petrolagar administration, showing complete emulsification and thorough admixture with intestinal content.
[1] Epithelial Cells [2] Microscopic Oil Globule [3] Agar-Agar Granule.
[4] Faeces



Micro-photograph of faeces after administration of plain mineral oil, showing complete absence of emulsification: this explains why mineral oil always leaks.
[1] Epithelial Cells [2] Oil Globule [3] Faeces

Petrolagar

(trade mark)

SUPERSEDING LIQUID PARAFFIN IN THE TREATMENT OF CHRONIC CONSTIPATION

THE micro-photographs clearly demonstrate the superiority of Petrolagar over ordinary liquid paraffin in the treatment of constipation. On the left the perfect admixture with the intestinal content obtained with Petrolagar is apparent: the other photograph, in which large unemulsified globules of oil are present, explains at a glance why plain mineral oil never has solved and never can solve the problem of constipation. It also shows why mineral oil leaks.

The drawbacks inseparable from the use of plain liquid medicinal paraffin are well known. Many patients cannot tolerate its insipidity; digestive disturbances sometimes occur; whilst thorough admixture with the intestinal content is seldom attained, with consequent leakage from the rectum. These difficulties are overcome in Petrolagar, which contains 65% of pure medicinal liquid paraffin with 10% of prepared agar-agar, in the form of a highly stable and extremely palatable emulsion. There is no taste of oil, so that the most fastidious patients take the product readily. In the treatment of chronic constipation, Petrolagar gives results unobtainable by any other method and breaks the vicious circle set up by the habitual use of drastic purgatives. The medicinal paraffin is so finely divided that it is thoroughly disseminated throughout the faecal mass and *cannot leak*; the agar-agar is specially prepared so as to yield on incubation in the intestinal tract many times its original bulk, forming a bland gelatinous mass which is completely and readily eliminated, acting, indeed, as a soothing emollient to the inflamed intestinal mucosa. As contrasted with cathartics, Petrolagar is non-habit forming, and once normal elimination has been restored may be given in diminishing quantity.

PETROLAGAR is available in four forms: PETROLAGAR Plain PETROLAGAR Alkaline
PETROLAGAR Phenolphthalein PETROLAGAR Unsweetened.

Clinical Trial Samples will be sent on request

DESHELL LABORATORIES, LIMITED: Sole Manufacturers: PREMIER HOUSE, 150 SOUTHAMPTON ROW, LONDON, W.C.1



LIQUOR SEDANS

Utero-Ovarian Sedative

EACH FLUID OUNCE REPRESENTS:

Viburnum Prunifolium ...	60 grains
Hydrastine to represent Fl. Ext. Hydrastis ...	30 minims
Piscidia Piscipula ...	30 grains
Aromatics ...	q.s.

LIQUOR SEDANS (P., D. & Co.) was introduced to the medical profession in the year 1888, and notwithstanding the many additions to materia medica that have been made since that date, it still holds a foremost place as a proved remedy for pelvic congestions and inflammations requiring tonic-sedative and antispasmodic treatment.

LIQUOR SEDANS is of special value in the treatment of menorrhagia, metrorrhagia, dysmenorrhœa, endometritis, perimetritis and ovaritis; it is also prescribed in the treatment of subinvolution and in cases of impending abortion.

The dose of Liquor Sedans is from 1/2 to 1 teaspoonful in hot water, three or four times a day; in cases attended with severe pain it may be given every one or two hours.

LIQUOR SEDANS (P., D. & Co.) is supplied in bottles of 4, 8, 16 and 80 fluid ounces.

LIQUOR SEDANS GLOBULES (gelatin capsules containing the equivalent of 1 teaspoonful of the Liquor) are supplied in boxes of 12, 25 and 100.

Parke, Davis & Co., London, W.I.



Telephone: Regent 3260 (six lines). Telegraphic Address: "Cascara London."

In the Insulin Treatment of Diabetes the diet is still a factor of vital importance.

Allenburys' Diabetic Flour

Is a special preparation of caseins and lactalbumen to which leavening agents are added.

It is a satisfactory and convenient product for the preparation of special foods, free from carbohydrates, and containing a minimum of fat; or definite proportions of these may be added as tolerance increases with the progress of the treatment. The 'Allenburys' Diabetic Flour is compact, convenient to use, and keeps well. From it may be prepared a variety of palatable and highly nutritious foods of special composition. Recipes and directions for use are enclosed with each packet.

COMPOSITION:

	Per cent.
TOTAL PROTEINS	87.0
FAT	0.7
SODIUM BICARBONATE	1.6
ACID POTASSIUM TARTRATE	1.6
MOISTURE	9.1

Calorific Value—303 calories per 100 grammes
or 1,376 calories per lb.

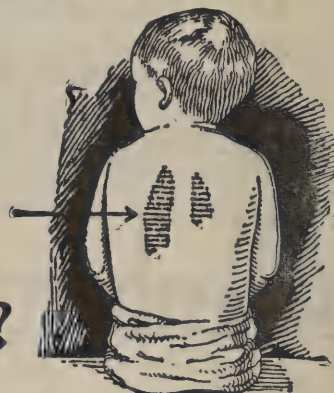
A Doctor writes:

"I have tested the sample of 'Allenburys' Diabetic Flour which you recently sent me and find it makes admirable bread, etc.; it is both more easily digested and more palatable than any similar preparation I have come across."

Further particulars and clinical trial sample
will be sent on request.

Allen & Hanburys Ltd
37, LOMBARD STREET, E.C.3.
West End House 7, VERE ST., W.1.

How do you reduce Temperature in Broncho-Pneumonia?



HOLT says—"It must be remembered that the normal range of temperature in Broncho-Pneumonia is from 101° to 104.5° F. This temperature is not in itself exhausting, and the chances of recovery are not, I think, improved by systematic efforts at reducing it so long as it remains within these limits.

"Too much cannot be said in condemnation of the practice of giving drugs for reduction of temperature."

Antiphlogistine hastens the elimination of toxins

thus favoring a decline in temperature.

Applied hot and thick over the entire thorax, Antiphlogistine, in a mild, yet effective manner, bleeds the patient into his own superficial capillaries; the pain lessened, temperature declines, deep-seated congestion and dyspnoea are relieved, while the heart, having a smaller volume of blood to deal with, conserves its strength.

Over 100,000 Physicians have used the genuine Antiphlogistine for 30 years. It is a scientific, not empirical, preparation.

Let us send you our booklet "The Pneumonic Lung"—it is replete with very valuable information and is FREE.

The Denver Chemical Mfg. Co.,

London, E. 3.

Laboratories: New York, Sydney, Berlin, Paris, Buenos Aires, Barcelona, Montreal, Mexico City

Antiphlogistine
TRADE MARK
"Promotes Osmosis"

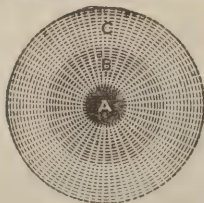
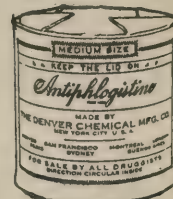
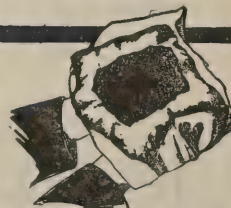


Diagram represents inflamed area. In zone "C" blood is flowing freely through underlying vessels. This forms a current away from the Antiphlogistine, whose liquid contents, therefore, follow the line of least resistance and enter the circulation through the physical process of endosmosis. In zone "A" there is stasis, no current tending to overcome Antiphlogistine's hygroscopic property. The line of least resistance for the liquid exudate is therefore, in the direction of the Antiphlogistine. In obedience to the same law exosmosis is going on in this zone, and the excess of moisture is thus accounted for.



Antiphlogistine poultice after application. Center moist. Periphery virtually dry.

AN EMPIRE PRODUCTION

OF GREAT VALUE TO THE INVALID

Burgoyne's

OBTAINABLE OF ALL
WINE DEALERS.

Tintara

Ferruginous.



4/-

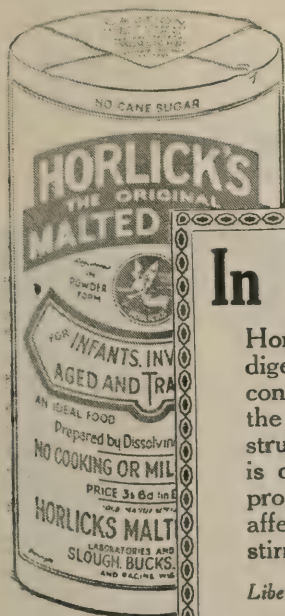


6/-

THIS PURE AUSTRALIAN WINE was introduced in 1871, it has been highly recommended by the Medical Profession in all cases where strength and nerve force have required building up. In anæmia, debility, neurasthenia and in convalescence after any illness, this full-bodied, generous wine, palatable as well as health producing, has proved itself the finest of all natural stimulants.

Sample Bottle sent free in the United Kingdom,
on receipt of professional card.

P. B. BURGOYNE & CO., Ltd.,
Burgoyne House, Dowgate Hill, London.



In Pulmonary Diseases

Horlick's Malted Milk, by supplying nourishment in an easily-digested form especially adapted to enfeebled digestive powers in conditions associated with metabolic unbalance—in which there is the ascendancy of the products of destruction over those of reconstruction—presents the best form in which milk can be given, and is one of the most important factors, as an enriched diet, in the prophylactic and active treatment of all Pulmonary and allied affections. Complete in itself and ready in a moment by briskly stirring the powder in hot or cold water only.

Liberal samples free to Members of the Profession.

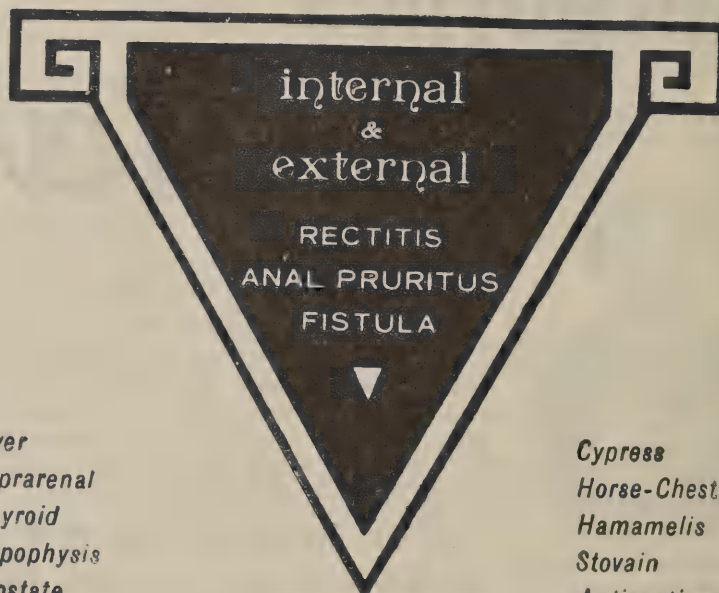
To secure the original, always specify HORLICK'S.

Manufactured by
HORLICK'S MALTED MILK COMPANY,
SLOUGH, BUCKS.



Made in England

Hemorrhoids



Liver
Suprarenal
Thyroid
Hypophysis
Prostate

Cypress
Horse-Chestnut
Hamamelis
Stovain
Antiseptics



Compound



Glandular Medication

Adrepatine

OINTMENT — SUPPOSITORIES

Literature and Samples on request.

Telephone: MUSEUM 4029.

Telegrams: "AMPSALVAS, LONDON."

THE ANGLO-FRENCH DRUG CO., LTD.,
238a, Gray's Inn Road, London, W.C.1.

Depots Abroad:

Wilson Building,
1270, Broadway,
NEW YORK CITY.

St. Denis Building,
294, St. Catherine Street,
MONTREAL.

Yusuf Building,
Church Gate Street,
BOMBAY.

B.M.A. Building,
32, Elizabeth Street
SYDNEY.

34, Fletcher's Chambers,
Longmarket Street,
CAPE TOWN.

PIONEERS AND EMPIRE BUILDERS: No. 323
SEVENTH PERIOD—circa 2000 to 700 B.C.

The Ideal Vehicle for distasteful medicaments

In itself a valuable nutrient, 'KEPLER' MALT EXTRACT masks the disagreeable taste of Phosphorus, Quinine, Strychnine, etc.

TRADE 'KEPLER' MARK MALT EXTRACT

and its combinations are described in the booklet, "'Kepler' Malt Extract as a Vehicle." The value of 'KEPLER' MALT EXTRACT in preserving an unstable salt and ensuring its administration in its proper state, is exemplified in the following:—

'KEPLER' MALT EXTRACT
(Trade Mark) WITH IRON IODIDE

Each fluid ounce contains Iron Iodide,
gr. 2

'KEPLER' COD LIVER OIL WITH MALT
(Trade Mark) EXTRACT AND IRON IODIDE

Supplied to the Medical Profession, in
glass bottles, at 3/1 each

The booklet will be sent gratis on request



BURROUGHS WELLCOME & CO., LONDON

NEW YORK MONTREAL SYDNEY CAPE TOWN MILAN
BOMBAY SHANGHAI BUENOS AIRES

All communications intended for the Head Office should be addressed to SNOW HILL BUILDINGS, LONDON, E.C. 1
London Exhibition Room; 54, Wigmore Street, W.



ASKLEPIOS, THE PIONEER OF GREEK MEDICINE.—It is from Homer that we gain our first knowledge of Greek medicine. He refers to physicians who ministered to the wounded in the Trojan War and to Asklepios, not as the "God of Medicine," which he became later, but as a real person, a Thessalian chieftain and hero divinely skilled in medicine. His sons, Machaon and Podaleirios, to whom he had taught his art, accompanied the Greek host against Troy as physicians and surgeons. In the Iliad there is no hint of healing by a god; natural means alone are described, though in the later Odyssey there are references to charms. The pioneer Greek physicians were acquainted with the science and art of cleansing and binding wounds and of healing them by the application of anodyne drugs and dressings. They prepared reviving drinks; they were aware of the after-effects of certain injuries. They allayed pain by the application of powders and poultices often made from roots. A Homeric tonic was composed of Prammiam wine, onions, honey, grated goat's milk cheese, and flour. They had a rough knowledge of anatomy, acquired chiefly upon the battle-field. They referred the life-spirit, or breath, to the diaphragm; this, while not exact science, led to the knowledge that a wound in this region was fatal. Asklepios was the pioneer in Homeric medicine. In later generations he was looked upon as a god; temples were built in his honour, and to them flocked the sick for treatment.

Date: c. 1000 B.C. or c. 900 B.C.

COPYRIGHT

THIS PREPARATION IS NOW OBTAINABLE IN 5-oz. BOTTLES.

MIST. HEPATICA CONC. (HEWLETT'S)

COMPOSITION.—Ext. Cascara, Ext. Rhei, Jalapin, Podophyllin, Cocainæ Hydrochlor., 1-20th gr. in each fluid drachm.

This preparation does not come under the Dangerous Drugs Act.

THIS excellent compound, first introduced as a general aperient and cholagogue, has now become a popular remedy in that class of cases spoken of as Chronic Biliousness, in Catarrhal Jaundice, and in the Jaundice of simple Hepatic Torpor. In passive or habitual Congestion of the Liver, so frequently met with, it has been used with marked benefit.

In the treatment of acute or temporary constipation, frequently met with in the convalescence from acute disease and in pregnancy, or in the constipation due to sedentary habits, to a deficiency of intestinal secretion and of peristalsis, the mixture can be prescribed with wonderful effect.

The Dose is from 10 to 60 minims, according to the age and condition of the patient. One drachm is a direct aperient and is not accompanied by griping or tenesmus.

Packed for Dispensing only in 5-oz., 10-oz., 22-oz., 40-oz., and 90-oz. Bottles.

Price in England, 12/6 per lb.

Please write: "Mist. Hepatica Conc. (HEWLETT'S)" to ensure obtaining this Preparation.

This preparation is also supplied "sine Cocaina," the dose and price remaining the same.

C. J. HEWLETT & SON, Ltd.,

Wholesale and Export Druggists and Manufacturing Chemists,

35 to 42, CHARLOTTE STREET, LONDON, E.C.2.

SOLE AGENTS FOR THE

HUMAN TUBERCLE BACILLUS SOLUTION (H.T.S.—DR. CROFTON).

The most powerful tubercle bacillus antigen yet produced.

*To Medical Men***GRANOSE BISCUITS.**

This is a cereal food in the form of flakes. The analysis gave the following figures:—

Water	3.02
Proteids	14.02
Soluble carbohydrates (chiefly dextrin)	32.98
Other digestible carbohydrates	44.52
Fat	1.73
Fibre	1.82
Mineral matter (chiefly phosphates)	1.91
	<u>100.00</u>

It has special value to those who have weak digestions or who suffer from dyspepsia, and to athletes, hard workers, children, and all who undergo mental strain.

From our tests we are able to certify "Granose" to be a pre-cooked food of the highest possible dietetic value and scientific skill in manufacture.

Granose Biscuits are composed of "Granose Flakes" pressed in the form of oblong cakes, and have the same general composition, and valuable dietetic properties as the "Granose Flakes" detailed above.

(Signed) J. GRANT-STEPHEN, D.Sc., Ph.D.,
Director of Laboratories.

The subjoined analysis justifies our advocacy of GRANOSE BISCUITS for all cases of stomach trouble and weak digestion. Excellent for Infants—a boon to Invalids.

*Are you
prescribing
Granose
Biscuits?
(The All Wheat Food)*

FREE
SAMPLES
ON REQUEST

THE INTERNATIONAL HEALTH ASSOCIATION, Ltd.

Stanborough Park, Watford, Herts.

DR. DE JONGH'S LIGHT BROWN COD-LIVER OIL

In prescribing Cod-Liver Oil the Medical Profession can confidently rely upon Dr. de JONGH'S OIL giving the most uniform and satisfactory results. Dr. de Jongh's Light Brown Cod-Liver Oil is prepared from the oils obtained from the livers of fish caught in the region of the Loffoden Isles off the Norwegian coasts. The oils are naturally produced, and no process in their preparation or mixing can conduce to the destruction, either partial or total, of the vitamins which are now recognised as being such an important factor in dietary and a valuable adjunct to medical treatment. The proprietors, Ansar, Harford & Co., Ltd., 182, Gray's Inn Road, London, have always maintained the high quality which the late Dr. de Jongh insisted was essential if the full curative value was to be obtained. It will be found invaluable in the treatment of Diseases of the Throat and Chest, Infantile and all Wasting Diseases.

Sold in Imperial Pints and Half-Pints by all Chemists.

PROPRIETORS—

ANSAR, HARFORD & CO., Ltd.,
182, Gray's Inn Road, London.

An important aid in the preparation of Peptonised Milk, etc.

Benger's Liquor Pancreaticus is an active solution of the digestive principles of the Pancreas; a really efficient agent for the digestion of milk, gruel, and farinaceous or partly farinaceous foods. Benger's Liquor Pancreaticus is odourless and tasteless. In 4, 8 and 16 oz. bottles.



BENGER'S

Liquor Pancreaticus

Medical men may obtain full particulars of this, and any other of Benger's preparations, post free on request, from—

BENGER'S FOOD, LTD., — Otter Works, — MANCHESTER.
Branch Offices—NEW YORK (U.S.A.): 90, Beekman St. SYDNEY (N.S.W.): 117, Pitt St. CAPE TOWN (S.A.): P.O. Box 573

HAIR GROWTH BY NUTRITION.

*A Scientific Preparation for preserving the Hair,
preventing its loss and promoting new growth*

This remedy introduces a new feature into the treatment of hair troubles, such as loss of hair and partial or complete baldness due to malnutrition. It is given internally in the form of tablets. Its action is that of a specific nutrient stimulant to the growth of epidermal structures. Its claim may be gathered from the following quotations from leading medical journals.

"The Lancet," December 18th, 1920.

"Hair restoration by the use of special foodstuffs."
"N. Zuntz, the distinguished chemical physiologist of Berlin, takes a . . . philosophic view as to the conditions likely to influence the growth of hair or wool. He recalls the fact that in the early decades of the nineteenth century the question was raised as to whether the woolly coat of sheep could be improved by the nature of the diet. Proceeding on the supposition that given an increased supply to the hair papillae of the proximate organic material out of which is manufactured keratin—the organic basis of certain epidermic appendages—it might be possible to influence favourably the growth of wool and hair."

"In man—Zuntz himself—before the experiment the daily growth of new hair was calculated as 5 mg. With the daily addition of 1.15 g. of the hydrolised products to the dietary in the first four weeks the amount was 6.3 and in the subsequent four 9.12 mg. Even after the withdrawal of the keratin products the increase in the growth of the hair continued for several months."

Dr. H. B., writes:—

"I used Humagsolan in the case of a female patient who had lost a great deal of hair during her confinement and in the subsequent nursing period. I was astonished to see how quickly a new growth of hair began."

"Medical Press and Circular," March 7th, 1923.

The remedy has been introduced in a scientific form and with excellent credentials. It is therefore worthy of extended trial.

FREE We shall be pleased to send to any member of the medical profession a full month's supply of Humagsolan with covering literature for practical testing purposes **FREE**.

PRICE 12/6 for one complete month's Treatment.

HU-MAG-SO-LAN

(REGISTERED TRADE MARK)

Faraday House, 10, Charing Cross Road, LONDON, W.C.2

Antikamnia Tablets

**Strongly Recommended in:
INFLUENZA & LA GRIPPE**



For the headache, pain, and general soreness give a five-grain Antikamnia Tablet crushed with a little water; if the pain is very severe two tablets should be given. Repeat every 2 or 3 hours as required. One single ten-grain dose is often followed by complete relief.

NEURALGIA

In the Treatment of Neuralgia and Myalgic Pains Antikamnia Tablets are not only palliative, but, along with other measures, assist in ultimate cures; they also have a field of use in Rheumatic and Gouty Affections. In Neurasthenia, Hysteria, and Migraine they are a valuable adjuvant to the other recognised therapeutic measures.

LARYNGEAL COUGH



Frequently remains after an attack of Influenza, and has been found stubborn to yield to treatment. There is an irritation of the larynx, huskiness, and a dry and wheezing cough, usually worse at night. The prolonged and intense paroxysms of coughing are controlled by ANTİKAMNIA & CODEINE TABLETS, and with the cessation of the coughing the laryngeal irritation subsides.

Antikamnia Tablets are the least depressing of all the drugs that can exercise so extensive a control of pain, and also least disturbing to the digestive and other organic functions.

A SAMPLE

of generous size will be sent all medical men sending their professional card. Also interesting literature.

Analgesic. Antipyretic. Anodyne.

Antikamnia Preparations in 1-oz. packages only.

JOHN MORGAN RICHARDS & SONS Ltd.,

46-47, Holborn Viaduct, LONDON, E.C.1.



HALITOSIS

(AS DEFINED IN THE CENTURY DICTIONARY)

(Hal-i-to-sis) N. N. L.

(L. Halitus—Breath :: :: Osis—Offensive)

Offensive breath, whether arising from diseased or neglected conditions of the teeth, mouth or nose or caused by disorders of digestion, respiration, the excessive use of tobacco, etc., may be readily overcome by the deodorizing properties of—

LISTERINE

Listerine is strictly antizymotic, it inhibits alike the acid fermentation of carbohydrates and the alkaline putrefactive processes of mixtures of meat and saliva, retained as debris about the teeth; hence, Listerine is antagonistic to the activating enzymes of fermentation so often the cause of Halitosis.

The volatile antiseptic constituents of Listerine—thyme, eucalyptus, gaultheria and mentha, combined with baptisia, boric acid, rectified spirits and water have a stimulating effect upon the stomach and in proportion to the dose, an action inhibitive to fermentation of its contents; hence, Listerine is often corrective of those disorders associated with the endo-development of gases and acid eructations. A large tablespoon of Listerine in a wine glass of hot water will afford immediate relief.

LAMBERT PHARMACAL COMPANY <Twenty-first and Locust Streets,>
St. Louis, Mo., U.S.A.

THE HEALTH OF THE NATION

is of paramount importance and in a large measure depends on robust and healthy children.

NESTLÉ'S MILK

THE RICHEST IN CREAM

whether used as a complete diet for infants or as a supplementary food, has achieved remarkable results during three Generations.

While it contains all the life-giving vitamins of fresh milk, as indicated by exhaustive experiments made at the Lister Institute, Nestlé's Milk is absolutely clean and pure as well.

On tabulating reports of lengthy investigations concerning children reared on Nestlé's Milk, we arrive at these eloquent figures:—

For every 100 infants at the average age of 2½ years reported on:—

Deaths from disease	-	1.86%	Unwell at time of reporting	0.77%
Deaths from accidents	-	0.14%	In perfect Health	- 97.23%

NESTLÉ'S, 6 & 8, EASTCHEAP, LONDON, E.C.3.

THE FRENCH NATURAL MINERAL WATER

VICHY-CÉLESTINS

And the other State Springs of Vichy
(Property of the FRENCH STATE.)

**FERMENTATIVE DYSPEPSIA.**

When the secretion is vitiated in quality, and the motricity of the stomach weakens, that organ dilates, and the gastric stagnation allows the micro-organisms of many ferments to develop. Quite a series of acids are then to be met with (butyric, lactic, acetic, etc.), which not only irritate the mucosa, but further, after their passage into the intestine, become absorbed by the lymphatics and swept into the circulation. **Vichy-Célestins**, by its slightly stimulating action, clears out the stomach, and this avoids stagnation and consequent fermentation. As, in addition to doing this, it modifies stomachal metabolism, the secretions return little by little to their normal physiological condition.

CAUTION.—Each bottle from the STATE SPRINGS bears a neck label with the word "VICHY-ÉTAT" and the name of the SOLE AGENTS:—

INGRAM & ROYLE, Limited,

Bangor Wharf, 45, Belvedere Road = = = London, S.E. 1.

And at LIVERPOOL and BRISTOL.

Samples free to Members of the Medical Profession.



Energen

THE SPECIFIC DIABETIC BREAD.

ENERGEN BREAD is standardised and constant in composition. It is **unleavened and free from all ferments**, baking powder, or other admixture, and so perfectly pure and neutral that **it may be given when no other cereal foods are tolerated**. It is light, crisp and most palatable. Not only in diabetes, but also in obesity, indigestion, and other conditions it **renders valuable services to the dietitian**.

N.B.—Samples of Energen Bread and of any of the other Energen starch-reduced Products, sufficient for clinical or household trial, with analyses and description, sent on demand.

THERAPEUTIC FOODS Co., Ltd., 73, ENERGEN WORKS, WILLESDEN, LONDON, N.W.10.

E. TOSSE & CO., HAMBURG 22; and at NEW YORK, Wall Street 90/96.

Manufacturers of the Famous Antilueticum—

BISMOGENOL.

Agencies in all Countries, amongst others:—

SPAIN: JOSE M. SAGNIER VIDAL, Barcelona, Rambla Catalunya 104 1.^o
PORTUGAL: BETTENCOURT LDA, Lisbon, rua da Prata 8.
BRITISH INDIA, CEYLON and BURMA: B. G. JACK & Co.
Bombay, Raval Building, Lamington Road.
EGYPT, PALESTINE, SYRIA: WEISER'S PHARMACY, Cairo, Ave Fouad I.
CHINA: SIEMSEN & Co. Shanghai, 60 Kiangse Road Hong Yue Building.
ARGENTINE: EDUARDO RETIENNE, Buenos Aires, Sarmento 1131.

BRAZIL:

Rio de Janeiro: GRAF & BUSSE, rua da Quitanda 161.
Sao Paulo: ZAPPAROLI & SERENA LTDA, rua 15 de Novembro Nr 29.
Porto Alegre: ALBANO VOLKMAR, rua voluntarios da patria 52.
Pernambuco: JORGE WAIDER & Co., rua Primeiro de Marco 35 I.
Bahia: A. COSTA & Co., rua Grades de ferro 81
Para: PHARMACIA CEZAR SANTOS.

'GRANOLA' DIGESTIVE BISCUITS

Manufactured from the finest prepared wholemeal, pure butter, fresh eggs, milk and sugar. Full of nutrition, and suitable for eating with any beverage. Most acceptable for invalids.

Packed in artistically labelled tins or may be purchased in half-pound packets.

MANUFACTURED BY

Macfarlane, Lang & Co.
Limited,
GLASGOW & LONDON.

The finest of all Digestive Biscuits



SAMPLE SENT UPON APPLICATION.

Makers of the Celebrated
DINNER TOAST BISCUITS

W. H. BAILEY & SON'S CONSULTING ROOM COUCHES

LATEST REDUCED PRICES.

Fig. C.R. 1650

Bailey's "Belgrave" Consulting Room Couch, Mahogany, Oak or Walnut Frame. Upholstered hair and best Rexine Leather Cloth. Adjustable in positions. Best finish throughout. **£8 17 6**

Detachable Leg Section, **15s.**

Leg Crutches & Sockets, **£1 16s.**



Surgical Instruments and Appliances (NEW ADDRESS) 45, OXFORD STREET, } LONDON, W.1.
Hospital and Invalid Furniture - - - - 2, RATHBONE PLACE, }



Indicated in the treatment of Cardiac Valvular Lesions, Exophthalmic Goitre, Cardiac Neuroses, Dropsy resulting from Chronic Parenchymatous Nephritis, Scarlatina, Hepatic Cirrhosis, &c., Albuminuria in Pregnancy, &c.

Anasarcin
TRADE MARK

Samples and Literature
to the Medical Profession on
request to **THOMAS CHRISTY & Co.,**
4/12, Old Swan Lane, London, E.C. 4.
Distributors for British Isles.

Advertised to the Medical Profession only.
THE ANASARCIN CHEMICAL Co., Winchester Tenn. U.S.A.
Agents for India: SMITH, STANISTREET & CO., Ltd., Calcutta.

HOMMEL'S HÆMATOGEN

approved of for over 30 years by thousands of Doctors all over the world.

BLOOD-FORMING TONIC

Write for Free Sample and Literature to **HOMMEL'S HÆMATOGEN & DRUG CO.,**
36, St. Andrew's Hill, London, E.C. 4.

Vapo-Cresolene

Ensure sound sleep.

Vapo-Cresolene assures comfortable repose to all sufferers from Asthma, Bronchitis, Whooping Cough, Influenza, Coughs and Colds. Only those who have suffered can realise the instant relief of this cooling antiseptic vapour which does its beneficial work while the patient sleeps.

At all Chemists. Send for descriptive booklet No. 61 to—
ALLEN & HANBURYS LTD., Lombard Street, London, E.C. 3.

Ⓢ Ⓜ



TRADE
MARK

“STERULES”

TRADE
MARK

For HYPODERMIC, INTRAMUSCULAR and INTRAVENOUS USE and for INHALATION

List on Request—**W. MARTINDALE** (*Manufacturing Chemist*), 10, New Cavendish Street, LONDON, W.1
Telegraphic Address—“MARTINDALE, CHEMIST, LONDON.” *Telephone Nos.—LANGHAM 2440 and 2441.*

“ENTRAPURO”

(Registered)

GALE'S

“An ideal preparation for Mouth Hygiene.”

An agreeable concentrated Antiseptic for Mouth Wash, Gargle, etc.

PRICE LIST AND PILL CATALOGUE ON APPLICATION.

GALE & COMPY., Ltd., Wholesale Chemists and Druggists
(Established 1786)

15, BOUVERIE STREET, FLEET STREET, LONDON, E.C. 4.

Tel. Ad.: “Dreadnought, London.”

Phone: Central 3610 (2 lines).

NATURAL MINERAL WATERS

Bulletin Number 2

ON the Continent **MIRA APERIENT WATER** is used in Encephalitis, Meningitis, Meningum, Œdema, Dysentery, Accidental Constipation; while **MIRA MEDICINAL WATER** is used for Gastritis, Liver Disorders, Cholecystitis, Pyelitis, Gout, High Blood Pressure, and Chronic Constipation.

OTHER REPORTS.

Mira Medicinal Water has been successfully used to cure Pharyngitis due to constipation.

Rubinat - Llorach Water has recently been supplied to a mental asylum.

Ask for particulars, and free samples, of **Mira Aperient Water, Mira Medicinal Water, Mira Baby Laxative Water, and Rubinat-Llorach Water** from the Sole Importers—

EVERETT & CO. (Dept. L.U.), 5, Lloyd's Avenue, LONDON, E.C. 3.

Doctors and hospitals may have supplies of these waters at special prices; and on application to EVERETT & CO. may have free samples for purposes of test.



Influenza Prophylaxis.

PINEOLEUM BRAND INHALANT is a Chemically and Bacteriologically standardised preparation for the medication of the Mucous Membranes of the nose and throat.

It possesses a high index of inhibition against the organisms usually present in chronic and epidemic nasal catarrh and is particularly selective to Pfeiffer's Influenza Bacillus.

It will be found to be an ideal preparation for prophylaxis and treatment of Influenzal conditions.

FREE SUPPLIES of Pineoleum Brand Inhalant (including nebulizer) with Clinical Research Laboratory Certificate of Inhibition indices will be supplied to Physicians on application to:—

A.D.S. Co. (British Agents),
40-42, Lexington St., LONDON, W.I.

PRESCRIPTION (Humanised) GLAXO

Prescription Glaxo is a product which combines the advantages of a dried milk produced under the best possible conditions with those of milk so modified that it has the same low protein and high carbohydrate value as breast milk as the following analyses show:—

DRIED		LIQUID	
FAT	24.8	FAT	3.1
PROTEIN	13.6	PROTEIN	1.7
CARBOHYDRATE	55.2	CARBOHYDRATE	6.9
ASH	3.7	MINERAL MATTER	0.5
NATURAL CITRATES	0.4	WATER	87.8
MOISTURE	2.3		

The carbohydrate contained in Prescription Glaxo is Lactose only.

Reconstituted with hot boiled water, 1 in 8 (1 part of powder made up to 8 parts with boiled water, allowed to cool to about 160 F.

Prescription (Humanised) Glaxo is therefore practically identical in composition with average breast milk.

GLAX-OVO

"EVERY DROP SHEER NOURISHMENT"

In the short time that it has been on the market, this new food-drink has met with an increasingly favourable reception from the Medical and Nursing Professions.

Glax-ovo contains milk, malt extract, and cocoa, together with the "Vitamin Concentrate" which is extracted from its richest known source, cod-liver oil. Glax-ovo "provides a means of obtaining the benefit of cod-liver oil without its unpleasant qualities of flavour and repetition."—*The Lancet*, Sept. 27, 1924

Note.—This "Vitamin Concentrate," which is incorporated in Glax-ovo alone, is now sold under the registered name of "OSTELIN." In this form the actual substance is diluted with glycerine so that three drops of the glycerine suspension are equivalent to one teaspoonful of cod-liver oil.

Prepared by the Glaxo Laboratories,
London, N.W.1. Samples and special literature concerning these products will gladly be sent on receipt of name and address

An Improved Method of
Administering Paraffin Oil

Magnolax Emulsion OF B. P. Paraffin Oil

A pleasant tasting and stable combination of
Liquid Paraffin and Magma Magnesia

Lubricates Intestinal Walls and Softens The Contents

Magnolax, softens the food waste and at the same time gently lubricates the intestinal walls, allowing the contents to pass naturally out of the system. Indicated in all cases of chronic constipation, assisting and maintaining normal bowel action.

Samples and literature free to Physicians upon application to **FRANCIS NEWBERRY & SONS, LTD.**, 31-33, Banner St., London, E.C. 1.

MADE IN CANADA BY

Henry K. Wampole & Co., Limited

PERTH, ONTARIO, CANADA,

Intractable Cases of ANÆMIA and CHLOROSIS

respond quickly to treatment with

"FERRIGEN" AMPOULES

(Soluble Iron Arsenate)

Prepared in the Laboratory of

ROBERTS & CO.,

PHARMACIENS,

LONDON : 76, New Bond St. W.

and at Paris.

Samples free to Members of the Medical Profession.

IODOSAL

(Iodized Salt).

Treatment for Goitre.



THE incorporation of Iodine in Table Salt has been definitely accepted by the Medical Profession as a curative agent for the treatment of simple Goitre. **IODOSAL** is a pharmaceutically standardized preparation, carefully manufactured by a special process under the strict supervision of competent qualified chemists. The prescribing of **IODOSAL** ensures uniformity of Iodine content, and is of assistance in obtaining correct therapeutic data.

Supplied in Bottles 8-oz. and 16-oz.

Liberal Free Samples to the Medical Profession.

FRANCIS NEWBERRY & SONS, LTD.,

Manufacturing Chemists,

27/28, Charterhouse Square, London, E.C. 1.

Branches at Cardiff and Liverpool.

DIGITALINE

**DIGITALINE NATIVELLE
CRISTALLISEE**

INVARIABLY TRUSTWORTHY

Awarded by the ACADÉMIE DE MÉDECINE DE PARIS the Prix Orfila (6,000 frs.) 1872 and 1904 the Prix Desportes
GIVES DEFINITE RESULTS

NATIVELLE'S

Granules 1/240th grain and 1/600th grain.
Solution (1 per 1000) 30 drops—1 millig.
Ampoules 1 c.c. corresponding to 1/10th and 1/4th millig.

Prepared in Laboratoire Nativelle, Paris.

Agents for Great Britain,
WILCOX, JOZEAU & CO.,
15, Great St. Andrew St., London, W.C.2

Literature and samples free on application with professional card from Wilcox, Jozeau & Co.

DIGITALINE



'Imperial Bee'

NEW ZEALAND HONEY

A British Empire Product Throughout

GUARANTEED PURE and WITHOUT PRESERVATIVES this HONEY contains the essential vitamins.

It is all nutriment, easily digested and mildly laxative. A doctor writes to THE LANCET that HONEY is better than milk and beef extracts for general physical repair, and above all, for heart failure.

Ask for 'Imperial Bee' NEW ZEALAND HONEY at Stores, Grocers, Chemists and Dairies. It is a soft, thick, creamy, delicious HONEY.

*In 1's and ½'s Screw-top
Glass Jars and Monopots.*

If unable to obtain locally, write, giving name and address of your dealer, to A. J. MILLS & CO., Ltd., 14, Tooley Street, London, S.E. 1.

A. & P.S.24

PULMO (BAILLY)

A Marked Advance in Scientific Pharmacy

*Ensures the remineralisation of the Organism
and the Encapsulation of Bacillary Lesions*

PULMO, unlike the old-fashioned pharmaceutical preparations of phosphates and calcium, which were not assimilated, but passed through the body unchanged, contains these mineral substances in the ionized state (introduced by Prof. Stephane Leduc and Dr. A. Bouchet). Consequently they are eminently active, and ready to form stable combinations with the constituent elements of the organism.

PULMO is indicated in Influenza, Catarrh, Colds, Laryngitis, Tracheitis, Bronchitis, Asthma, Pneumonia, and all Pre-Tubercular states.

PULMO has a world-wide reputation among Medical men, as a most efficient combination of those principles which act specifically on the diseased tissues and morbid secretions of the Respiratory Tract.

Manufactured by A. Bailly, Laboratoires

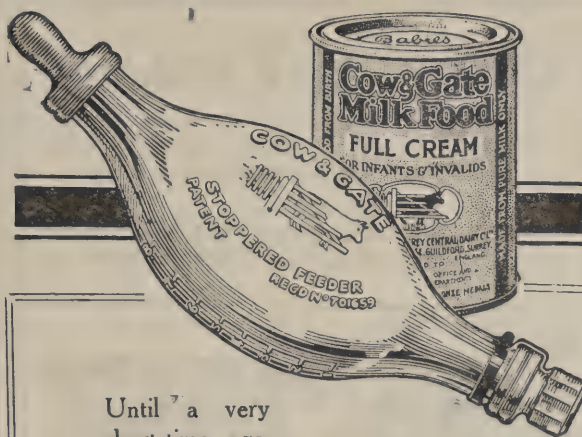
15, Rue de Rome, PARIS.

Samples and Literature on application to the

Sole Agents:

Bengue & Co., Manufacturing Chemists,

52, Charlotte Street, Oxford Street, London, W.1



Until a very short time ago, the bottle-fed baby and his mother were at a distinct disadvantage. Feeding time was attended with various discomforts, then thought inseparable from the bottle method.

The new Cow & Gate Feeder—simple, efficient and hygienic—is the outcome of careful study of Baby's sucking power; no leakage, no hand-tiring, no guess-work.

There are numerous new and important features in the Cow & Gate Feeder. The flow of food can be nicely regulated by the zig-zag groove in the octagonal glass-stopper (secured by a moveable rustless clip so that Baby cannot remove it.) Clearly marked for ounces and table-spoons. Patent pure rubber teat, internally ribbed so that it has only to be rolled between the fingers to be cleared of any secreted food, but cannot be slipped off by Baby. Bottle has a flat base, and can be stood without food reaching the teat.

Stopper, clip and teat can be removed by Mother in three seconds, and the bottle flushed from end to end. The whole Feeder is well-balanced, easily held, and cannot get out of order in any way. It realises the dream of thousands of Mothers and Nurses.

Cow & Gate STOPPERED Feeder

Obtainable from **2/-** Complete in
all Chemists. Cartons.

*Should any difficulty be found in obtaining, write direct to
DEPT. I, COW & GATE HOUSE, GUILDFORD, SURREY.*

DIAMALT (PLAIN)

A highly concentrated Extract of Barley with a reputation for purity, high digestive power, and high protein content.

Analytical report states :—

"The results show 'DIAMALT' to be a thoroughly satisfactory preparation of the highest degree of excellence."

DIAMALT
WITH **33% COD LIVER OIL**
REGD TRADE MARK

Equivalent to over 40% by measure.

Cod Liver Oil is the most easily assimilable of all fats employed to improve nutrition in wasting diseases. It is estimated to contain about 200 times the amount of fat soluble vitamin present in butter.

In 1 lb., 2 lb., and 4 lb. jars.

THE BRITISH DIAMALT CO.,
SAWBRIDGEWORTH, HERTS.

Pepsodent
TRADE MARK

The Modern Dentifrice.

**IRVING'S
YEAST-VITE TABLETS.**

The New Yeast Vitamin Treatment.

We hold high medical testimony showing efficacy in cases of **DIABETES, SEPTICÆMIA, PYÆMIA**, skin blemishes and other disorders of the blood.

They act with quick stimulating effect on the pancreas, liver and kidneys.

The antipyretic, anodyne and analgesic action is more pronounced than that of the usual coal tar derivatives, without unfavourable reaction, and have the advantage of rapid assimilation.

Of value as a vitaliser and rejuvenator.

Recommended as a nerve sedative, and of considerable value in moderating menstrual and labour pains.

We supply (without charge) to physicians, hospitals, clinics and nurses sufficient supplies for exhaustive tests.

IRVING'S YEAST-VITE LABORATORIES,
29, RED LION STREET, CLERKENWELL, E.C.1.
Phone: Clerkenwell 1424.

**PROMONTA
NERVE RESTORATIVE**

Test it yourself. Gratis sample sent to Doctors.

ANGLIN & Co. 68, Milton Street, London, E.C.

ORAL SEPSIS.

**"EUMENTHOL
JUJUBES"**

(HUDSON)

Made in Australia.

A Gum pastille containing the active constituents of well-known Antiseptics, Eucalyptus Polybractea (a well-rectified Oil free from aldehydes (especially valeric aldehyde), which make themselves unpleasantly noticeable in crude oils by their tendency to produce coughing), Thymus Vulg., Pinus Sylvestris, Mentha Arv., with Benzo-borate of Sodium, &c., they exhibit the antiseptic properties in a fragrant and efficient form. Non-coagulant antiseptic and prophylactic, reducing sensibility of mucous membrane.

THE LANCET says:—

"In the experiments tried the Jujube proved to be as effective bactericidally as is Creosote."

Mr. W. A. DIXON, F.I.C., F.C.S.,

Public Analyst of Sydney, after making exhaustive tests, says:—

"There is no doubt but that 'Eumenthol' Jujubes have a wonderful effect in the destruction of bacteria and preventing their growth.... I have made a comparative test of 'Eumenthol' Jujubes and Creosote, and find that there is little difference in their bactericidal action."

THE PRACTITIONER says:—

"They are recommended for use in cases of oral sepsis, a condition to which much attention has been called in recent years as a source of gastric troubles and general constitutional disturbance, and are also useful in tonsillitis, pharyngitis, &c."

THE AUSTRALASIAN MEDICAL GAZETTE states:—

"Should prove of great service."

LONDON AGENTS:

Wholesale:—F. NEWBURY & SONS, LTD.,
27 & 28, Charterhouse Square.

FREE SAMPLES forwarded to Physicians on receipt of professional card by F. Newbury & Sons, Ltd.

Retail:—W. F. PASMORE, Chemist, 320, Regent Street, W.
Manufactured by G. INGLIS HUDSON, Chemist,

FOR

HUDSON'S EUMENTHOL CHEMICAL CO., LTD.,
Manufacturing Chemists, 31, Bay St., SYDNEY, AUSTRALIA.

**Distillers of Eucalyptus Oil Rectified by
Steam Distillation.**

Manufacturers of Pure Eucalyptol (Cineol).

SULFARSENOL.**THE ARSENOBENZENE OF CHOICE IN THE TREATMENT OF SYPHILIS.**

(In use in the Civil and Military Hospitals in France.) Of all forms of Arsenobenzene **SULFARSENOL** is:

THE LEAST DANGEROUS because it is free from arsenoxide; because it is from 2 to 5 times less toxic than the other Arsenobenzenes, because, being freely soluble, it may be injected intravenously, intramuscularly, or subcutaneously with equal satisfaction and without a special menstruum.

THE MOST EFFICACIOUS because the variety of its modes of administration permits of its application to the exigencies of each particular case, and renders possible the intensive treatment by cumulative doses which secures a therapeutic effect as rapid as it is thorough and permanent.

N.B.—**SULFARSENOL** has a specific action on the acute complications of Gonorrhoea; relief follows the first injection (18-24 centigr.), and subsidence without relapse in a few days.

LABORATORY of MEDICAL BIOCHEMISTRY, 36, Rue Claude-Lorrain, Paris (16).

General Agents for Great Britain:

WILCOX, JOZEAU & CO., 15, Great St. Andrew Street, W.C.2.

BRAND'S**ESSENCE OF BEEF**

Recognised by Medical Men for nearly a century as a marvellous stomachic without an equal in the treatment of cases of Gastric Trouble, Fevers, Impaired Digestion, Nervous Prostration, and similar diseases.

Guaranteed Pure and free from Preservatives.

BRITISH MADE, and prepared at the Dietetic Laboratories of

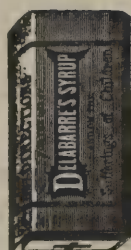
BRAND & CO., LTD., MAYFAIR WORKS, VAUXHALL, LONDON, S.W.8

**MEAT JUICE**

Described by "The Lancet" as "a powerful, nourishing and stimulating fluid." Rich in uncoagulated proteid, extractives and salts derived from the fresh muscle juices of the finest British Beef.

**DELABARRE'S SYRUP**

Children's first teeth



Saffron and Tamarind without any Narcotic

Rub softly the gums with the Syrup to calm first teeth aches, ease the coming out of the teeth, and cure first teeth diseases.

ÉTABLISSEMENTS FUMOUEZ
78, Faubourg Saint-Denis, PARIS.

Sole Representatives and Distributing Agents:
MANSON'S (LONDON), LTD.,
101, Hatton Garden, London, E.C.1.



PRUNOL Prune Jelly consists of Selected Prunes, Demerara Sugar, Senna and Ginger. This Recipe is approved by the Medical Profession as the finest known remedy for Children and Adults in all cases of Constipation, Colitis and intestinal Toxæmia (which is so often the true cause of Anæmia and general debility). **PRUNOL** Prune Jelly does not become a habit.—Of all Chemists, 1s. 10d. or of **PRUNOL, Ltd.** 4, Pickering Place, London, S.W.1.

**Foot Troubles Ended**

Scholl's Anterior Metatarsal Arch Support, for restoring the arch across the ball of the foot, etc. Price per pair, 12/6

Scholl's Foot Comfort Appliances

give instant relief and permanent correction to every type of foot trouble.

Booklet "The Feet and Their Care" sent free on request.

THE SCHOLL MFG. CO., LTD., 8K, Cheapside, London, E.C.2.

Highly
Specialised
Service in
Expert Making
and Fitting of

ALL
ORTHOPÆDIC
and
ANATOMICAL
APPLIANCES

A. E. EVANS

38, Fitzroy Street,
LONDON, W.1.

EST
1890

Phone

MUSEUM 4738.

MAKER TO—

Royal National Orthopædic Hospital,
Royal Surgical Aid Society,
Industrial Orthopædic Hospital,
War Office, India Office, & General Hospitals

APPARATUS

for Spinal Curvature, Tuberculous Joints, Fractures, Paralysis, and all Deformities.

SURGICAL BELTS

for all Abdominal troubles.

TRUSSES

for all Hernia

ARTIFICIAL LIMBS

for all Amputations.

SURGICAL BOOTS

for all Deformities of Feet.

Thin .. Light .. Quite Invisible!

Securely fixed
with *Phillips*
Solution Only.

Ladies' . . 2/6
Men's . . 3/6
per pair with
Phillips Solution.
Fixing extra.

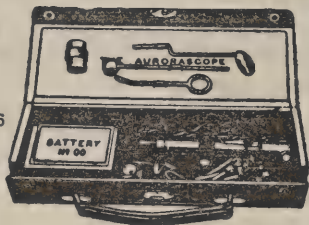
From all good
Boot makers.

PHILLIPS
PRESIDENT
STICK-A-SOLES



THE SPECIAL
HOSPITAL AND
COLONIAL
PATTERN
OUTFIT.

Price £3-10-6
or in
Solid Leather
Case £4-4-0
Postage in
U.K. 1/6



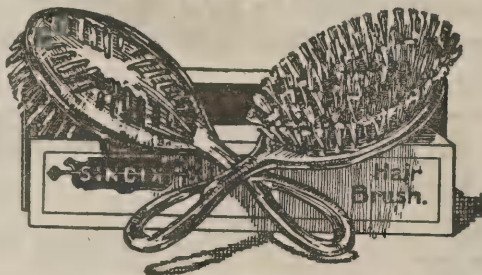
DEES AURORASCOPE (PATENT)
The G.P. Pocket Throat and Ear Outfit.

A NOVICE can see at the bedside, in daylight, the Vocal Cords, Drum of the Ear, Optic Disc, Transillumination of the Antrum and Sinuses, and everything in the range of Rhinology, Ophthalmology, Laryngology and Aural Surgery. Certified correct by Specialists and Leaders of the Profession.

PRICES: Leather Wallet, £2 2 0. Postage in U.K. 1/-.
Adaptor, Flex (Conversion), including Special Battery for four hours' permanent lighting, 12/6.
Fundus Attachment, 2 0.

AURORASCOPE CO., LTD., Fulwood House, Fulwood Place, Holborn, W.C. 1
(side of Chancery Lane Tube Station), where Demonstrations are given daily.
Electric Instruments cannot be sent on approval.

**EVERY DOCTOR
WILL APPRECIATE**



the hygienic excellence of a Sindix Hairbrush. Any Doctor, who sees and tries one, will both use it and recommend it. Many have done so already, and it is being used in a large number of clinics. If you have not already tried a Sindix, we will gladly send you one for a 3 days' test. Then send 12/6 for either handled or military shape, if you are satisfied. Otherwise, return the brush and there is no charge or obligation.

The back is of polished aluminium, perforated to allow instant, thorough cleansing. The "bristles" are fine, glistening chromaloy wire, which penetrate the hair and stimulate its growth, but do not irritate the scalp. The whole brush can be boiled, soaked in disinfectants, or passed over the flame of a spirit lamp without injury. Awarded a Certificate by the Institute of Hygiene, it is "the clinic brush."

RAZOR BLADES.—If you use a Gillette type razor write to us for a free trial Sindix blade. They are made by a new process, hollow ground, 2/6 doz.

SINDIX Ltd. 3, Duke Street, Adelphi,
LONDON, W.C. 2.

Telegrams :
Bathchair
Wesdo,
London.

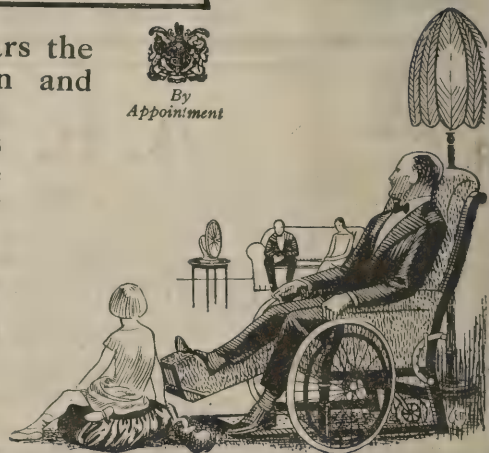
CARTERS
INVALID FURNITURE

Telephone :
Langham
1040.

ALL over the World for Eighty years the name of Carter has been known and appreciated by thousands of invalids. No longer are they a burden to themselves or to others but are contented and happy in the perfect comfort and ease of movement they have acquired through Carters Invalid Furniture.

Self-propelling Chairs, Bath Chairs, Hand Tricycles, Reclining Chairs . . . particulars of these and every other kind of Invalid Furniture will be readily sent on request.

125, 127, 129, GREAT PORTLAND STREET,
LONDON, W. 1.



*Why not send Patients suffering
from Foot Trouble to*

CHARLES H. BABER.

The majority of cases only require the ARCH PRESERVER SHOE, fitted by my "Heel-to-Ball" method, in order to get relief.

My Shoe Fitting Service includes the examination of the feet by X-ray without extra charge. This, combined with my "Heel-to-Ball" method of fitting, and the supplying of "ARCH PRESERVER SHOES" where necessary, ensures an absolutely perfect fit and correct support for the arch of the foot.

I have given relief to thousands who have suffered from foot troubles. If you can spare the time to call I shall be pleased to demonstrate my method and show you how completely my Shoe Fitting Service surpasses all others.

Charles H. Baber.

OPPOSITE THE POLYTECHNIC,
Regent Street, W. 1.

Telephone: Mayfair 5212-3. Charles H. Baber, Ltd.

NOTE! Upper Regent Street is being repaved during March and April. Your chauffeur can use Margaret Street, where we have a side entrance in Langham House.

The Doctors' Portable Remington

possesses all the recognised advantages of this wonderful portable machine, plus a keyboard containing the special symbols used by the profession. It has the big machine four-bank keyboard arrangement, 42 keys writing 84 characters. No shifting for figures.

A Helpful Time-saver

The busy doctor will find the light, handy, serviceable Remington indispensable to his practice and a great time saver. It turns out work of the highest legibility and accuracy at astonishing speed. A special Drug Label Attachment enables neatly typed labels to be produced as required.

The Remington Portable is the most complete of all portable typewriters—with four-bank keyboard, automatic ribbon reverse and every feature common to the big machines. Yet it fits in a case only four inches high. So handy it can be used anywhere, and so small it can be tucked away in a corner when not in use.

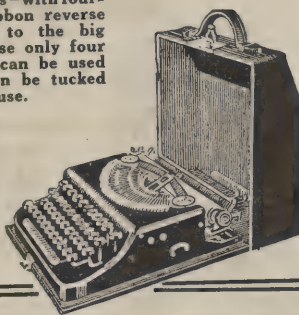
Write for Illustrated Folder "L.P."

Remington Typewriter

:: Company Ltd. ::

100, Gracechurch Street, London,

and BRANCHES.



CATALOGUE of SECONDHAND SURGICAL INSTRUMENTS, OSTEOLOGY MICROSCOPES POST FREE.



Students' Half Sets of Osteology. Articulated Skeletons and Disarticulated Skulls.

Secondhand Surgical Instruments, Osteology and Microscopes bought, sold and exchanged.

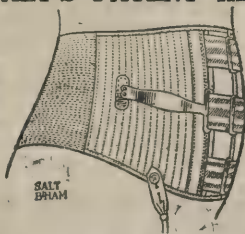
MILLIKIN & LAWLEY, 165, STRAND, LONDON, W.C.2.

Telephone
City 1706

SALT & SON LTD

SALT'S PATENT KIDNEY BELT (OVER 20,000 (ALREADY SUPPLIED,))

THE
MOST
EFFICIENT
SUPPORT
DEvised



SECTIONAL
VIEW
SHOWING
SPRING
PRESSURE
ON INNER
INFLATABLE
PAD.



CORSETS
ALSO
MADE
WITH
SAME
SUPPORT

Orthopaedic
Appliance
Specialists

Artificial
Limb
Manufacturers

WRITE FOR PARTICULARS AND MEASUREMENT FORMS.

Established
1793

6 CHERRY ST.

BIRMINGHAM

and at
LONDON

"Tycos"Stocked by reputable
Dealers everywhere.ARTERIAL PRESSURES
are quickly gauged with
this instrument, whose
unique diaphragm action
ensures constant accuracy
and infinite utility.
*Invaluable in Surgery***SPHYGMOMANOMETER***Full particulars from the makers:*
SHORT & MASON, LTD.,
Aneroid Works, Walthamstow, London, E.17**DR. CHAUMIER'S**GLYCERINATED
AND REINFORCED**CALF LYMPH**

THE CHEAPEST AND MOST ACTIVE LYMPH

PREPARED UNDER THE MOST MINUTE ANTISEPTIC PRECAUTIONS.

Supplied in Tubes, sufficient to vaccinate 1 or 2 persons, at 8d. each; 10 persons at 1s. 3d. each, 25 persons at 2s. 3d. each. Collapsible tubes for 40 vaccinations 3s. 9d. each. Postage and packing 2d. each extra.

ROBERTS & CO., 76, New Bond St., London, W.1.**'B.P.' ANTHRACITE FUEL**
(Egg Shape)The Ideal fuel for Sick Rooms, Hospital Wards, etc.
Also for Central Heating and Open Grates.
Low Cost, Durable, Good Heat.*Free Sample sent if desired.*

Truckloads to any Station.

SALES AGENTS:

W. H. ESSERY & CO., Ltd., SWANSEA.**J. H. HAYWOOD, LTD.,**

DEPT. "B," Castle Gate, NOTTINGHAM.

*ESTABLISHED 1833.*Experts in Special Articles to Measure, Surgical Corsets,
Brassieres, Abdominal Belts, Trusses (Spring and Elastic
Band). Elastic Hosiery. Orthopaedic Instruments. Poroplastic
Jackets, and Nursing Requisites.

ADVICE FREE. PRICES ON APPLICATION.

THE EARLIEST HYGIENIC SHOEMAKERS.

[ESTABLISHED SINCE 1824.]



The instructions of the Profession intelligently carried out.

In addition to the departments for **Ladies and Gentlemen**, special attention is given to provide properly shaped shoes for **Children**, parcels of which can be forwarded on approval to any part of the country. Please send outlines of the feet.

DOWIE & MARSHALL have had great experience in the shoeing treatment of weak ankles and flat feet.

DOWIE & MARSHALL, Ltd., 455, West Strand, London, W.C. 2.

G.P.O. Telephone

No 9015 Central.

**MEDICAL CORRESPONDENCE
COLLEGE**

19, WELBECK STREET, LONDON, W.1.

Telephone: LANCINGHAM 1166

PROVIDES HIGHLY SUCCESSFUL ORAL AND POSTAL
COACHING FOR ALL MEDICAL EXAMINATIONS.**Special Preparations for all Surgical Qualifications****F.R.C.S. ENGLAND**

(Primary and Final)

Ch.M. EDINBURGH**M.C. CANTAB.****F.R.C.S. EDINBURGH****M.S. LONDON**

And all other Surgical Degrees and Diplomas.

- † The remarkable success of Students of the Medical Correspondence College at the higher Surgical Examinations is specially noteworthy.
- † Both at the Primary and Final F.R.C.S. England the majority of our Students are successful at the first attempt, and Candidates who have failed at these Exams. on several previous occasions get through without difficulty after going through our courses.
- † The Surgical Tutors of the College all hold either the M.S. Lond. or F.R.C.S. England, or both, and are highly experienced teachers.
- † The Postal Courses are thoroughly clear, concise, and up-to-date, and the test questions are carefully selected from those set at previous Examinations so as to embrace all parts of the subject. By working systematically through the Course the Student is brought up to the examination standard in the minimum time and much unnecessary reading is saved.

VALUABLE BOOK*"How to Pass the F.R.C.S." free on application to the Secretary*
50**PRELIMINARY EXAMINATIONS FOR MEDICAL
AND DENTAL STUDENTS.**

The College of Preceptors holds Preliminary Examinations in March, June, September, and December. For regulations, apply to the Secretary, College of Preceptors, Bloomsbury-square, London, W.C.1.

**LONDON SCHOOL OF HYGIENE AND
TROPICAL MEDICINE,
DIVISION OF TROPICAL MEDICINE & HYGIENE,
ENDSLEIGH GARDENS, N.W.1.**

Next Session will commence 20th April, 1925.

The number of students applying to take this course is already so large that it is desirable that any further applications should be sent in without delay; later applications may have to be refused owing to the pressure on the available accommodation.

For prospectus and further particulars apply to the Secretary, Endsleigh Gardens, Euston, N.W.

**POST-GRADUATE TEACHING.
WEST LONDON HOSPITAL.**Continuous Clinical work in all Departments.
Clinical Assistantships. F.R.C.S. Final Course.
For further particulars apply to Mr. H. J. SIMSON, Dean,
West London Hospital, Hammersmith, W. 6.**CITY OF LONDON MATERNITY HOSPITAL**

MIDWIFERY SCHOOL, City Road, E.C. 1.

MEDICAL STUDENTS admitted to HOSPITAL PRACTICE,
with Operative Midwifery and Obstetrical Complications.
PUPILS TRAINED as MIDWIVES and MONTHLY NURSES
in accordance with Central Midwives Board regulations.
CERTIFICATES awarded as required by Examining Bodies.

PRIVATE WARDS for PAYING PATIENTS.

For particulars apply to

RALPH B. CANNINGS, Secretary.

The James Mackenzie Institute for CLINICAL RESEARCH, ST. ANDREWS (LATE ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH).

A Four Weeks' Course of Post-graduate Study for a limited number of General Practitioners will be held in this Institute, commencing upon Tuesday, 2nd June, 1925.

The Course will consist of Lecture-Demonstrations dealing with the Symptomatology of Disease on the lines laid down by the late Sir James Mackenzie, and will be supplemented by Demonstrations on subjects of Clinical interest in Anatomy, Physiology, Chemistry, Bacteriology, Ophthalmology, and Radiology.

The Fee for the Course is £5 5s.

As the Class will be limited in numbers, Graduates desirous of attending this Course should communicate as early as possible with

The Secretary,
The James Mackenzie Institute for Clinical Research,
St. Andrews,
who will send them full particulars, and will be glad to advise them with regard to securing rooms in St. Andrews.

University of Durham College of MEDICINE, Newcastle-upon-Tyne.

The SUMMER SESSION will be commenced on Tuesday, April 14th, 1925.

DEGREES in MEDICINE, SURGERY, HYGIENE, and DENTISTRY, DIPLOMAS in PUBLIC HEALTH and PSYCHIATRY, and LICENCE in DENTAL SURGERY.—Nine Degrees, two Diplomas, and one Licence are conferred by the University of Durham—viz., The Degrees of Bachelor of Medicine, and Bachelor of Surgery, Doctor of Medicine, Master of Surgery, Doctor of Surgery, Bachelor of Hygiene, Doctor of Hygiene, Bachelor of Dental Surgery, and Master of Dental Surgery; Diploma in Public Health, Diploma in Psychiatry; and Licence in Dental Surgery.

These Degrees, &c., are open to both Men and Women.

Particulars with regard to examinations, &c., and all other matters connected with the College may be obtained from Professor HOWDEN, Registrar, College of Medicine, Newcastle-upon-Tyne.

UNIVERSITY OF CAMBRIDGE.

DIPLOMAS in (a) PUBLIC HEALTH, (b) HYGIENE (FOR FOREIGN GRADUATES), (c) TROPICAL MEDICINE AND HYGIENE.

Courses of instruction in the subjects of the examinations will commence 12th October, 1925. Full particulars to be obtained from Mr. J. E. PURVIS, Public Health Chemical Laboratory, Medical School, Cambridge.

UNIVERSITY EXAMINATION POSTAL INSTITUTION.

Postal or Oral Preparation for all Medical Examinations.
(Forty years' experience in postal tuition.)

SOME SUCCESSES

M.D.(Lond.), 1901-24 (9 Gold Medallists 1913-24) **275**
M.S.(Lond.), 1902-24 (including 3 Gold Medallists) **18**
M.B., B.S.(Lond.), Final, 1906-24 (completed exam.) **171**
F.R.C.S.(Eng.), 1906-24, Primary **116**; Final **90**
F.R.C.S.(Edin.), 1918-25 **25**
M.R.C.P.(Lond.), 1914-25 **85**
D.P.H. (various), 1906-24 (completed exam.)... **237**
M.R.C.S., L.R.C.P. Final, 1910-25 (completed exam.) **256**
M.D. (Durham) (Practitioners), 1906-24 **33**
M.D. (various), by Thesis. Many Successes.
Preparation for **M.B.(Camb., etc.), D.P.M., D.O.M.S.,**
D.T.M. & H., D.L.O.; R.A.M.C.

ORAL CLASSES

M.R.C.P. M.D. M.B., B.S.
F.R.C.S. Conjoint (Second and Final).

Small Clinics in Medicine and Surgery.

Museum and Microscope Work. Also Private Tuition.

For MEDICAL PROSPECTUS (32pp.) and particulars about any examination, List of Tutors, List of Successes, &c., apply to the Principal, Mr. E. S. WEYMOUTH, M.A., 17, Red Lion Square, London, W.C. 1. (Telephone Central 6813.)

North-East London Post-Graduate COLLEGE.

PRINCE OF WALES'S GENERAL HOSPITAL, TOTTENHAM, N.15

The Practice of the Hospital is limited to Medical Practitioners. Particulars and prospectus from A. J. WHITING, M.D., Dean.

York Road (General Lying-in)

HOSPITAL, Lambeth, S.E. Established 1765.

Patrons: H.M. the Queen and H.M. Queen Alexandra.

Medical Students and qualified Practitioners admitted to the Practice of this Hospital.

Telephone: 794 Central. For rules, fees, &c., apply
ROSE E. WHYTE, Secretary.

Liverpool School of Tropical Medicine.

Courses of Instruction (lasting three months) for the Diploma and also in Veterinary Parasitology, commence about September 15th and January 7th. Prospectus from the Hon. Dean, School of Tropical Medicine, University of Liverpool.

YOUR FUTURE SAVINGS.

You may guarantee your savings
to your family if you die and to
yourself if you live by means of
An **ENDOWMENT POLICY.**

THE PRUDENTIAL ASSURANCE CO., LTD.,
HOLBORN BARS, LONDON, E.C.1.

Telephone: LANGHAM 2728

Telegrams: "ASSISTIAMO, LONDON"

For MEDICAL, SURGICAL, and

MENTAL NURSES

Male or Female.

Our nurses are chosen carefully for their personal character and their suitability for private work. They reside on the premises, and are available for urgent cases Day or Night.

(Mrs.) MILLICENT HICKS, Superintendent.
W. J. HICKS, Secretary.

THE NURSES' ASSOCIATION

In conjunction with the MALE NURSES' ASSN.

29, YORK ST., BAKER ST., LONDON, W.1.

ST. LUKE'S HOSPITAL.

Established 1761.

PRIVATE NURSING STAFF DEPARTMENT.

TRAINED NURSES for Mental and Nervous Cases can be had immediately. Apply to LADY SUPERINTENDENT, 19, Nottingham Place, London, W.1. Telephone: Mayfair 5420.

NORTHERN BRANCH. — Apply, LADY SUPERINTENDENT, 57, Clarendon Road, Leeds. Telephone: Leeds 26165.

MENTAL NURSES ASSOCIATION, Ltd. (MALE & FEMALE)

8, Hinde Street, Manchester Sq., London, W.1.

SUPERIOR CERTIFICATED MENTAL NURSES (MALE AND FEMALE) SUPPLIED AT A MOMENT'S NOTICE. DAY OR NIGHT.

LADIES' TRAVELLING COMPANIONS. For all MENTAL AND NERVE Cases. All Nurses fully insured against Accident. Telegrams: "Isolation, London." Terms: £2 12 6 to £3 3 0 Apply:—SECRETARY. Telephone: Mayfair 2287.

LONDON: 43, NEW CAVENDISH STREET, W.1.
MANCHESTER: 176, OXFORD ROAD.

GLASGOW: 23, WINDSOR TERRACE.
DUBLIN: 23, UPPER BAGGOT STREET.

NURSES MALE AND FEMALE

CAVENDISH TEMPERANCE MALE NURSES' CORPORATION, Ltd.

TELEGRAMS:

Tactear, London. Surgical, Glasgow.
Tactear, Manchester. Tactear, Dublin.

Superior trained Nurses for Medical, Surgical, Mental, Dipsomania, Travelling and all cases. Nurses reside on the premises, and are always ready for urgent calls Day or Night. Skilled Masseuses, Masseurs, and good Valet attendants supplied.

TELEPHONES:

London, 1277 Mayfair. Glasgow, 477 Douglas.
Manchester, 5213 Central. Dublin, 531 Ballsbridge.

Terms from £3 3s. Apply to the Secretary or Lady Supt.

NURSES MALE & FEMALE ASSOCIATION, LIMITED.

All Members of our Staff are Total Abstiners

24, NOTTINGHAM ST., LONDON, W.1. Telegrams: "Gentlest, London." Telephone: Mayfair, 5969.

CERTIFICATED HOSPITAL NURSES (Male and Female) AVAILABLE DAY AND NIGHT FOR MEDICAL, SURGICAL, MENTAL, AND ALL CASES.
TERMS from £3 3s. ALL NURSES ARE FULLY INSURED AGAINST ACCIDENT. Apply. M. J. QUINLAN, Secretary.

CO-OPERATION OF TEMPERANCE

MALE & FEMALE NURSES

60, WEYMOUTH STREET, PORTLAND PLACE, LONDON, W.1.

Reliable and Experienced Nurses for all Cases at all Hours.

Special Staff for Mental "Borderline," Neurasthenia, and Nerve Cases.

Telephone: MAYFAIR 2253.

Telegrams: "NURSINGDOM, LONDON."

Terms £3 3 0 to £4 4 0 per week.

Apply M. SULLIVAN, Secretary.

MALE NURSES TEMPERANCE CO-OPERATION, LTD.

TRAINED MALE NURSES AND VALET ATTENDANTS for MENTAL MEDICAL, TRAVELLING AND ALL CASES.

8 HINDE ST., MANCHESTER SQ., W.1.

MANCHESTER—237, BRUNSWICK STREET (Facing Owens College)
EDINBURGH—7, TORPHICHEN STREET

Terms from £3 13 6 to £4 4 0

ALL NURSES ARE FULLY INSURED AGAINST ACCIDENT



Telephones:

London: 3297 MAYFAIR. ASSUAGED, LONDON.
Manchester: 4699 CENTRAL. ASSUAGED, MANCHESTER
Edinburgh: 2715 CENTRAL. ASSUAGED, EDINBURGH.

Telegrams:

Please address all communications W. WALSHE, Secretary.

MAYFIELD, ROTHSAI ROAD, BEDFORD

Telephone: 872.

Private Home for Mild Mental, Paralysis and Chronic cases.
Special attention given to Borderland patients.
Terms 4 gns. weekly. Apply, Medical Officer or Matron.

CLARENCE LODGE, CLAPHAM PARK, LONDON.

Situated in 3½ acres of secluded gardens.



HOME FOR TWELVE MENTAL PATIENTS (LADIES).

Well appointed private house. Home comforts and Trained Nursing Staff. Eminent Mental Specialist Visiting Physician.

Station: Clapham Common Tube.
Phone: Brixton 494.

Apply:
MRS. THWAITES.

THE COPPICE, NOTTINGHAM.

HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. For terms, &c., apply to the Medical Superintendent.

NORTHUMBERLAND HOUSE, 344-354, GREEN LANES, FINSBURY PARK, N.4.

A PRIVATE HOME for the treatment of Ladies and Gentlemen suffering from Mental and Nervous Affections. Highly situated, facing Finsbury Park.

Voluntary Boarders received without certificates.
For particulars apply to the Resident Physicians.
Telephone No. 888 North. Telegrams: "SUBSIDIARY, LONDON."

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.

Terms Moderate. Apply to Resident Medical Superintendent.
Telegrams: ADAM, WEST MALLING. Telephone: No. 2 MALLING.**THE WARNEFORD, OXFORD,**
HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

BARNWOOD HOUSE
HOSPITAL FOR MENTAL DISEASES,
BARNWOOD, near GLOUCESTER

Telephone: No. 7 Barnwood.

Exclusively for PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES.

This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment.

Voluntary boarders not under certificates are admitted.

Under special circumstances the rates of payment may be reduced by the Committee.

The MANOR HOUSE for Ladies only, which is entirely separate from the Hospital and standing in its own grounds, is utilised exclusively for voluntary patients.

For further information apply to ARTHUR TOWNSEND, M.D., the Medical Superintendent.

STRETTON HOUSE,

Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Supt. Tel.: 10 P.O. Church-Stretton.

SPRINGFIELD HOUSE

(Telephone No. 17)

Near BEDFORD

For Mental Cases with or without Certificates.

Ordinary terms Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Drs. BOWER, as above, or at 5, Duchess-street, Portland-place, W. 1, on Tuesdays from 4 to 5.

ASHWOOD HOUSE

KINGSWINFORD, STAFFORDSHIRE.

An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception terms, &c., may be obtained from the Resident Medical Officer.

CHEADLE ROYAL,
CHEADLE, CHESHIRE.

This Registered Hospital for MENTAL DISEASES with its seaside branch Glan-y-Don, Colwyn Bay, is for the treatment and care of PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES. Voluntary Boarders received.

For terms, &c., apply to the Superintendent, J. A. C. ROY, M.B., or he may be seen at 72, Bridge-street, Manchester, on Tuesdays and Fridays from 2 to 3. Telephone: No. 163 GATLEY.

LITTLETON HALL, BRENTWOOD, ESSEX

(18 MILES FROM LONDON.)

400 feet above sea

HOME for few LADIES Mentally Afflicted. Large grounds. Liverpool-st. 26 min. Stations: Brentwood, Shenfield, one mile. Boarders received. Apply Dr. Haynes. Telephone and Telegrams: Haynes Brentwood 45.

**Grove House, All Stretton, Church**
STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Bucks Mental Hospital,
Stone, near Aylesbury.

The Visiting Committee of this Hospital can receive PRIVATE PATIENTS at a minimum weekly charge of 1½ guineas. No vacancies for female cases at present.

Apply to the Medical Superintendent.

Telegraphic Address:
"Relief, Old Catton."Telephone:
"290 Norwich."**NERVOUS & MENTAL AFFECTIONS.**

Ladies only received.

The Grove, Old Catton, Norwich.—

A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates.

For full particulars apply to the Misses MCINTOCK, or to Dr. S. BARTON, 34, Surrey-st., Norwich, Visiting Physician.

PORTSMOUTH BOROUGH MENTAL HOSPITAL.

Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds, with sea views. Charges from 3 guineas weekly, including all necessaries, except clothing. Apply to the Medical Superintendent.

THE GRANGE, Near
ROTHERHAM.

A HOUSE licensed for the reception of a limited number of ladies of unsound mind. Both certified and voluntary patients received. This is a large country house with beautiful grounds and park, five miles from Sheffield. Station, Grange Lane, G.O. Railway, Sheffield. Telephone No. 34 Rotherham.

Resident Physician—

GILBERT E. MOULD, L.R.C.P., M.R.C.S.

HOME FOR FEEBLE-MINDED**BRUNTON HOUSE, LANCASTER.**

This well-appointed private establishment overlooks Morecambe Bay and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention given by experienced staff under Lady Matron. For terms apply Dr. W. H. Coupland, Medical Superintendent.

GREAT WALSTEAD,
LINDFIELD, SUSSEX.

A high-class Rest Home for Cases of NEURASTHENIA AND ALLIED FUNCTIONAL NERVOUS DISORDERS.

The Home is a beautiful Mansion standing in a park of 300 acres, and is within an easy motor run of Town, being 39 miles distant, 3 miles from Haywards Heath on the Southern Railway, whence London is reached in 50 minutes, and Brighton in 20 minutes.

There are 16 beautifully furnished bedrooms varying in size from the single room to a complete suite with dressing-room, bathroom, &c.

Weir-Mitchell and Electrical Treatment.

Ladies and Gentlemen received.

Terms from 6 guineas per week.

For prospectus and further particulars apply to The Secretary, Great Walstead, Lindfield, Sussex, or Dr. R. D. PENNEFATHER, The Hollies, Haywards Heath, Sussex, Visiting Physician.

ST. ANDREW'S HOSPITAL
FOR MENTAL DISEASES,
NORTHAMPTON.

President—The Most Hon. the MARQUESS OF EXETER, C.M.G., C.B.E.

This Registered Hospital receives for treatment PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES of both Sexes. The Hospital, its branches (including a Seaside Home at Llanfairfechan, North Wales), and its numerous Villas are surrounded by over a thousand acres of Park and Farm.

Voluntary Boarders without certificates received.

For particulars, apply to DANIEL F. RAMBAUT, M.A., M.D., the Medical Superintendent. TELEPHONE No. 56.

Dr. Rambaut can be seen by appointment on Wednesdays at 39, Harley Street, W. 1. TELEPHONE: LANGHAM 1827.

LAVERSTOCK HOUSE, SALISBURY.

A Private Home for the Care and Treatment of sufferers from Drug Habits, Mental or Nervous Disorders. Ladies or Gentlemen can be received either as Certified Patients or Voluntary Boarders. Only moderate number of patients of the Upper and Middle Classes taken. Healthily situated in extensive and prettily laid-out games grounds and gardens. Special arrangements for mild cases or those requiring private apartments. Terms moderate.

For Illustrated Prospectus and terms apply to J. R. BENSON, Medical Superintendent. Telephone: Salisbury 12. Telegrams: Benson, Laverstock, Salisbury.

The OLD MANOR, SALISBURY.

Telephone 51.

Private Hospital for the Care and Treatment of those of both sexes suffering from Mental Disorders.

Extensive grounds. Detached Villas. Chapel. Garden and dairy produce from own farm. Terms very moderate.

Illustrated Brochure on application to the Secretary.



NORTHWOODS HOUSE WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2089. Terms moderate.

Dr. J. D. Thomas and Dr. J. R. P. Phillips, O.B.E., Resident Physicians and Licensees.

PECKHAM HOUSE MENTAL HOSPITAL

(Established 1826),

112, PECKHAM ROAD, LONDON, S.E.15.

Telegrams: "Alleviated, London."

Telephone: New Cross 576.

CERTIFIED PATIENTS and VOLUNTARY BOARDERS RECEIVED.

Private houses for suitable cases adjoin the Institution. Holiday parties are sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars and Illustrated Prospectus.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL FOR THE CARE AND TREATMENT OF MENTAL AND NERVOUS CASES OF BOTH SEXES, EITHER VOLUNTARY OR UNDER CERTIFICATES, preference being given to Recoverable Cases.

Terms from £2 2s. per week upwards.

Private Apartments on special terms.

Situated mid-way between Manchester and Liverpool. Two miles from Newton-le-Willows Station on the L. & N. W. Ry., and close to Ashton-in-Makerfield Station on the G.C. Ry. in direct communication with Manchester.

CONSULTING ROOMS (Dr. Street), 47, Rodney Street, Liverpool, from 2 to 4 P.M., or by appointment. Telephone: 2458 Royal Liverpool. Manchester (Dr. Mould), Winter's Buildings, St. Ann Street, on Tuesdays and Thursdays from 12 to 1.30 P.M., or by appointment.

VISITING AND CONSULTING PHYSICIANS—Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney Street, Liverpool; G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Medical Proprietor, Haydock Lodge, Newton-le-Willows, Lancs.

Telegraphic Address: "STREET, Ashton-in-Makerfield."

Telephone: 11 Ashton-in-Makerfield.

CAMBERWELL HOUSE,

Telegrams: "PSYCHOLIA, LONDON."

33, PECKHAM RD., LONDON, S.E. 5.

Telephone: New Cross 2300—2301

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds with extensive allotments on which gardening is encouraged. Cricket pitches, hard and soft Tennis Courts, croquet, squash rackets, and all indoor amusements, including Wireless and other Concerts. Daily Services in Chapel. Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P. An Illustrated Prospectus, giving full particulars and terms, may be obtained on application to the Secretary.

HOVE VILLA, BRIGHTON.

A Convalescent Branch of the above, to which all suitable patients may be sent on holiday.

MAUDSLEY HOSPITAL, DENMARK HILL, S.E. 5.

Telephone: Brixton 788

A CLINIC instituted by the London County Council for Treatment of Nervous and Curable Mental Disorder. Voluntary Patients only received.

Out-patients, 2 P.M.—Men: Mondays and Thursdays. Women: Tuesdays and Fridays. In-patients.—(a) 144 beds (both sexes) in wards or separate rooms; (b) 13 private rooms (for ladies), with special sitting-rooms, garden, and dietary. TERMS.—(a) £1 a week, but in case of patients with a legal settlement in the County of London a less sum may be charged according to means; (b) £6 6s. a week.

Terms include (with rare exceptions) all forms of treatment, for which exceptional facilities exist, there being staff of Consultant Specialists and the Central Laboratory of London County Mental Hospitals being attached to the Hospital. Enquiries of EDWARD MAPOTHER, M.D., M.R.C.P., F.R.C.S., Medical Superintendent.

SHAFTESBURY HOUSE

Formby-by-the-Sea, LANCASHIRE.

For the CARE and TREATMENT of Ladies and Gentlemen MENTALLY AFFLICTED, with or without certificates. Consultations in Liverpool or Southport can be arranged by telephone.

For terms apply MEDICAL SUPERINTENDENT.

Tel. No. 8 Formby.

THE DEESIDE SANATORIA IN SCOTLAND

FOR THE OPEN-AIR TREATMENT OF
PULMONARY TUBERCULOSIS and ALLIED DISEASES

At BANCHORY and MURTLE.

Medical Director - - - DAVID LAWSON, M.A., M.D., F.R.S.E.

These Sanatoria are situated amidst **Ideal Surroundings** in **Middle Deeside**, the reputation of whose **Climate** in the treatment of Lung Diseases is well established.

Both Institutions are well equipped with **Research Laboratory**, **Throat Room**, **Dental facilities**, and powerful **X-Ray Plant**. **Full Day and Night Nursing Staffs** are employed.

Special Treatment by artificial **Pneumothorax** (with X-ray Control), the various **Tuberculins**, **Autogenous Vaccines**, &c., is available without extra charge.



NORDRACH-ON-DEE

At BANCHORY, near BALMORAL.

Physician - - - - DR. IAN STRUTHERS STEWART.

Assistant Physician - DR. J. C. LORRAINE.

For particulars apply Secretary.



TOR-NA-DEE SANATORIUM

At MURTLE, ABERDEENSHIRE

Senior Physician - - DR. J. M. JOHNSTON.

Assistant Physicians - DR. R. J. DUTHIE & DR. H. TRAIL.

Inclusive terms 7 guineas a week.

For further particulars apply Secretary.

The Scottish Branch of the British Red Cross Society is prepared to contribute towards payment of the fees of ex-Officers and Nurses recommended by the Society and such Officers and Nurses obtain priority of admission to TOR-NA-DEE



YARROW CONVALESCENT HOME, BROADSTAIRS FOR CHILDREN OF WELL-EDUCATED PEOPLE OF VERY LIMITED MEANS.

CHARGE, 10s. PER WEEK FOR EACH CHILD.

This fee is subject to addition or deduction according to Parents' means.

100 Beds.

Boys, ages 4 to 12.

Girls, ages 4 to 14.

The usual stay is 4 weeks, but some wards are reserved for serious cases requiring special treatment, and for these a lengthened stay may, under some circumstances, be granted, and the age limit raised to 14 for Boys and 16 for Girls.

The Home faces the sea, and is open all the year, being as well adapted for winter, as for summer residence.

Particulars can be obtained from the Secretary, YARROW CONVALESCENT HOME, 116, Victoria St., Westminster, London, S.W.1.

The work hitherto carried on at
DUFF HOUSE, BANFF, SCOTLAND,
 has been transferred to
RUTHIN CASTLE,
NORTH WALES,

which is now opened as a Private Hospital for sufferers from any non-infectious INTERNAL DISEASES who need investigation or treatment.

Special arrangements are made for carrying out the preliminary tests needed for the proper administration of INSULIN in diabetes.

Application should be made to the Secretary.

MENDIP HILLS SANATORIUM



Specially built, facing south. 300 acres of Sanatorium grounds—meadow and woodland; sheltered pine avenues. Altitude 850 ft. Magnificent view for miles south; hot-water radiators and electric light in each room and chalet.

All forms of treatment, including X-ray, Vaccines, and Pneumothorax in suitable cases. Trained Nurses. Individual attention.

For particulars, apply SECRETARY, Hillgrove, Wells, Somerset. Telegrams: Hillgrove, Wells, Somerset.

Resident Physicians { Dr. C. MUTHU.
 Dr. T. C. BRENTNALL.

VALE OF CLWYD SANATORIUM.

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and of the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level, on the south-west slopes of mountains rising to over 1800 feet, which protect it from the north and east winds and provide many miles of graduated walks with magnificent views.

Trained Nursing Staff day and night. X-Ray apparatus. Treatment by Artificial Pneumothorax in suitable cases.

Electric lighting in every room. Heating by radiators. For particulars apply to Medical Superintendent,

H. MORRISTON DAVIES, M.D., M.Ch. (Cantab.), F.R.C.S., Llanbedr Hall, Ruthin, N. Wales.

ST. KATHARINE'S, HOOK HEATH, WOKING.

FOR THE TREATMENT OF CASES OF TUBERCULOSIS.

Pleasantly situated on the "Upper Bagshot Sands," 200 feet above sea level, it stands in its own charming grounds facing South and West, and sheltered from the North and East, in a mild and bracing climate.

Trained Nurses on duty night and day. Facilities for Artificial Pneumothorax and other modern methods.

Electric Light, Gas and Water laid on, Main Drainage.

For particulars apply to A. R. SNOWDON, M.R.C.S., L.R.C.P., Medical Superintendent, St. Katharine's, Hook Heath, Woking, Surrey.

NEW LODGE CLINIC, WINDSOR FOREST.

This clinic has been instituted in order to provide for the scientific investigation and treatment of disease by a "team," consisting of physicians, biochemist, bacteriologist, radiologist, laryngologist, and dental surgeon.

All forms of non-infectious medical cases are received, special attention being paid to disorders of digestion and metabolism, arthritis, anæmias, asthma, and heart and kidney disease.

Particulars can be obtained on application to
 The Secretary, New Lodge Clinic, Windsor Forest, Berks.

Telephone: 25 Winkfield Row.



SPAS and MINERAL SPRINGS of SWITZERLAND

Do you know the Swiss Spas which combine their renowned healing properties with quite exceptional climatic conditions?

Information and booklets free of charge at the following addresses:

SWISS TOURIST OFFICE in ZURICH or LAUSANNE.

Its Representatives abroad. Agencies of the Swiss Federal Railways in London and New York. Spas mentioned beneath.

YVERDON les BAINS

Romantic and ideal place on the lake of Neuchâtel. Splendid healing results by means of two strong mineral springs for rheumatism, gout, chronic catarrhs, asthma, diseases of the stomach, kidney, bladder, and liver, women's diseases, affections of the skin, gall-stones, diabetes, strengthening of the nervous system.

Prospectuses free of charge.

LAVEY les BAINS

French Switzerland—Season from May 15th to Oct. 1st.

Sulphur Mineral Springs (48°C.)—Hot Saline Springs—Sand Baths.

Cures: Rheumatism, gout, catarrhs, Bright's disease, general weakness, etc.

Hotels and thermal establishment with modern installations.

For prospectus apply to the Manager.

SCHINZNACH SPA

*on the Zurich—Brugg—
Berne Railway line.*

*The strongest Thermal
Sulphur Spring of the
Continent.*

Very good healing results for gout, rheumatism, catarrhs, asthma, diseases of the bones and joints, certain wounds and inflammations, diabetes, arteriosclerosis, affections of the bronchia, larynx, pharynx and nose, women's diseases, scrofula, blood, skin and glandula diseases (venereal excluded).

*Tennis — Fishing —
Hunting—Excursions.*

*Large, shady Park and
Woods, Reunions, Orchestra.*

*Prospectuses through the "Bad-
Direction."*

TARASP- Engadine SCHULS- VULPERA

The most important spa of Switzerland (4,000 feet). Season—May 15th to Sept. 20th. Ideal Spa and Summer Resort. Remarkable combination of world-famous mineral springs with a most healthy mountain climate. Unequalled cures for digestive and assimilative disorders, nervous complaints, tropical diseases, etc.

**SUMMER SPORTS,
TENNIS, GOLF, etc.**

For prospectus No. 30, apply to Badeverwaltung Kurhaus Tarasp, Inquiry Office, Schuls; and Inquiry Office, Vulpera.

BADEN SWITZERLAND (Near ZURICH)

Thermal Cure Bath for rheumatism, gout, joint and throat diseases. All therapeutic factors at the bath hotels. Inhalatorium. Cursaal with large park. Concerts daily. Theatricals, Balls. Gambling-room. Minimum rates (room and meals). Fr. 8.50 to Fr. 15 = 7s. to 12s. Prospectus through the Administration.

St. MORITZ-BAD

The Thermal Bath with High Alpine Climate. Natural acid steel spring with strongest carbonic acid contents. Bathing and drinking cures, rest cures in the open air, sun cures. Tennis, Golf, Fishing, Rowing, Mountaineering. Hotels and cure establishment with every comfort.

MUNDESLEY SANATORIUM.



Specially built for the treatment of Pulmonary and other forms of Tuberculosis. Aspect S.S.W., on a carefully chosen site. Pure, bracing air. High sunshine record. Heliotherapy. Arc-light treatment. One mile from the coast. Electric light throughout. X-Ray installation. Full day and night Nursing Staff. Wireless in many rooms.

Resident Physicians

S. VERE PEARSON, M.D.(Camb.), M.R.C.P.(Lond.).
GEOFFREY LUCAS, B.A.(Camb.), M.D.(Durham).
L. WHITTAKER SHARP, M.B.(Camb.).

Apply The Secretary,
Sanatorium, Mundesley, Norfolk.

THE COTSWOLD SANATORIUM.

A private sanatorium opened in 1898 for the treatment of Pulmonary Tuberculosis. It is situated on the Cotswold Hills, seven miles from Cheltenham, 800 ft. above sea level in grounds of 40 acres surrounded by 1,000 acres of wooded common land sheltered from the North and East, S.S.W. aspect. The rooms are specially built of one storey only, opening on to wide verandahs, have radiators, hot and cold basins, electric light. X-Ray installation, throat room. All special forms of treatment available. Full day and night nursing staff.

Resident Physicians: ARTHUR H. HOFFMAN, M.D.; GEOFFREY A. HOFFMAN, M.B.

Apply The Secretary, The Cotswold Sanatorium, Cranham, Gloucester.

Telephone: 22 Painswick.

Telegrams: Hoffman, Birdlip.

CROOKSBURY SANATORIUM

Specially built in 1900 for the Treatment of Pulmonary Tuberculosis, midst pine trees and heather, in the most beautiful part of Surrey. Large grounds, with fine views. Altitude over 400 feet; south aspect. Electric lighting. Modern methods of treatment.

MEDICAL DIRECTOR: F. R. WALTERS, M.D., M.R.C.P.Lond., F.R.C.S., formerly Physician to the Mount Vernon Chest Hospital.

For particulars apply to the Secretary, Crooksbury Sanatorium, Farnham, Surrey.

PRIOR PLACE SANATORIUM

HEATHERSIDE, CAMBERLEY.

RECENTLY OPENED FOR THE TREATMENT OF PULMONARY TUBERCULOSIS.

WELL SITUATED ON HIGH GROUND AND SURROUNDED BY PINES AND HEATHER.

RESIDENT MEDICAL SUPERINTENDENT: DR. H. O. BLANFORD, late Medical Superintendent, King Edward VII. Sanatorium, Midhurst, to whom applications for particulars may be made.



HOSPITAL FOR CONSUMPTION

AND DISEASES OF THE CHEST,
BROMPTON,

and FRIMLEY SANATORIUM.

SPECIAL WARDS FOR PAYING PATIENTS.
3 to 3½ guineas per week.

Apply to the Secretary, Brompton Hospital, S.W. 3.

PENDYFFRYN HALL SANATORIUM (ESTAB. 1900)

ARTIFICIAL PNEUMOTHORAX AND ALL MODERN METHODS OF TREATING TUBERCULOSIS AVAILABLE UNDER IDEAL CONDITIONS.

INSULIN ADMINISTRATION (WITH BLOOD SUGAR CONTROL) AVAILABLE FOR DIABETIC CASES.

Resident Physicians:

BERKELEY ASH, M.R.C.S., L.R.C.P., Late First Assistant to King Edward VII Sanatorium, MIDHURST;
C. H. BRODRIBB, M.B., B.S.Lond., M.R.C.S., L.R.C.P. late Physician in Charge King Edward VII. Memorial Hospital, Secunderabad;
P. L. T. BENNETT, M.C., L.R.C.P., T.D.D., late Assistant Resident Medical Officer to BROMPTON HOSPITAL for Diseases of the Chest.

Matron.—Miss L. HANSON, late King Edward VII. Sanatorium, MIDHURST, assisted by a full Day and Night Nursing Staff.

For full particulars apply to S. GUTHRIE, Esq., Assistant Secretary, Pendyffryn Hall, Penmaenmawr, N. Wales.

INEBRIETY.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

(Telephone: 16 Rickmansworth.)

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars apply to F. S. D. Hogg, M.R.C.S., &c., Resident Medical Superintendent.

BAY MOUNT, PAIGNTON ALCOHOLISM, DRUG HABIT, NEURASTHENIA.

Ladies and Gentlemen received.

Small, select home, standing in 3½ acres of secluded gardens overlooking Torbay, near Torquay. Billiards, golf, tennis, &c. Every case treated with a view to rapid and permanent cure.

All communications must be addressed to SECRETARY, or STANFORD PARK, M.B., Bay Mount, Paignton.

Tel.: Paignton 210

WEMBLEY NURSING HOME. EALING ROAD, WEMBLEY.

Vacancies for Chronic and Permanent Cases.

The house is pleasantly situated and facing open country.

Terms Moderate.

Apply, Matron.

Telephone: Wembley 1360.

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M. (Edin.).

Prospectus and full information on application to the Managing Director.

THE VICTORIA SANATORIUM, DAVOS, SWITZERLAND.

Altitude 5,200 feet above sea level.

For the Treatment of all forms of **TUBERCULOSIS**

Situated in the centre of the English Quarter, Davos-Platz. This establishment is intended to receive *English-speaking patients* suffering from tuberculosis.

For particulars apply to the Physician in charge, BERNARD HUDSON, M.D. (Cantab), M.R.C.P., Swiss Federal Diploma, The Victoria Sanatorium, Davos-Platz, Switzerland.

PALACE SANATORIUM, MONTANA-SUR-SIERRE, SWITZERLAND.

TUBERCULOSIS CURE STATION

(All the Year). THE FINEST IN EUROPE.

5000 ft. high. Accommodation for 100 patients.

Resident Medical Officers:

ANDREW MORLAND, M.B., B.S. (Lond.),
Formerly House Physician, Brompton Hospital.

ERIC ZIMMERLI, M.D. (Bâle), M.R.C.S. (Eng.).

FULL PARTICULARS FROM THE SECRETARY, 5, ENDSLEIGH
GARDENS, LONDON, N.W.1.

NEURASTHENIA.

The work hitherto carried on at ELTON has been transferred to the

VALE OF BELVOIR NURSING HOME, ASTON-ON-TRENT, DERBY.

Private Nursing Home for Cases of Neurasthenia and allied Functional Nervous Disorders, for general Convalescent Cases, and those requiring Electrical Treatment.

The Home, a Georgian mansion 14 miles from Nottingham and 6 miles from Derby, is for both sexes.

In addition to the methods of general medicine associated with occupational treatment, physical exercises, and massage, treatment by Psycho-Therapy, adapted to the type of case, is available for cases requiring it. Electrical Treatment, Radiant Heat, etc., is available.

For further particulars and fees apply to—

Dr. E. M. DOUGLAS-MORRIS, ASTON, DERBY.

(Telephone: Shardlow 16.)

Rest Cures and all Nervous Ailments
are received under experienced Physician at "The Heath," Weybridge. Apply, Matron. Tel. 797.

Patient or Guest requiring care,
rest-cure, supervision, received in Doctor's charming residence. Excellent cuisine and comfort. Doctor's own personal attention given.—Address, No. 703, THE LANCET Office, 423, Strand, W.C. 2.

Neurasthenic or Nerve Cases received
by Specialist. Large house and grounds. Bracing climate. Chronic or rest cure cases accepted.—Dr. POPE, Hollenden House, Burlington-road, Ipswich.

Putney Hospital (Chester Bequest),
Lower Common, Putney, S.W. 15.—Wanted early in April, a RESIDENT MEDICAL OFFICER (Male). Salary £150 a year, with rooms, board, and lodging.

Applications, stating age, with copies of testimonials, to the Hon. Secretary at the Hospital, from whom further information may be obtained.

Paddington Green Children's Hospital,
London, W.2.—HOUSE PHYSICIAN, HOUSE SURGEON.—These appointments will become vacant on May 1st, 1925. Gentlemen are invited to send in their applications, with copies of three testimonials, addressed to the undersigned, not later than April 10th, 1925. Salary of each £150 per annum, with board and residence. Candidates who have held a responsible Resident Hospital appointment are preferred. The appointments are for a period of six months.

JAMES A. HAMLIN, Secretary.

Queen Mary's Hospital for the East
END, Stratford, E. 15.

Telephone: Maryland 2616 and 2617.
Beds 160. Out-patient attendances: 138,868.

HONORARY ASSISTANT PHYSICIAN.

There is a vacancy on the Staff of this Hospital for an Honorary Assistant Physician.

The Assistant Physician will have some beds allocated to him in the Hospital and will be required to see out-patients.

Applications, accompanied by copies of testimonials, from candidates, who must be duly registered practitioners, either Graduates in Medicine of a University or Fellows or Members of a Royal College of Physicians, should be lodged with the undersigned not later than the 4th of April, 1925.

RAPHAEL JACKSON (Major), Secretary.

The Prince of Wales's General
HOSPITAL, Tottenham, N. 15.

Applications are invited for the following posts, vacant on the 15th April next:—

HOUSE SURGEON. £150 per annum.

SPECIAL HOUSE SURGEON. £150 per annum

HOUSE PHYSICIAN. £150 per annum

JUNIOR HOUSE SURGEON. £110 per annum

JUNIOR HOUSE PHYSICIAN. £110 per annum

with residence, board, and laundry.
The appointments are held for six months, but the holders are eligible for re-appointment for a further term.

Candidates (Male) must be duly qualified and registered, and applications, together with copies of three recent testimonials, to be sent to me on or before the first post on Tuesday, 31st March next.

March 11th, 1925.

FREDK. W. DREWETT, Director.

MINISTRY OF HEALTH

APPOINTMENT OF MEDICAL OFFICERS.

The Minister of Health invites applications from registered Medical Practitioners for appointment to act as Medical Officers of the Ministry in various parts of England and Wales, for the discharge of combined clinical and administrative duties in connexion with the National Health Insurance Medical Service and otherwise. Twelve Officers will be appointed for England and one for Wales, and their official designation will be Deputy Regional Medical Officer.

DUTIES.

The Medical Officers will be required to perform such duties as may be assigned to them by the Minister from time to time, and these will include acting as deputy to the Regional Medical Officer in the work carried out by the latter:—

- (a) As Medical Referee in cases of insured persons referred for a second medical opinion on questions of incapacity for work, or of restoration of working capacity;
- (b) In assisting in the administration of the Insurance Medical Service.

RESIDENCE.

Medical Officers will be required to reside in the area from time to time assigned to them.

REMUNERATION.

The rate of remuneration will be £800 per annum, rising by annual increments of £30 to a maximum of £1100. No cost of living bonus will be payable in addition thereto. Officers appointed to this scale will be established Civil Servants with the usual pension rights.

Successful candidates who are considered to possess exceptional or special qualifications may be allowed to enter the above scale at a commencing salary of £850 per annum. Above the grade of Deputy

Regional Medical Officer, there are at present 33 posts of Regional Medical Officers (30 in England and 3 in Wales) rising to a maximum of £1400 a year inclusive, and four posts of Divisional Medical Officers rising to a maximum of £1600 a year inclusive. The above numbers are, however, subject to revision from time to time as the exigencies of the Service may determine. When vacancies are to be filled among the Regional Medical Officers, preference will be given to those who have given satisfaction as Deputy Regional Medical Officers.

Applicants must be medical men of not less than 10 years standing and not exceeding the age of 50 years. Preference will be given to those having wide experience of general practice, especially amongst the industrial population. Further particulars of these appointments and forms of application may be obtained from the SECRETARY, MINISTRY OF HEALTH, WHITEHALL, LONDON, S.W.1.

Or for Wales:—

The SECRETARY, WELSH BOARD OF HEALTH, CITY HALL, CARDIFF. Letters applying for forms of application should have the words "Medical Officer" boldly written in the bottom left-hand corner of the envelope. No applications can be considered if received after the 15th April, 1925.

The Royal Dental Hospital of London,

Leicester-square, W.C. 2.

HONORARY ASSISTANT DENTAL SURGEON.

There is a second vacancy on the staff of this Hospital for an Honorary Assistant Dental Surgeon.

Candidates for the same, who must be Licentiates of Dental Surgery of one of the licensing bodies recognised by the General Medical Council of the United Kingdom, are requested to send in their applications, accompanied by testimonials and a list of appointments held, to the undersigned, from whom further particulars may be obtained, on or before March 30th, 1925.

W. J. WADHAM, Secretary.

Royal Chest Hospital, City-road, E.C.1

(Royal Northern Group of Hospitals.)

A vacancy occurs for a PHYSICIAN with charge of Out-patients. Candidates must possess the degree of M.D. or M.B. obtained by examination at a British University, and be Fellows or Members of the Royal College of Physicians of London.

Applications should be sent not later than 13th April to the undersigned, from whom particulars with regard to the appointment, attendances, and submission of testimonials may be obtained.

GILBERT G. PANTER, Secretary.

Royal Northern Hospital, Holloway, N.7.

The Hospital for Sick Children,

Great Ormond-street, London, W.C. 1.

A HOUSE SURGEON is required on 12th April, 1925.

A HOUSE PHYSICIAN and ASSISTANT CASUALTY OFFICER is required on 14th April, 1925.

Gentlemen are invited to send in their applications, addressed to the Secretary, before 12 o'clock, on Monday, 30th March, 1925, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible Hospital appointment.

The appointments are made for six months. Salary £50, laundry allowance £5, and board and residence in the Hospital. Candidates must be unmarried and possess a legal qualification to practise.

All candidates must be in attendance to appear before the Joint Committee if required at their meeting on Wednesday, 1st April, 1925, at 5 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary.

By order of the Board of Management.

March, 1925.

JAMES MCKAY, Secretary.

60

British Hospital for Mental Disorders

AND NERVOUS DISEASES, 72, Camden-road, N.W. 1. There is a vacancy for an HON. PHYSICIAN. Application to be made to D. IRVING, Secretary.

Queen Charlotte's Maternity Hospital,

Marylebone-road, N.W. 1.
(formerly Queen Charlotte's Lying-in Hospital).

There is a vacancy for an OBSTETRIC SURGEON to Out-Patients. Candidates must be Graduates in Medicine of a University of the United Kingdom, and (a) Fellows or Members of the Royal College of Physicians in London, or (b) Fellows of the Royal College of Surgeons of England. Applications to be sent to the Secretary at the Hospital not later than April 11th, accompanied by a certificate of age and six copies of testimonials. For further particulars apply to ARTHUR WATTS, Secretary. 18th March, 1925.

Parish of Hammersmith.

DISTRICT MEDICAL OFFICER AND PUBLIC VACCINATOR.

The Guardians invite applications for the appointment of District Medical Officer for the No. 1 District, which is bounded on the south by the River Thames; on the west by Stamford Brook-road, on the north by Goldhawk-road, and on the east by Brackenbury and Iffley-roads and The Grove.

Salary £150 per annum (no bonus), subject to the provisions of the Poor-law Officers' Superannuation Act, 1896, in addition to the authorised extra medical fees allowed for midwifery and other cases.

The Guardians will also be prepared to enter into a contract with the successful candidate for the performance of public vaccination for the same District with remuneration according to the minimum rate named in the Vaccination Order (estimated fees £70 per annum).

Candidates must be duly registered in accordance with the Medical Act of 1838, and possess certificates of efficiency in Vaccination, and the gentleman appointed will be required to reside or have a Surgery within the District, and to perform the several duties prescribed in the Orders of the Ministry of Health.

Forms of application, which can be obtained from the undersigned by forwarding stamped addressed envelope, must be returned to me by 10 A.M. on 6th April, 1925.

The successful candidate will be required to undergo a medical examination by the Guardians' own Medical Officer.

Canvassing the Guardians will be deemed a disqualification.

By order,

W. H. GLANVILLE, Clerk.

206, Goldhawk-road, W. 12, 18th March, 1925.

Royal Chest Hospital, City-road,

London, E.C. (Royal Northern Group of Hospitals.)—The post of HOUSE PHYSICIAN at this Hospital will be vacant on the 1st May. The appointment is for six months. Salary at the rate of £100 per annum, with board, residence, and laundry. Applications, with copies of testimonials, should be sent on or before the 11th April to the undersigned, from whom forms of application and rules can be obtained.

GILBERT G. PANTER, Secretary.

Royal Chest Hospital, City-road,

E.C. (Royal Northern Group of Hospitals.)—The post of RESIDENT MEDICAL OFFICER at this Hospital will be vacant on the 1st May. The appointment is for six months, when re-election is required.

Salary at the rate of £150 per annum, with board, residence, and laundry.

Applications, with copies of testimonials, should be sent on or before the 11th April to the undersigned, from whom forms of application, rules, and further particulars can be obtained.

GILBERT G. PANTER, Secretary.

South London Hospital for Women,

South Side, Clapham Common, S.W.

The Board of Management invite applications from qualified Medical Women for the appointment of CLINICAL ASSISTANT (Ophthalmic Department) to attend at the Out-patient Department, 86/90, Newington Causeway, S.E., on Monday and Friday afternoons. Refractions taught. Also CLINICAL ASSISTANT (Surgical Department) to attend at the Out-patient Department on Thursday afternoons. Applications, with testimonials, to be forwarded to the Secretary at the Hospital.

The Prince of Wales's General Hospital,

Tottenham, N. 15.

Applications are invited for the post of HONORARY MEDICAL REGISTRAR. (Honorarium of £200 per annum.)

Candidates must be graduates in Medicine of a British University, or a Fellow or Member of the College of Physicians.

Applications, accompanied by three testimonials, to be sent on or before Wednesday, the 15th April next, to

FREDK. W. DREWETT, Director.

March 23rd, 1925.

The Prince of Wales's General Hospital,

Tottenham, N. 15.

Applications are invited for the post of HONORARY ASSISTANT SURGEON to the Ear, Nose and Throat Department.

Applicants must be Fellows of one of the Royal Colleges of Surgeons, and engaged in Consulting Practice.

Applications, stating age, qualifications, and enclosing copies of three recent testimonials, to be sent on or before Wednesday, 15th April, to

FREDK. W. DREWETT, Director.

March 23rd, 1925.

The Prince of Wales's General Hospital,

Tottenham, N. 15.

Applications are invited for the post of HONORARY SURGICAL REGISTRAR. (Honorarium of £200 per annum.)

Candidates must be graduates in Medicine of a British University or a Fellow or Member of the Royal College of Surgeons.

Applications, accompanied by three testimonials, to be sent on or before Wednesday, the 15th April next, to

FREDK. W. DREWETT, Director.

March 23rd, 1925.

Beit Memorial Fellowships for Medical

RESEARCH.—Notice is hereby given that an election of JUNIOR FELLOWS will take place in July, 1925. The Fellows then elected will be required to begin work on October 1st. Junior Fellowships are of the annual value of £350. The usual tenure is for three years. Applications of candidates whose name as their referees persons resident abroad must be received on or before May 1st. Applications from other candidates must be received on or before June 1st. Forms of application and all information may be obtained by letter only addressed to Sir JAMES K. FOWLER, M.D., Honorary Secretary, Beit Memorial Fellowships for Medical Research, 35, Clarges-street, Piccadilly, London, W.1.

Hospital for Consumption and Diseases

OF THE CHEST, Brompton, S.W.3. The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are three vacancies). The duties include work in the Out-patient Department as well as in the Wards, and one of the selected candidates will also be appointed Assistant to the Tuberculosis Officer for the local Tuberculosis Dispensary at the Hospital. Applications, with testimonials, must be sent in not later than Saturday, 11th April, 1925, addressed to the Secretary. The appointment is for six months, commencing on 1st May, with an honorarium of £50.

Brompton, March, 1925.

FREDERICK WOOD, Secretary.

Prince of Wales' Hospital for Cripples

AND LIMBLESS, Cardiff. (50 Beds.)

Required immediately, RESIDENT HOUSE SURGEON. For particulars apply, with copies of testimonials, to the Secretary.

City and County of Newcastle-upon-

Tyne.—Wanted immediately, TUBERCULOSIS MEDICAL OFFICER. Salary £750, rising by £50 per annum to £900, subject to 4 per cent. reduction on account of superannuation. The gentleman appointed will be responsible to the Medical Officer of Health for the immediate charge of the Tuberculosis Dispensary and of the Advanced Case Hospital, and such other duties in connexion with Tuberculosis as may be required of him.

Applications, stating age, qualifications, and experience, together with copies of not more than three recent testimonials, to be forwarded to the Medical Officer of Health, Town Hall, Newcastle-upon-Tyne.

24th March, 1925.

Derbyshire Royal Infirmary, Derby.

(General Hospital, 320 Beds.)

Applications are invited for the post of HOUSE SURGEON. The appointment is tenable for twelve months from 1st May, with a possibility of extension for a further period of twelve months.

Salary £200 per annum, with apartments, board, &c.

Applications, with copies of not more than five testimonials, to be sent to the undersigned not later than 10th April.

WALTER BANKS, Superintendent and Secretary.

24th March, 1925.

County Borough of Derby.

ISOLATION HOSPITAL AND SANATORIUM.

Applications are invited for the post of Resident Medical Officer (Male) to the above Institutions. Experience in Sanatorium management as well as Fever Hospital experience essential. Salary £550 per annum, with board, residence, &c.

Applications, stating age, qualifications, together with copies of not more than three recent testimonials and a certificate of health, should be sent to the undersigned on or before Wednesday, April 15th.

ALBERT E. BRINDLEY, Medical Superintendent.

Health Office, Ford-street, Derby.

The University of Sheffield.

FACULTY OF MEDICINE.

The Council of the University and the Board of Management of the Royal Hospital, Sheffield, acting conjointly, are about to appoint an ASSISTANT PATHOLOGIST to the Royal Hospital and DEMONSTRATOR OF PATHOLOGY in the University.

The appointment is for whole-time service, and the work, consisting largely of Morbid Anatomy, Morbid Histology, and Clinical Pathology and Bacteriology, under the direction of the Professor of Pathology, will be principally in the Royal Hospital. The salary offered is £500 per annum.

Applications, accompanied by recent testimonials and references, should be sent on or before Saturday, the 18th April, 1925, to the undersigned, from whom further details may be obtained.

W. M. GIBBONS, Registrar.

Ministry of Pensions.

HIGHBURY GROUP OF HOSPITALS, BIRMINGHAM

(313 Beds.)

Applications are invited for the post of SENIOR MEDICAL OFFICER (Resident) at the above Hospitals.

Orthopaedic, general, surgical and medical cases are treated at these hospitals, but the largest proportion of cases are of an orthopaedic nature.

Salary £500 per annum, with single quarters, fuel and light, the appointed candidate to be prepared to take up duty as early as possible.

Candidates selected for interview will be required to pay their own travelling expenses.

Applications, stating age, experience, and war service (if any) together with copies of recent testimonials, to be received not later than Saturday, April 4th, addressed to the Chairman of the Committee, Highbury Hospital, Moseley, Birmingham.

City and County of Newcastle-upon-

Tyne.

CITY HOSPITAL FOR INFECTIOUS DISEASES—
RESIDENT MEDICAL ASSISTANT (MALE).

Wanted immediately, a Resident Medical Assistant (male unmarried), who holds a registrable qualification in Medicine and Surgery (and preferably also in Public Health), and possesses a practical knowledge of Bacteriology.

The officer appointed will be attached primarily to the Wards for Advanced Tuberculosis, and if necessary will assist in the work of the Tuberculosis Dispensary. The appointment is for one year, subject to reappointment, and the salary £350 per annum, with board, lodging, &c.

Applications, stating age, qualifications, and previous experience, to be forwarded, with copies of not more than three recent testimonials, to the Medical Officer of Health, Town Hall, Newcastle-upon-Tyne.

Mar 23rd, 1925.

The Liverpool Eye and Ear Infirmary.

Myrtle-street.—Applications are invited for the post of HOUSE SURGEON (Male) to the above Institution. Salary £100 per annum, with board and lodging. Applications, stating age and qualifications, together with copies of not more than three testimonials, should be sent before April 7th to
W. W. HIGGIN, Esq. (Hon. Sec.).

14, Chapel-street, Liverpool.

Bristol Royal Infirmary.

Applications are invited for the post of THIRD HONORARY ASSISTANT ANÆSTHETIST. Candidates, who must be Doctors of Medicine or Graduates of one of the Universities of Great Britain or Ireland or Fellows, Members, or Licentiates of the Royal College of Physicians of London, Edinburgh, or Ireland, to send in their applications, together with copies of three testimonials, to the undersigned on or before April 11th, 1925.
ELLIS C. SMITH, F.C.I.S., Secretary and House Governor.

Royal Salop Infirmary.
(Containing 130 Beds.)

HOUSE SURGEON required (single), at once. Good opportunity for practical surgery. Applications, with not less than three recent testimonials, must reach the undersigned not later than first post on Monday, 30th March.

There are two Resident Medical Officers, of whom the House Surgeon is senior.

Candidates must be doubly qualified and duly registered. Salary £250 per annum, with board, residence, and laundry.
ALFRED SUGDEN, Secretary.

Shrewsbury, March 14th, 1925.

Durham County and Sunderland Eye INFIRMARY.

Wanted, earliest possible, a HOUSE SURGEON, non-resident, unmarried preferred, whole time. Salary £450 per annum, rising by annual increments of £50 to £550.

The Hospital contains 44 beds, is fully equipped, and last year 497 in-patients and 15,885 out-patients were treated, the average daily attendance of the latter being over 200. Last year there were 259 in-patient operations and 301 out-patient operations.

Applications, with copies of recent testimonials, to be sent to
JOHN BUTTERFIELD, Secretary.
Eye Infirmary, Stockton-road, Sunderland.

The Royal Earlswood Institution,
Redhill, Surrey.
(Under Mental Deficiency Act, 1913.)**JUNIOR ASSISTANT MEDICAL OFFICER REQUIRED.**

Applicants must be registered Practitioners, Males, unmarried, and willing to assist in the games and amusements.

The appointment is temporary for six months. Inclusive salary at the rate of £250 per annum, with board, residence, and washing. Good facilities for Post-graduate Studies, Classes and Examinations.

Applications, stating age, religion, and qualifications, with copies of three testimonials of recent date and two references, to be sent on or before the 31st March to the Secretary at the Offices, 14, Ludgate Hill, E.C. 4. The envelope to be endorsed "Assistant Medical Officer."
9th March, 1925.

H. HOWARD, Secretary.

Royal Salop Infirmary, Shrewsbury.

Containing 130 Beds.—HOUSE PHYSICIAN required at once. Candidates must be duly registered under the Medical Acts. British and unmarried. (Ladies ineligible.) Salary at the rate of £160 per annum, with board, residence, and laundry. The duties consist of being responsible to the Medical Staff for the Medical cases, assisting the Pathologist, and acting as Anæsthetist.

Preference given to those with previous experience as Anæsthetist.

The House Physician is the Junior Resident Officer.

Applications, stating age, experience, and qualifications, accompanied by copies of recent testimonials (not less than three) to be sent to the undersigned forthwith.
March 11th, 1925.

ALFRED SUGDEN, Secretary.

Manchester Royal Infirmary.**ASSISTANT RESIDENT SURGICAL OFFICER.**

The Board of Management of the Manchester Royal Infirmary invite applications for the above appointment, which will become vacant on 1st May, 1925.

Applicants must be registered and hold a Medical and Surgical qualification.

The appointment is for six months, renewable for a further period of six months, subject to the provisions of the Bye-laws as to notice.

Salary is at the rate of £200 per annum, with allowance for laundry.

Applicants must state age, and send twelve copies of their application and testimonials to the undersigned by Friday, 17th April, 1925.

By order.
FRANK G. HAZELL, Gen. Supt. and Secretary.

21st March, 1925.

62

Rochdale Infirmary and Dispensary.

(110 Beds.)—Wanted, JUNIOR HOUSE SURGEON (Male), Salary £200 per annum, including board, residence, and laundry. Applications, stating age, nationality, &c., together with three testimonials, to be sent to the Secretary endorsed "House Surgeon." Conditions of appointment may be had on application to the Secretary.
W. WYNNE, Secretary.

Manchester and District Radium INSTITUTION, Nelson-street, Manchester, S.

Applications are invited for the post of ASSISTANT RADIOLOGIST to the Manchester and District Radium Institution. Salary £500 per annum. Candidates should forward applications and testimonials to the Hon. Secretary, The Radium Institute, not later than Saturday, April 4th.

County Borough of Dewsbury.**APPOINTMENT OF MEDICAL OFFICER OF HEALTH.**

The Dewsbury Corporation invite applications from duly qualified and registered Medical Practitioners holding the Diploma of Public Health for the position of Medical Officer of Health at a salary of £900.

The gentleman appointed will be required to devote the whole of his time to the duties of the office, to reside in the Borough, and will not be allowed to engage in private practice. All emoluments or fees which may be payable to, or received by him, will have to be paid over to the Corporation.

The appointment will be made in accordance with the Public Health Officers' Act, 1921, and the Sanitary Officers' Order, 1922, and subject to the terms of the said Order, and to the approval of the Minister of Health.

Canvassing either directly or indirectly is prohibited. Applicants may, if they desire, forward fifteen copies of their application and testimonials for the use of the members of the Committee.

Applications, with copies of not more than three recent testimonials attached, to be sent to me, endorsed "Medical Officer of Health" not later than the 15th April, 1925.

HOLLAND BOOTH, Town Clerk.

Town Hall, Dewsbury, 21st March, 1925.

AMENDED ADVERTISEMENT.**City of Cardiff.****ASSISTANT MEDICAL OFFICERS.**

Applications are invited for the appointment of Assistant Medical Officers (one Male and one Female) under the Health and Education Committees of the Cardiff City Council.

Candidates must have had not less than three years' experience since graduation and must hold a Diploma in Public Health. Other qualifications being equal, special consideration will be given to candidates who have had experience of Orthopaedics and the female candidates with experience in the treatment of Venereal Diseases.

The persons appointed, who will act under the direction of the Medical Officer of Health and School Medical Officer, must devote their whole time to official duties, and reside within the City of Cardiff.

The salary in each case will be £600, rising to £750 per annum by annual increments of £25. The officers appointed will be required to contribute under the Superannuation Scheme of the City Council.

Forms of application and information as to the duties attached to the appointments may be obtained from the undersigned, by whom applications, with copies of three recent testimonials (endorsed "Assistant Medical Officer"), must be received not later than 4th April, 1925.

RALPH M. F. PICKEN,

Medical Officer of Health and School Medical Officer.
City Hall, Cardiff, 16th March, 1925.

Liverpool County Borough.**LOCAL EDUCATION AUTHORITY.****JUNIOR ASSISTANT SCHOOL MEDICAL OFFICERS.**

Applications are invited for three Junior Assistant School Medical Officers in the Department of the Medical Officer to the Local Education Authority at a salary of £600 per annum in each case. Applicants must be registered Medical Practitioners and shall have had at least three years' experience. It is desirable that they should have had some special experience in School Hygiene and in the study of Diseases of Children.

The Officers appointed will be required to devote their whole time to the service of the Education Authority, under the direction of the Medical Officer of Health, who is the Medical Officer to the Education Authority. They will not be allowed to undertake private practice, and will be required to contribute to the Liverpool Corporation Superannuation Scheme as required by the Standing Orders of the City Council.

Applications, stating age, qualifications, &c., together with copies of not more than three recent testimonials, and endorsed "Junior Assistant School Medical Officer," must be delivered at the Office of the Town Clerk, Municipal Buildings, Liverpool, on or before the 7th April, 1925.

Canvassing of members of the Committee or the City Council is strictly prohibited and will be considered a disqualification.
WALTER MOON,

Town Clerk and Clerk to the Local Education Authority.
Municipal Offices, Liverpool, 16th March, 1925.

WEST AFRICAN MEDICAL STAFF

VACANCIES exist at present for MEDICAL OFFICERS in the WEST AFRICAN MEDICAL STAFF. Candidates, who should be British subjects of European parentage and not over 35 years of age, should apply to the Private Secretary (Appointments), the Colonial Office, London, S.W.1. Preference is given to candidates who have had some professional experience since their qualification. Selected candidates are required to attend one of the Schools of Tropical Medicine, the fees for their tuition being defrayed by Government and an allowance being paid during their instruction.

SALARIES.

2. The initial salary of a medical officer is £660 a year, rising by annual increments of £30 to £720. Officers are appointed on probation for three years and then become eligible for confirmation. On confirmation, the salary rises by annual increments of £40 to £960 a year. If an officer remains for three years on £960 a year, he is eligible, if recommended, to be placed on a scale of salary of £1000 a year, rising by annual increments of £50 to £1150 a year, as if he had been appointed a Senior Medical Officer. Officers are required to undergo an approved course of instruction before proceeding to draw salary in excess of £800 a year.

3. In addition to the salary stated a "seniority allowance," which is non-pensionable and drawn only while the officer is in West Africa, is paid after the officer reaches £720 a year. This allowance is at the rate of £72 a year between £720 and £960 and £100 a year between £1000 and £1150.

4. Free furnished quarters are provided by Government or an allowance paid in lieu thereof. Quarters are usually available. An outfit allowance of £60 (or £30 if posted to Sierra Leone) is granted on first appointment. No income tax is at present levied by the Colonial Governments in West Africa.

PENSIONS.

5. The appointments are pensionable, a minimum service of seven years being required to qualify for a pension. An officer may elect to retire on reaching the age of fifty and may be called upon to retire on reaching the age of fifty-five. Medical officers are permitted to retire if they wish with a gratuity of £1000 or £1250 after nine or twelve years' approved service, but receive no pension in that case.

A Medical Officer whose service had been satisfactory would on retirement be qualified for pension at the following rates, assuming that he retired as a Medical Officer or Senior Medical Officer and had not received promotion to one of the higher offices.

After 16 years' service ..	£508
„ 17 years' service ..	£539 15s.
„ 18 years' service ..	£571 10s.
„ 19 years' service ..	£603 5s.
„ 20 years' service ..	£635 0s.
„ 21 years' service ..	£666 15s.
„ 22 years' service ..	£698 10s.
„ 23 years' service ..	£730 5s.
„ 24 years' service ..	£762 0s.
„ 25 years' service ..	£793 15s.

Alternatively an officer may elect to receive a gratuity of one year's pensionable emoluments (£1270 in the case here considered) and a pension reduced by one-fifth. If the retiring officer had been promoted to one of the higher posts and retired from that his pension would be of greater amount. The maximum pension which can be drawn is two-thirds of the salary (including an allowance for free quarters) at the date of retirement.

6. A contributory scheme for providing pensions for the widows and children of deceased officers has been introduced, and all officers whether married or single are required to contribute to it.

PASSAGES AND LEAVE.

7. Free ocean passages are provided on appointment and when going on leave and returning from leave. Half salary only is paid on the outward voyage on first appointment.

8. After a tour of from twelve and eighteen months' residential service in West Africa, an officer may be granted leave with full salary for the period of both voyages and for one week in respect of each complete month's residence. Married officers who have obtained permission to bring their wives to West Africa may be paid a grant equal to half the cost of their wives' passages out and homewards.

HIGHER APPOINTMENTS.

9. The higher posts in the West African Medical Staff are at present as follows:—

- 20 Senior Medical Officers (£1000 to £1150 plus £100);
- 9 Assistant Directors Medical Service (£1300 plus £260 duty allowance);
- 2 Deputy Directors Medical Service (one at £1400 a year plus £280 duty allowance; one at £1500 a year plus £300 duty allowance);
- 3 Directors Medical and Sanitary Service (one at £1800 a year plus £360 duty allowance, one at £1600 a year plus £320 duty allowance, one at £1400 a year plus £280 duty allowance).

A duty allowance is non-pensionable, and is drawn only while the officer is resident in the Colony.

10. In addition, there are at present six Senior Sanitary Officers (£1050 to £1200 plus £210 duty allowance), three Deputy Directors Sanitary Service (one at £1500 a year plus £300 duty allowance, two at £1300 a year plus £260 duty allowance), and one Assistant Director Sanitary Service (£1300 a year plus £260 duty allowance). Officers holding these appointments are required to possess a qualification in Public Health. There are also a certain number of Specialist appointments (£1300 plus £260 duty allowance rising after five years to £1400 plus £280 duty allowance), and appointments as Medical Officers of Health which carry a special addition to salary.

GENERAL.

11. The West African Medical Staff serves the Colonies and Protectorates of Nigeria, the Gold Coast, Sierra Leone, and the Gambia. Officers are appointed to the Staff and are liable for service under any of the four administrations, though transfers from one to another are not usually made except on promotion or in case of emergency.

12. Private practice is allowed to Medical Officers and Senior Medical Officers, but the privilege may be withdrawn by the Governor should he consider it desirable. In most stations there is little opportunity for such practice, and as a general rule stations where private practice can be found are allocated to the more senior members of the Staff.

13. Further particulars may be obtained from the Private Secretary (Appointments), Colonial Office.

The Hospital for Sick Children,

Newcastle-upon-Tyne.—The Committee of Management invite applications for the post of HONORARY PHYSICIAN to the Electrical Department. Applications, stating age and qualifications, with copies of testimonials, should be sent to the Secretary, Mr. Neil Brodie, 18, City-road, Newcastle, on or before 11th April, 1925. Personal canvassing a disqualification.

National Sanatorium, Benenden, Kent.

RESIDENT ASSISTANT MEDICAL OFFICER (Male) required. 130 Beds. Salary £300 per annum, rising to £350 by annual increments of £25, with board, residence, and laundry. Applications, with copies of three recent testimonials, should be sent to the Medical Superintendent not later than Wednesday, April 1st.

City of Bradford.

ASSISTANT SCHOOL MEDICAL OFFICER required. Salary £600 per annum.

Forms of application may be obtained from the Medical Officer of Health, Town Hall, Bradford, and should be returned to him not later than the 7th April, 1925.

N. L. FLEMING, Town Clerk.

Town Hall, Bradford, 23rd March, 1925.

The Royal Infirmary, Sheffield.

The Weekly Board of Management invite applications for the post of HOUSE SURGEON.

The salary attached to the appointment is £80 per annum, with board and residence.

Applications, with copies of testimonials, to be addressed to JNO. W. BARNES, Secretary. Board Room, 24th March, 1925.

Hull and Goole Port Sanitary AUTHORITY.

APPOINTMENT OF ASSISTANT MEDICAL OFFICER OF HEALTH.

The Hull and Goole Port Sanitary Authority invite applications for the appointment of Assistant Medical Officer of Health, to carry out under the direction and supervision of the Medical Officer of Health, the routine work of Port Sanitary Administration, the Medical Inspection of Aliens, Bacteriological work and such other duties as he may be called upon to perform.

Applicants to be under forty years of age, and must hold a registered degree or diploma in Public Health or State Medicine. The person appointed will be required to devote the whole of his time to the duties of the office, and also to contribute at the rate of 5 per cent. of his salary to a superannuation fund under the Local Government and Other Officers' Superannuation Act, 1922.

Salary £750 per annum.

Applications, stating age, qualifications, experience, and present occupation, to be sent to me, with copies of three testimonials of recent date, on or before Tuesday, the 31st day of March, 1925, marked "Assistant Medical Officer."

H. A. LEAROYD, Clerk to the Authority.

Guildhall, Hull, 17th March, 1925.

University of the Witwatersrand, JOHANNESBURG.

SENIOR LECTURER IN DENTAL ANATOMY, PHYSIOLOGY AND HISTOLOGY

Applications are invited for the above post, which is full-time, from qualified and registered Dental Practitioners.

SALARY £450 per annum, rising by annual increments of £25 to £650 per annum, plus relative local allowance. On a salary of £450 per annum this at present amounts to £64 per annum. Half salary during voyage to South Africa.

DUTIES The appointee will be ex officio a member of the Senior Honorary Visiting Staff of the Witwatersrand University Dental Clinic, with duty during one forenoon per week at that Institution. In the first instance for two years, with a prospect of renewal.

ENGAGEMENT Duty commences on 1st July, 1925, or as soon thereafter as possible.

TRANSPORT £40 will be allowed towards the cost of the voyage subject to a proportionate refund in the event of resignation within three years.

Applications, with copies of testimonials, all in triplicate, should reach the Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar-square, London, W.C. 2 (from whom forms of application and further particulars may be obtained), not later than 11th April, 1925.

Applications are invited for the post

of ASSISTANT MEDICAL OFFICER in BRITISH GUIANA. Candidates should be registered Medical Practitioners. Salary £500-£700 by annual increments of £25; but appointment for two years in the first instance. Free bachelor quarters.

Further particulars can be obtained from the Private Secretary (Appointments), Colonial Office, Downing-street, London.

64

Locum Tenens Provided

at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent who for forty years, without agency fee to Principals, has supplied Practitioners with reliable substitutes.

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C. 2.

Telegrams: Epsomian, London.

Telephone: Gerrard 399

After 5 P.M.—Tel. Epsom 335.

Lady, L.R.C.P., M.R.C.S., requires

ASSISTANTSHIP or LOCUM TENENS post, South Wales District preferred. Good experience.—Address, No. 876, THE LANCET Office, 423, Strand, W.C. 2.

M. B. Ch B., M.R.C.S., L.R.C.P.,

age twenty-five, desires ASSISTANTSHIP with view to Partnership later. General hospital and twelve months general practice with good experience Midwifery.—Address, No. 878, THE LANCET Office, 423, Strand, W.C. 2.

DANCING.

Miss Evadne Newsholme,

Hotel Quebec, Marble Arch, W.1. Phone: Mayfair 4791. Three private lessons 1 guinea. Seven 2 guineas. Classes held.

Wanted, Partner in General Practice

in Midland Town. Receipts averaging £2,600. Must be capable Surgeon, preferably F.R.C.S.—Address No. 877, THE LANCET Office, 423, Strand, W.C. 2.

Partner wanted. Country Practice,

Hampshire.—£1650. One-third Share. Two years' purchase. Further share shortly.—Address, No. 879, THE LANCET Office, 423, Strand, W.C. 2.

Partner wanted in Mixed Practice,

South Coast Town, 60 miles from London. Must be well qualified and capable of doing Major Surgery. Share worth about £1000 per annum at two years' purchase. Preliminary Assistantship.—Address full particulars to No. 854, THE LANCET Office, 423, Strand, W.C. 2.

Partner wanted in County Town

Practice S. of England. Age not to exceed thirty-five. Must be good Surgeon. Reversion of Hospital appointment almost certain. No panel. No dispensing. Share £900 per annum. Terms two years' purchase.—Address, No. 858, THE LANCET Office, 423, Strand, W.C. 2.

Medical Man, who has for past

twenty years been doing chiefly Major Surgery and Midwifery in the East, desires SHARE in good-class Practice on or near the South Coast. £6-700 a year with scope. Good house (5 bed) with garden essential. Small panel not objected to.—Address, D.S.O., c/o Herbt. Needes, 31, Bedford-street, Strand, W.C. 2.

Wanted, Practice with 3000 panel

patients or over in London. Top price given (cash).—Address, No. 860, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, Practice in Home Counties

or South. Receipts £1200 per annum, or more. Good house, garden, &c., would be bought if necessary. Necessary capital available.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2. (No charge unless sale effected.)

Wanted, General Practice by a M.D.,

yielding about £2000 per annum in any pleasant district. Must be in London or South Counties. Ample capital available for suitable practice.—Address, No. 861, THE LANCET Office, 423, Strand, W.C. 2.

West of England.—Half Share of a

good Middle-class Practice situated in a pleasant Town. Receipts £1700 per annum. Panel about 2000. Good house available to rent. Premium two years' purchase.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2.

Birmingham. — Best Suburb. —

Average receipts £750. Small selected Panel. Good scope. Good house on Lease; rent £60. Low premium for quick sale.—Lee & Martin, Ltd., 71, Temple-row, Birmingham.

Birmingham (Suburb). — Good-class

Residential district. Private PRACTICE yielding £750 per annum. Fees good. No Midwifery. Excellent house, garden, and garage; rent £60. Premium £800.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2.

To Purchasers.—Do not buy any

Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Forty years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Adelphi, Strand, W.C.2. Telephone: 399 Gerrard. Telegrams: Epsomian, London.

For Disposal.—A really good Practice

is not always to be had directly, but Mr. PERCIVAL TURNER (with forty years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best practices are sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C.2.

Consulting Room, Harley Street

corner, whole or part time, with or without door-plate. Also Service Suite or Bed-sitting Room if desired.—Address, No. 866, THE LANCET Office, 423, Strand, W.C.2.

Bed-sitting Rooms for Medical

Students; also accommodation on ground floor for Consulting Room, newly decorated, electric light; 'phone, &c. Very moderate terms.—9, Leinster-gardens, Lancaster Gate.

Dentists (Suburban and Provincial).—

Parttime use of Furnished Consulting Room near Harley-street.—Apply Barnes, Kirkwood & Woolf, 85, Baker-street, W.1. (Langham 2255).

Bond Street, Harley Street (near).—

Charming BED-SITTING ROOM for Lady. Sunny aspect; first floor; breakfast and attendance; use of kitchen; gas fire, own meter; bath.—'Phone: 1865 Langham.

Consulting Rooms (near Cavendish-square).—

Self-contained Suite of FIVE ROOMS, with own front door, to be LET without premium. Eminently suitable for two or more Doctors or Dentists. Constant hot water.—Apply, Sole Agents, Elgood and Co., 98, Wimpole-street, W.1.

Bristol.—Centre of densely populated

industrial district. RESIDENCE specially erected for Doctor within last few years. Main road; commanding position. Present Practitioner retiring.—Full particulars of Sole Agent, Mr. A. Victor Osmond, Auctioneer, 15, Bridge-street, Bristol.

FOR SALE.

ESPECIALLY SUITABLE FOR EXCLUSIVE NURSING HOME.

Detached, corner House. Best resi-

dential section of Sutton, Surrey. 8 bedrooms and dressing room; bathroom; W.C. both floors; beautifully decorated drawing-room, two other reception-rooms; winter gardens; good garden; covered way to garage. Convenient to stations and business. Electric light. Gas central heating. All modern conveniences. Price Freehold, £3,500.—Box 529, W. S. Crawford, Ltd., 233, High Holborn, London, W.C.1.

ESTABLISHED 1860.

MESSRS. BEDFORD & CO.

(O. E. BEDFORD, F.S.I., F.A.I.),

SURVEYORS, AUCTIONEERS, AND ESTATE AGENTS

10, Wigmore Street, Cavendish Square, W.

SPECIALISTS IN PROFESSIONAL HOUSES AND CONSULTING ROOMS in Harley-st. and leading medical positions.

Telephone: 2412 Paddington.

IMPORTANT TO THE MEDICAL PROFESSION.**Gentlemen requiring Distinctive Dress**

can secure Perfectly Tailored Clothes made to measure. Finest quality Materials. Distinctive Styles. Best Workmanship only

SPECIAL OFFER.—Black or Grey JACKET & VEST, £4 4s.

Worsted Trousers, £2 2s. Ideal for Professional or Evening Wear.

MODEL OVERCOATS from £5 5s. **SUITS** from £6 6s. (worth £8 8s.)**MOORLAND JACKET & PLUS FOURS** from £6 6s.

2 Expanding Pleats at Back, Perfect Arm freedom, any position.

"THE" Ideal Suit for ALL Sporting purposes.**DRESS SUITS** from £8 s. **RIDING BREECHES** from £2 2s.**RIDING HABITS** from £10 10s. **COSTUMES** from £1 6s.**PATTERNS POST FREE. PERFECT FIT GUARANTEED.**

Visitors to London can be measured & fitted same day

HARRY HALL, "THE GOLD MEDAL" COAT, BREECHES, HABIT, & COSTUME SPECIALIST.

207, OXFORD STREET, W.1.; 149, CHEAPSIDE, E.C.2.

'Phones: REGENT 3024 & 3025 CITY 2086.

Highest Awards 12 Gold Medals.

Estab. 35 years.

THE OLDEST AND LEADING MEDICAL AGENT.**MR. PERCIVAL TURNER, LTD.**

(Established over 40 years),

4 & 5, ADAM STREET, STRAND, W.C.2.

Telegrams: "EPSOMIAN, LONDON." Telephone: GERRARD 399.

PRINTED PROSPECTUS OF TERMS, ETC., POST FREE ON APPLICATION.**Death Vacancy.—£2800 a year.—**

Good Residential Southern Suburb. Senior Partner's HALF SHARE for Sale. Same hands 35 years. Panel and other appointments held. Excellent family house, garden, tennis lawn, for sale. Premium one and a half years' purchase.—Apply, No. 7697.

Cornwall.—Average £2400 p.a.—

PARTNERSHIP. Half Share for disposal. Very old-established. Panel 1100. Appointments about £600. Visits 5s. Good detached house; rent £75. Premium £2000 cash.—Apply, No. 7701.

Scotland, South.—About £2000 p.a.

Non-dispensing. Good Town. Panel over 1100. Visits 5s. up. Midwifery to £10 10s. Appointments about £250. Good house with garden. Good Hospital, scope for Surgery.—Apply, No. 7700.

London Suburb, S.W.—About £500

p.a. Increasing district. Panel 160. Few Midwifery cases; ample scope. House: 4 bedrooms, reception, waiting-rooms, &c., garage.—Apply No. 7676.

Sussex.—Partnership.—£3500-

£4000 p.a. One-third Share for disposal. Panel 1500. Appointment £120. Good fees. Few Midwifery cases, 1 to 15 guineas. Good corner house, with garden, garage, &c. Premium 2 years' purchase. Six months' preliminary Assisancy.—Apply, No. 7696.

Surrey.—About £550 p.a. Old-

established, non-panel. Ample scope. Appointments over £300. Midwifery refused. Visits 3s. 6d. to 10s. 6d. Detached house, good garden, on long lease.—Apply, No. 7695.

Home County.—Partnership about

£5000, increasing. One-sixth Share for disposal. Favourite Residential locality. Panel 1800-1900. Appointments over £500. Visiting fees 3s. 6d. to 15s.; Midwifery 3 to 10 guineas. Cottage Hospital. Partner should be 28 to 35 years of age and keen on Surgery.—Apply, No. 7691.

Gloucestershire.—Over £1500 a year.

Half Share for disposal with Succession. Very old established. Panel produces £400 p.a. Other appointments £150. Few Midwifery cases. Good house, electric light, garage, &c. Sport of all kinds.—Apply, No. 7687.

North-East Coast.—About £2000 p.a.

Half Share in old-established Practice with Succession later. Panel 2050. Opposition slight. Progressive district, very suitable for young man. Premium 1½ years' purchase.—Apply, No. 7686.

Essex Suburb.—About £1000 a year.

Old-established PRACTICE. Panel 415. Good fees. Little Midwifery, but scope. Good house, ample accommodation, garden and garage, to rent.—Apply, No. 7682.

Essex.—About £1300 a year. Very

old established. Increasing population. Panel 375. Other appointments about £130. Few Midwifery cases. Good fees. Corner house on lease to be rented.—Apply, No. 7677.

London, W.—About £650 p.a. Mostly

ready money and panel. Visiting fees chiefly 5s. to 10s. 6d. Cons. 3s. 6d. and 5s. Panel 300. No Midwifery taken. Scope.—Apply, No. 7675.

Seaside Resort.—Partnership.—About

£2400 a year. One-third Share for disposal, half later. Fees 3s. 6d. up. Few Midwifery cases from £5 5s. Panel 750. Scope for Surgery. Intending Partner should be a man about 30, married preferred.—Apply, No. 7671.

Gloucestershire.—Partnership in

Country Practice returning over £2000 a year. Old established. Largely panel and appointments. One-third Share for disposal, more later. Excellent sporting neighbourhood.—Apply, No. 7651.

South Coast.—Partnership.—About

£2700 a year. Non-dispensing; small panel. One-third share for disposal now, up to one-half later. Visiting fees chiefly 10s. 6d. Applicants should be Graduate and F.R.C.S. for preference.—Apply, No. 7631.

BOVRIL MEDICAL AGENCY, Ltd.

ALDINE HOUSE,

10-13, BEDFORD STREET, STRAND, LONDON, W.C.2.

Telegrams: BOVMEDICAL, WESTRAND-LONDON.

Telephone: GERRARD 3543 (3 Lines).

Established by Bovril, Limited, to provide an efficient and reliable transfer service for the Profession at minimum Charges.

Under the personal direction of Dr. J. FIELD HALL and Mr. J. C. NEEDES, who have both had many years' experience as Medical Transfer Agents.

An Accountant's Certified Report is required in respect of every Practice or Partnership the disposal of which is undertaken by the Agency.

The commission chargeable in respect of any Practice in Great Britain placed exclusively in the hands of the Agency for transfer has been fixed on an exceptionally favourable scale, the maximum chargeable on any transfer being fifty pounds (£50). In the case of Foreign and Colonial Practices similarly placed the maximum is seventy-five pounds (£75).

NO CHARGE IS MADE TO PRINCIPALS FOR THE INTRODUCTION OF LOCUM TENENS OR ASSISTANTS. Accountancy and Legal Services furnished by the Agency, where desired, at moderate inclusive charges.

PRACTICES AND PARTNERSHIPS FOR SALE.

- 1. SOUTH-WEST OF ENGLAND.—Coast Town.—PARTNERSHIP.**—A share representing nearly £2000 a year is for disposal in a well-established middle-class Practice situated in a very favourite Hospital town. There are various appointments, all transferable, and a panel of about 800. Advice and medicine 3s. 6d., 5s., and 7s. 6d.; visits and medicine 5s. to 21s. Little Midwifery at from 4 to 10 guineas. Well-situated ten-roomed house, on the sea front, in good repair; rent £75 on lease. Premium for share £3000, payable cash.
- 2. NEAR EPPING FOREST.—PARTNERSHIP.**—A one-fifth share (to commence with) is offered in an old-established and rapidly growing middle-class Practice. A further share will be sold after two years. Income approximately £3000, including £850 from panel and £300 from appointments. Advice and medicine usually 3s. and 4s.; visits and medicine 3s. 6d. to 10s. 6d., mostly 5s. and 6s. About 50 cases of Midwifery from 3 to 5 guineas. There is unlimited scope for a man who is keen to develop this Branch of the work. A suitable house will be secured for the incoming partner, on rental. Can be worked with a bicycle. Premium 2 years' purchase, payable cash.
- 3. LONDON, S.W.—Residential Suburb.—PARTNERSHIP.**—Owing to the death of the Senior Partner the Half Share in a very old-established Mixed Better-class Practice is for immediate disposal. Average income nearly £3000. Appointments are worth about £300. The deceased Partner was not on the panel. Fees 3s. 6d. to 10s. 6d. Very little Midwifery. House is a large detached one, standing in its own grounds, with good garden, tennis-court. Price £4000. Premium 1½ years' purchase.
- 4. LONDON, S.W.—A very sound Mixed General PRACTICE.** Income for the last year approximately £1800. Panel of 1500. Advice and medicine 2s. 6d. and 3s. 6d.; visits and medicine 3s. 6d., 5s., and 7s. 6d. House contains reception, 6 bedrooms, professional rooms, &c.; very good garden. Held on lease at £120 a year. Premium 1½ years' purchase.
- 5. IN A GOOD-CLASS RESIDENTIAL SUBURB OF LONDON,** a well-established Mixed General PRACTICE. Average income about £1750. Small panel of 220. Advice and medicine 2s. 6d. to 5s. 6d.; visits 3s. 6d. to 15s. No Midwifery. Convenient semi-detached house, with small garden, on rental at £85 a year. Premium £2600.
- 6. WEST OF ENGLAND.—Favourite Coast Town.—A very old-established and entirely good-class, non-dispensing, and non-panel PRACTICE.** Average receipts over £1500. Practically no Midwifery or night-work. Convenient house; would be let on lease at £100 p.a., or preferably sold. Rapidly growing town and excellent climate. Small Hospital. Premium 1½ years' purchase.
- 7. SOUTH LANCs.—Country Practice.—PARTNERSHIP.**—A One-third Share in a sound unopposed Country Practice, situated in very pleasant surroundings. Income about £4500, with very real and considerable scope. Fees 2s. 6d. to 21s. Suitable house available; on rent at about £50 p.a. Purchaser should be between 30 to 35 years of age, preferably married, and a hard worker. Premium 1½ years' purchase, payable £1500 cash and balance by instalments.
- 8. IN A PLEASANT DISTRICT (Population 7000) WITHIN 20 MILES OF LONDON.**—An old-established PRACTICE worth nearly £1300 a year, including union (£150) and panel of 600. Patients mixed class. Visits 5s. to 7s. 6d. Midwifery 3 to 5 guineas—25 to 30 cases yearly. Small house (large consulting and waiting-rooms, 2 reception-rooms, 3 bedrooms, bathroom, &c.) with garden; rent only £35 a year on lease. Premium £1900. Efficient introduction given. Golf, tennis, cricket, &c. Good educational facilities.
- 9. WITHIN 10 MILES OF VICTORIA.—Outlying Residential Suburb.—PARTNERSHIP.**—A Half Share in an old-established Mixed General Practice. Average income for the last 3 years over £2500. Panel of about 1100. Advice and medicine from 2s. 6d. (cash) and 3s. 6d.; visits and medicine 3s. 6d. to 7s. 6d. Very little Midwifery, from 3 to 5 guineas. Well-built corner house, with 2 reception-rooms, waiting-room, consulting-room and dispensary, 5 bedrooms. Small garden. Held on lease with 70 years to run at a ground rent of £14. Will be sold for £1600 or let on rental. Premium 2 years' purchase.
- 10. SOUTH-WEST OF ENGLAND.—Small Coast Town.—PARTNERSHIP.**—A Three-tenths Share (to commence with) is for disposal in an old-established Practice. Average income over £5500, including various appointments and panel of about 1200. Advice and medicine 3s. 6d. to 10s. 6d.; visits 4s. to 21s. medicine extra. A few Midwiferies at from 2 to 10 guineas. Large detached house, with garden, garage. Held on long lease, with a ground rent of £8 a year. Price £2000, a considerable part of which could be obtained on mortgage. Sport of all kinds, social club, and good educational facilities. Premium 2 years' purchase.
- 11. SOUTH CORNWALL.—PARTNERSHIP.**—A Half Share is for disposal in an old-established Mixed General unopposed Country Practice, situated within a few miles of the Sea and a Hospital Town. Income for the immediate past year £2600. Panel of about 1300. Advice and medicine 3s.; visits and medicine 5s. to 25s. Especially attractive detached house, with 3 reception, 4 bedrooms and dressing-room, bathroom (h. & c.), large garden with 2 lawns, orchard, &c.; rent £75 p.a., or will be sold for £1500. Good schools for boys and girls within reach by motor-bus. Premium £2000 cash, or £2100, part by instalments.
- 12. LONDON, NORTH.—Residential Suburb.—PARTNERSHIP.**—A One-sixth Share (to commence with) in an old-established, non-dispensing Practice is offered to an experienced and well-qualified Englishman or Scotchman, after short preliminary Assistantship. The income is nearly £5000 a year, and increasing. Fees mostly 5s., 7s. 6d., and 10s. 6d. Premium 2 years' purchase on the average for the last 3 years.
- 13. LONDON, NORTH.—Centrally situated.**—An old-established Middle- and Working-class PRACTICE. Steady average income of £1130, including a panel of 1100, capable of much increase. Fees from 2s. 6d.; visits from 3s. 6d. Very little Midwifery. Small house, with 2 reception, 3 bedrooms, professional rooms, &c.; rent £45, on lease. Premium £1800.
- 14. NEW ZEALAND (NORTH ISLAND).**—In an increasing and quite detached Suburb of a large Town, amidst most beautiful scenery of Harbour and Sea, an old-established PRACTICE is for disposal. Held by Vendor 14 years. Cash receipts average over £1500 p.a., including lodges worth about £380. These latter pay 25s. p.a. for single and married members. Population about 6000. Two opponents, one of whom is negligible. Fees 7s. 6d. to 10s. 6d., medicine extra, and up to £2 2s. outside Suburb. Midwifery 4 to 5 guineas, outside suburb 5s. per mile. Good substantial 2-storied house, commanding splendid views, and containing 8 rooms, bathroom, kitchen, garage. Vendor's property. Price £1800, part on mortgage. Premium £1200. Scope for both Private and Surgical work.

Profits accruing to Bovril, Ltd., from the Agency will be allocated amongst recognised Medical Charities
Full Schedule of Terms and Conditions will be forwarded on application.

THE SCHOLASTIC CLERICAL AND MEDICAL ASSOCIATION LTD.

Tele. Address: (Founded 1880)
Triform, Wesdo, London. 12, Stratford Place, Oxford Street, W.1.

Telephone:
Mayfair 2400.

The Association is recognised as a thoroughly trustworthy medium for the transaction of all MEDICAL, SCHOLASTIC and ACCOUNTANCY matters. The Business undertaken is divided for sake of reference as follows:—

TRANSFER OF PRACTICES, PARTNERSHIPS, &c.

Full and trustworthy information regarding Practices, Partnerships, &c., for Disposal supplied to purchasers.
N.B.—A full page list of Practices, &c., for Disposal appears each week in the "British Medical Journal."

ASSISTANTS AND LOCUM TENENS.

The introduction of reliable Assistants and Locum Tenens has always been the foremost aim of the Association.

RESIDENT PATIENTS.

A list of Practitioners receiving Resident Patients is kept and a printed and descriptive Register widely circulated.

ACCOUNTANCY.

The Association has its own Staff of fully qualified Accountants who investigate all matters MEDICAL & SCHOLASTIC. This Branch will be found of great value to Purchasers requiring the books of a Medical Practice or School examined prior to purchase.

SCHOLASTIC DEPARTMENT.

SCHOOLS, PRIVATE TUTORS, GOVERNESSES, ASSISTANT MASTERS AND MISTRESSES recommended. SALE of SCHOOLS negotiated. Medical Men will find this Department of great assistance in the selection of Educational Establishments for their children. Prospectuses and advice free of charge.

"MEDICAL PARTNERSHIPS, TRANSFERS, & ASSISTANTSHIPS" (BARNARD & STOCKER), Post free 13/9.
All Communications to be addressed to Mr. A. V. STOREY, General Manager.

LEE & MARTIN, Ltd.

MEDICAL AGENTS

(ESTABLISHED 1877)

71, TEMPLE ROW, BIRMINGHAM.

Telegrams: "LOCUM, BIRMINGHAM." Telephone: 1116 CENTRAL.

TRANSFERS OF PRACTICES AND PARTNERSHIPS ARRANGED.
ACCOUNTS AUDITED & INCOME-TAX RETURNS PREPARED.

"LOCUMS" AND ASSISTANTS SUPPLIED.

ARNOLD & SONS

(JOHN BELL & CROYDEN Ltd.)

Established over a Century.

50, 50a, 52, Wigmore Street, London, W.1.

Telephone—
Langham 3000 (10 lines). Telegrams—
"Instruments, Wesdo, London."

LOCUM TENENS provided at short notice.

LONDON, N.—G.P. with income of about £1200 p.a. Panel 1100 (scope). Two appointments. Medium-sized house at £45 p.a. Premium £1800 (cash).

CITY NUCLEUS—G.P. (scope for increase). Income approx. £135 p.a. Scope for panel. Premium £200.

LONDON, W.—NUCLEUS LOCK-UP SURGERY in good position. Might suit Lady Doctor. Income at the rate of £300 p.a.; scope for increase. Premium £250, or reasonable offer.

LONDON, W. (near Harley-street).—LOCK-UP SURGERY. Income about £630 p.a. Panel 300, increasing. Fees 3s. 6d. upwards. Might suit Lady Doctor. Premium for quick sale £850.

CORNWALL.—PARTNERSHIP.—Average income about £2400 p.a. Panel 1100. Good fees. Good-sized house for sale or rent. Premium for half share 1½ years' purchase.

SOUTH COAST.—PARTNERSHIP in good-class Practice. Suitable for Varsity graduate about 30, and preferably F.R.C.S. Income about £3000 p.a. Premium for 2½ths share, 2 years' purchase.

LONDON, E.—Suburban G.P. Medium-sized house. Panel nearly 1300. Good fees. Income £1835. Premium £2800 cash.

GLAMORGAN.—Old-established G.P. situated in large Town. Fees 3s. 6d. to 2 gu. Panel 100 (recently started). Good-sized corner house on lease. Income about £600 p.a. Premium £900.

S. WALES.—Unopposed G.P. (Colliery) in pleasant locality. Income £1614 p.a. Fees 2s. 6d. upwards. Medium-sized house, 69 years' lease. Premium £2000 or reasonable cash offer.

LONDON, S.W.—Well-established Suburban G.P. situated main thoroughfare. Income approx. £900 p.a. Panel 130 (scope). Fees 3s. 6d. up. Excellent accommodation to let. Premium £1200.

Purchasers stating their requirements will be sent particulars of other suitable PRACTICES and PARTNERSHIPS for Sale free of charge.

Please address all communications to the Manager,
Mr. W. H. GRANT, Medical Transfer and Insurance Department.

THE MANCHESTER MEDICAL AND SCHOLASTIC ASSOCIATION, LTD.

The oldest MEDICAL Agency in Manchester, 6, BROWN STREET

Telegrams: "STUDENT, MANCHESTER." Tel. 5932 City.

TRANSFERS and PARTNERSHIPS arranged and Investigations, Valuations, &c., undertaken. ASSISTANTS and LOCUM TENENS SUPPLIED. PRACTICES for Sale. Particulars on application.

BLUNDELL & CO.

22, CRAVEN ST., STRAND, W.C. 2

(Late of Walter House, 418-422, STRAND, W.C. 2).

Telephone: 7148 GERRARD.

Cable Address: (via Eastern only) "RECALLABLE, LONDON."

Inland Telegrams: BLUNDELL, 22, CRAVEN STREET.

Town and Country Practices of from £700 to £2000 Wanted for numerous Buyers.

For List of Practices for Sale, please see B.M.J.

PEACOCK & HADLEY (EST.)

(Mr. A. HADLEY).

MEDICAL TRANSFER AGENCY,

19, Craven Street, Strand, W.C. 2.

Wires: HERBARIA WESTRAND-LONDON. 'Phone: Central 1112.

This old-established reliable Agency negotiates the Sale of PRACTICES AND PARTNERSHIPS on reasonable terms which can be obtained on application. No charge made unless a sale be effected. LOCUM TENENS AND ASSISTANTS supplied.

Mr. HERBERT NEEDES

31, BEDFORD STREET, STRAND, W.C. 2.

Gerrard 3873.

(EST. 1860.)

This Agency (the Oldest in the Kingdom) undertakes the SALE of PRACTICES and PARTNERSHIPS, AUDITS, and VALUATIONS and the SUPPLY of LOCUMS and ASSISTANTS. No charge to Purchasers. All business receives Mr. Needs' personal attention.

Trial Case Mounted Lenses, 30

pairs each Sphericals, 18 pairs Cylindrical, Prisms, Discs, &c. Accept Ten Pounds.—Richardson, Cozenton, Rainham, Kent.

Untarnishable Nameplates for Doctors,

in fumed bronze and ivory enamel; need no daily cleaning; conspicuous, but strictly professional. State sizes required.—Macphails, 11, Graham-square, Glasgow.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY, LIMITED.

(FOUNDED 1892.)

Registered Offices: VICTORY HOUSE, LEICESTER SQUARE, W.C. 2.

Telegrams: "MEDICAVERO WESTRAND, LONDON."

Telephone: REGENT 611

President: Sir JOHN ROSE BRADFORD, K.C.M.G., C.B., M.D., F.R.C.P., F.R.S.

Treasurer and Chairman of Council: C. M. FEEN, M.R.C.S., L.R.C.P., D.P.H.

Trustees for the Reserve Fund: Sir HARRY BALDWIN, C.V.O., M.R.C.S., L.D.S.

Sir ANTHONY A. BOWLBY, Bart., K.C.B., K.C.M.G., K.C.V.O., F.R.C.S.

Sir R. DOUGLAS POWELL, Bart., K.C.V.O., M.D., F.R.C.P.

The Society was founded for the following purposes: To protect, support, and safeguard the character and interests of legally qualified Medical and Dental Practitioners; to advise and assist Members of the Society in matters affecting their professional character and interests; and to indemnify them in regard to actions, &c., undertaken on their behalf.

The present membership of the Society is 8,000.

SUBSCRIPTION.

There is an Entrance Fee of 10s. and the Annual Subscription is £1.

FUNDS AVAILABLE FOR THE DEFENCE, COMPLETELY AND TO AN UNLIMITED EXTENT, OF MEMBERS OF THE SOCIETY.

The Invested Funds of the Society taken at their market value as on the 1st January, 1924, amounted to £38,000. The Society is also fully insured with Lloyd's Underwriters under a Policy whereby Members of the Society are indemnified, subject to the provisions of the Articles of Association, to an unlimited extent against all adverse costs and damages which may be awarded against them in any action which the Society undertakes on their behalf.

Forms of application for Membership and full particulars may be obtained from the Secretaries.

Received too Late for Classification.

The Hospital for Diseases of the THROAT, Golden-square, W. 1.—Applications are invited for the appointment of HONORARY SURGICAL REGISTRAR, for which there are two vacancies.

The applications should be sent in to me with copies of three testimonials not later than 6th April.

WM. HOLT, Secretary and House Governor.

Royal Sussex County Hospital,

Brighton.—Notice is hereby given that a Meeting of the Elective Committee will be held in the Board Room at the Hospital on Wednesday, the 22nd April, 1925, at 12 noon (for the purpose of electing an HONORARY PHYSICIAN, and (in the event of a vacancy occurring at the Meeting) an HONORARY ASSISTANT PHYSICIAN, and such Elective Committee is hereby convened accordingly.

Applications are invited for the above offices from gentlemen who are Fellows or Members of the Royal College of Physicians of London, Edinburgh, or Dublin, or Graduates in Medicine of one of the Universities of Great Britain and Ireland, and who are duly registered under the Medical Acts.

Applications, with proof of the above-named qualifications, must reach the Secretary-Superintendent at the Hospital before 12 noon on Tuesday, the 7th April, 1925.

By order of the Board of Management.

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

Assistant Physician wanted for old-

established Sanatorium. Attractive prospects. Possible permanency for a man willing to take a financial holding. Address, giving particulars of qualifications and experience, to No 880, THE LANCET Office, 423, Strand, W.C. 2.

Evening Instruction in Medical

Bacteriology and Chemistry in London laboratory.—Address, No. 881, THE LANCET Office, 423, Strand, W.C. 2.

Dental Practice for Sale, nr. Montreal.

Income about £750. No opposition. Well estab. Charming country.—Write, Paul E. Gauntlett, C.A., 39c, King William-street, E.C.

GREAT MICROSCOPE BARGAIN.

EXCEPTIONAL OFFER TO STUDENTS.

KORISTKA NEW LATEST MODEL "K" MICROSCOPES.

List at £36 0s. 0d. Take £24 0s. 0d.

Deferred payment terms—£4 0s. 0d. cash down, and the balance in twelve monthly instalments of £1 16s. 8d.

MONEY BACK IF NOT SATISFIED.

SPECIFICATIONS: Koristka Model "K" Microscope, rigid horseshoe foot, inclinable to the horizontal position and well-balanced, focussing adjustments, coarse by rack and pinion, fine by side micrometer screw, mechanical stage with scale and verniers, with a displacement of 40 mm. in each direction. Focussing sub-stage with swing-out Abbé condenser, N.A. 1.20, with triple revolving nose-piece. Three Koristka objectives, 2/3rds, 1/6th, and 1/12th oil immersion. Magnifications 60-1000 complete in case. Splendid value at the price.

Or without 1/12th oil immersion objective, take £18 0s. 0d. THE CITY SALE AND EXCHANGE, Ltd., 81, Aldersgate-street, London, E.C. 1.



This Easter! See Europe from a Motorways Armchair.

One inclusive charge, London to London, escorted.

Dieppe, Rouen, Paris, 6 days, 18 guineas. Devon and Cornwall, 6 days, 15 guineas. French and Italian Rivières, 16 days, 39 guineas.

Get Illustrated Brochure from

CONTINENTAL MOTORWAYS LTD., 98, Wigmore Street. Phone: Mayfair 5428

THE MEDICAL MOTOR POLICY

is only issued to duly qualified Members of the Profession.

COMPLETE INDEMNITY. SPECIAL BENEFITS. LOWEST PREMIUMS.

THE Write for Proposal and Quotation.

MEDICAL GENERAL INSURANCE ASSOCIATION LTD.

7/8, POULTRY, CHEAPSIDE, E.C. 2.

PRINTED by HAZELL, WATSON & VINEY, LD., 52, Long Acre, W.C. 2, and PUBLISHED by the PROPRIETORS, WAKLEY & SON (1912) LTD., 68 at No. 423, Strand, and No. 1, Bedford Street, Strand, in the County of London.—Saturday, March 28, 1925.

*A Cure in Tuberculosis is Often
a Matter of Nutrition*

Without it, all other measures are unavailing.
With it, other measures are often unnecessary.

**Compound Syrup of Hypophosphites
"FELLOWS"**

has enjoyed an enviable reputation in the treatment of Tuberculosis for more than half a century. It stimulates the appetite.

Write for samples and literature

FELLOWS MEDICAL MANUFACTURING CO., Inc.
26 Christopher Street, New York City, U. S. A.

A fine product from the laboratories of E. SCHERING.

VERAMON
TRADE MARK.

Frequently in everyday practice the physician, being confronted with the choice between morphine (or other habit-forming drug) and unrelieved pain, wisely prefers the latter. Here the new analgesic, Veramon, is a friend alike to the physician and the patient. This preparation is a chemical compound of Barbitone and Amidopyrin, on Burgi's drug combination principle, whereby the analgetic effects of both components are enhanced, while the hypnotic effect is almost entirely eliminated. **It is safe and non-habit forming.** Veramon is next only to morphia in pain-relieving properties, and its exhibition is unaccompanied by any associated ill-effect.

Original Packages—TABLETS: In tubes of 10 × 6 grs.
POWDER: In boxes of 1 oz.

Samples and literature on request from the Importers:

A. & M. ZIMMERMANN, LTD., 3, Lloyd's Avenue, London, E.C.3

For Atophan announcement see page II. Cover.

BYNIN Amara

"A Distinct Advance on Easton's Syrup."

—The 'Lancet.'

'Bynin' Amara is an analogue of the well-known Easton's Syrup, but it is therapeutically much superior to that preparation. The syrup is replaced by 'Bynin,' pure active Liquid Malt, which affords a far better vehicle than the former, as it is actively digestive and nutritive. An added advantage is that the nauseous flavour of Easton's Syrup is effectively masked, whilst there is no possibility of sugar crystallising out and carrying down with it the active alkaloidal principles.

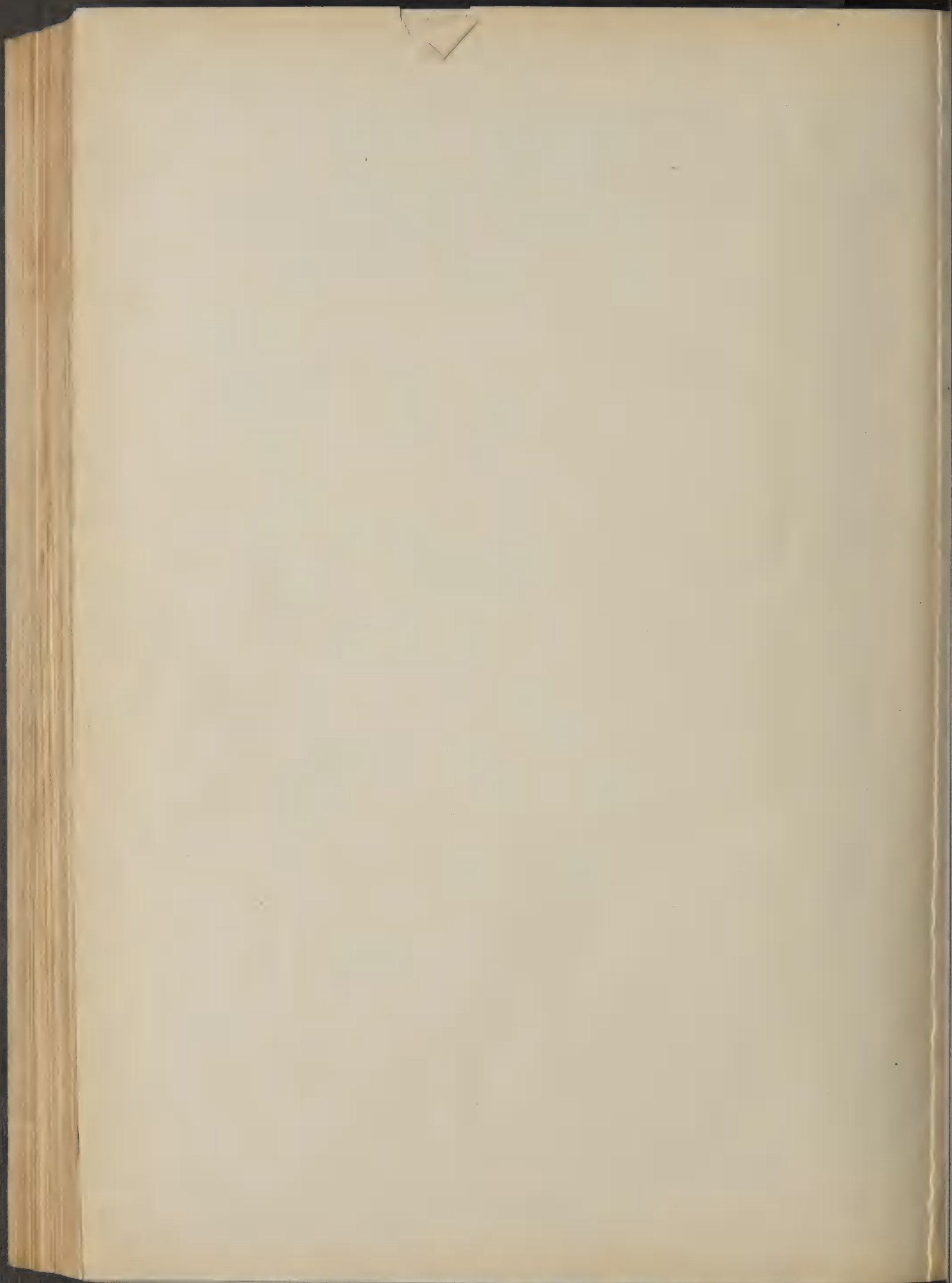
DOSE FOR ADULTS—A dessertspoonful to a tablespoonful in twice the quantity of water twice or on occasion three times daily.

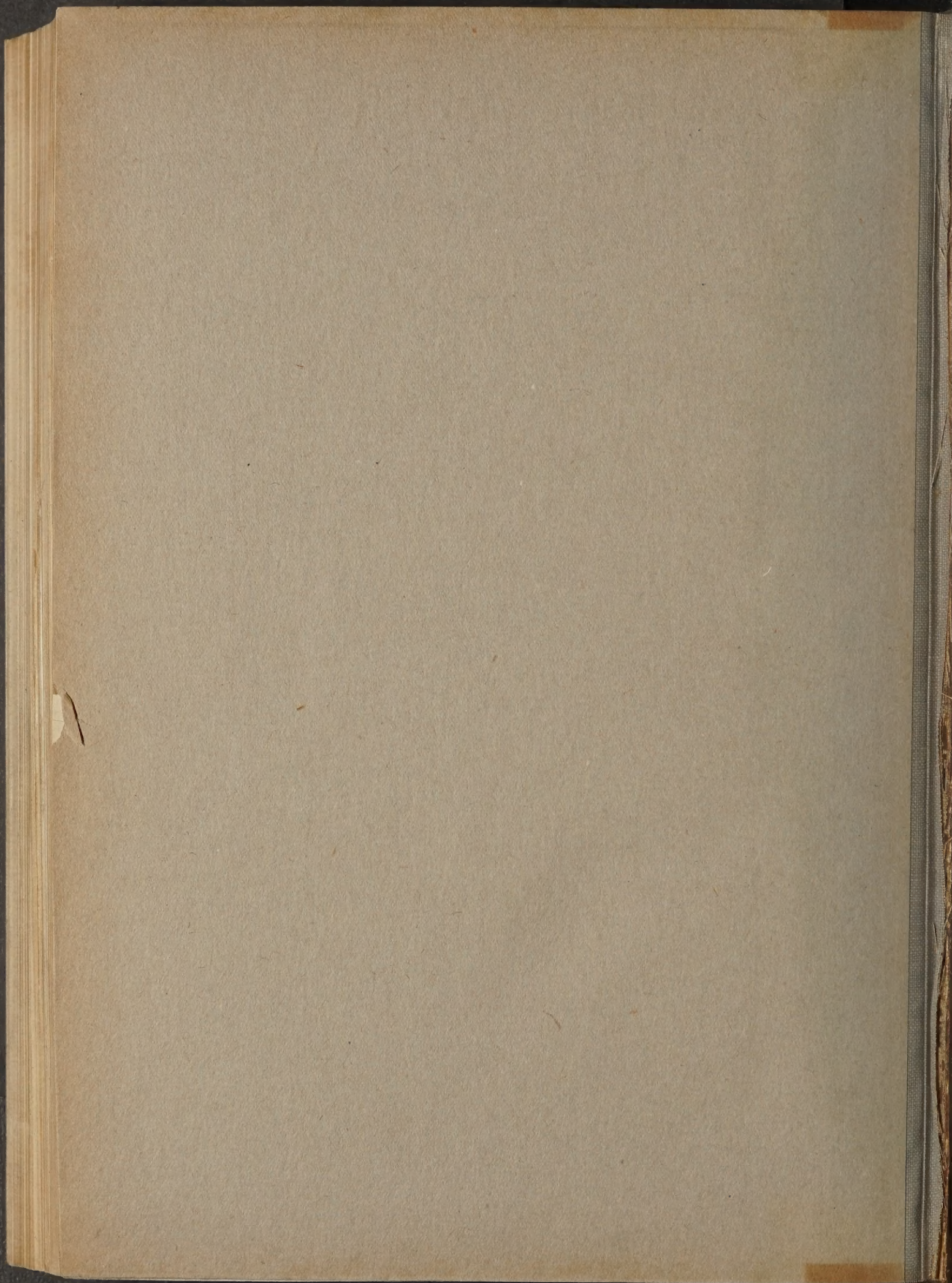
Further particulars and free sample will be sent on request.

Allen & Hanburys Ltd.
37 Lombard Street, LONDON, E.C. 3.

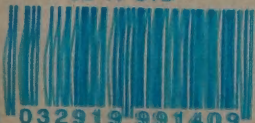
Composition

Quinine	grains
Phosphate	1½
Iron Phosphate	2
Nux Vomica	
Alkaloids	
equal to Strychnine	
Phosphate	1/8
'Bynin,'	
Liquid Malt	1oz.





02-17 STD



8 032919 991409

www.colibrisystem.com

UNIVERSITY OF ILLINOIS-URBANA



3 0112 118390431